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Physician - Coronary Artery Diseases and Surgery

[MÖB-01]

Study of the Effect of Fat Mass Index and Fat Free Mass Index on Postoperative Complications and Hospitalization in Patients Undergoing Isolated Coronary Artery Bypass Grafting Operation

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Objective: This study aimed to investigate the effect of preoperative fat mass and fat-free mass measurements on postoperative morbidity and mortality in patients scheduled for coronary artery bypass grafting (CABG).

Methods: In the prospective study conducted preoperative biochemistry analyses, sex, age, height, weight, body mass index, body surface area, fat mass index (FMI), fat-free mass index (FFMI), fat mass ratio (FMR), and fat-free mass ratio (FFMR) of 120 individuals were recorded. The number of vessels with CABG, postoperative need for inotropic drugs, time of extubation, total duration of intubation, duration of intensive care unit stay, duration of hospitalization, presence of wound drainage, cases of revision, development of pulmonary embolism, postoperative atrial fibrillation, ventricular arrhythmia, postoperative need for an intra-aortic balloon pump and extracorporeal membrane oxygenation, and death. For FMR, FFMR, and FMI, thresholds were determined by receiver operating characteristic analyses on wound drainage. The FFMI was evaluated within the ranges of 18.7 to 21 kg/m^2 in males and 14.9 to 17.2 kg/m^2 in females.

Results: Receiver operating characteristic analysis yielded the following thresholds: FMR, 0.26; FFMR, 0.73; and FMI, 7.46. Sex, age, body mass index, hypertension, diabetes, the need for postoperative continuous positive airway pressure or Vapotherm, wound drainage, need for inotropes, intensive care, and length of hospitalization were observed to be associated with FMI, FMR, and FFMR. Furthermore, FMR and FFMR were associated with pulmonary embolism. Patients with FFMI in the normal range had significantly less atrial fibrillation and wound drainage.

Conclusion: Preoperative fat mass measurements (FMI, FMR, FFMR, and FFMI) could effectively predict postoperative morbidity and mortality in patients after CABG. The findings underscore the importance of including fat and fat-free masses in operative risk calculations, as it can significantly enhance the accuracy of predicting complications, improving patient outcomes.

Keywords: Coronary artery bypass grafting, fat mass, fat-free mass, FMI, FMR, FFMI, FFMR, morbidity.

Table 1. Comparison of postoperative and operative results of the groups based on the fat free mass ratio threshold

	Fat-free mass ratio (FFMR)		
	≤0.73 (n=59)	>0.73 (n=61)	p
Age (years)†	62.9±8.1	57.2±10.0	0.001*
Male	43 (72.9)	59 (96.7)	0.001*
Women	16 (27.1)	2 (3.3)	
Diabetes mellitus	34 (57.6)	20 (32.8)	0.011*
Hypertension	42 (71.2)	27 (44.3)	0.005*
Chronic obstructive pulmonary disease	5 (8.5)	6 (9.8)	0.999*
Hyperlipidemia	25 (42.4)	21 (34.4)	0.479*
Height (cm) †	165.8±8.4	171.5±6.8	<0.001*
Body weight (kg)§	80.9 [60.0 – 135.0]	77.0 [54.9 – 100.0]	0.005**
Body mass index (kg/m^2)§	30.0 [24.2 – 44.0]	26.4 [18.4 – 31.1]	<0.001**
Body Surface Area (m^2)§	1.9 [1.6 – 2.5]	1.9 [0.0 – 2.2]	0.413**
NSTEMI‡	29 (49.2)	22 (36.1)	0.206*
STEMI‡	5 (8.5)	4 (6.6)	0.741*
STS score§	6.2 [2.7 – 13.0]	3.6 [0.3 – 14.1]	<0.001**
EuroSCORE score§	0.8 [0.4 – 3.3]	0.7 [0.3 – 2.4]	0.039**
Preoperative ejection fraction (%)§	60.0 [27.0 – 72.0]	60.0 [25.0 – 65.0]	0.690**
Total duration of intubation (hours)§	16.0 [7.0 – 240.0]	12.0 [7.0 – 480.0]	0.001**
Time of extubation (hours)§	14.0 [7.0 – 36.0]	12.0 [7.0 – 480.0]	0.001**
Need for CPAP/vapotherm‡	22 (37.3)	6 (9.8)	0.001*
Need for inotropes‡	38 (64.4)	14 (23.0)	<0.001***
Atrial fibrillation‡	16 (27.1)	11 (18.0)	0.331*
Pulmonary Embolism‡	5 (8.5)	0 (0.0)	0.026*
Wound drainage‡	49 (83.1)	8 (13.1)	<0.001***
Length of stay in postoperative intensive care unit (days)§	2.0 [1.0 – 20.0]	1.0 [1.0 – 36.0]	<0.001**
Length of hospitalization (days)§	11.0 [4.0 – 121.0]	7.0 [4.0 – 36.0]	<0,001**
Mortality‡	5 (8.5)	3 (4.9)	0.487*
‡: n (%), †: Mean ± Standard Deviation, §: Median [Minimum-maximum], *Independent Samples T-Test, **Mann-Whitney U test, ***Pearson Chi-Square or Fisher's Exact test.			

Table 2. Comparison of postoperative and operative results of the groups based on the fat mass index threshold

	Fat Mass Index (FMI)		
	>7.46 (n=54)	≤7.46 (n=66)	p
Age (years) †	62.4±8.4	58.0±10.0	0.011*
Men‡	40 (74.1)	62 (93.9)	0.006*
Women‡	14 (25.9)	4 (6.1)	
Diabetes mellitus‡	33 (61.1)	21 (31.8)	0.002*
Hypertension‡	38 (70.4)	31 (47.0)	0.017*
Chronic obstructive pulmonary disease‡	4 (7.4)	7 (10.6)	0.752*
Hyperlipidemia‡	25 (46.3)	21 (31.8)	0.152*
Height (cm) †	166.4±8.7	170.6±7.2	0.005*
Body weight (kg) §	83.0 [60.0 – 135.0]	75.0 [54.9 – 100.0]	<0.001**
Body mass index (kg/m^2)§	30.4 [24.7 – 44.0]	26.4 [18.4 – 31.1]	<0.001**
Body Surface Area (m^2)§	2.0 [1.6 – 2.5]	1.9 [0.0 – 2.2]	0.016**
NSTEMI‡	26 (48.1)	25 (37.9)	0.344*
STEMI‡	4 (7.4)	5 (7.6)	0.999*
STS score§	6.2 [0.3 – 13.0]	4.0 [1.3 – 14.1]	<0.001**
EuroSCORE score§	0.8 [0.4 – 3.3]	0.7 [0.3 – 2.4]	0.013**
Preoperative ejection fraction (%)§	60.0 [27.0 – 72.0]	60.0 [25.0 – 65.0]	0.632**
Total duration of intubation (hours)§	16.0 [7.0 – 240.0]	12.0 [7.0 – 480.0]	<0.001**
Time of extubation (hours)§	15.0 [7.0 – 36.0]	12.0 [7.0 – 480.0]	0.001**
Need for CPAP/vapotherm‡	20 (37.0)	8 (12.1)	0.003*
Need for inotropes‡	33 (61.1)	19 (28.8)	0.001*
Atrial fibrillation‡	15 (27.8)	12 (18.2)	0.302*
Pulmonary Embolism‡	4 (7.4)	1 (1.5)	0.173*
Wound drainage‡	46 (85.2)	11 (16.7)	<0.001***
Length of stay in postoperative intensive care unit (days)§	2.0 [1.0 – 20.0]	1.0 [1.0 – 36.0]	<0.001**
Length of hospitalization (days)§	10.5 [4.0 – 121.0]	7.5 [4.0 – 36.0]	0.006**
Mortality‡	5 (9.3)	3 (4.5)	0.465*
‡: n (%), †: Mean ± Standard Deviation, §: Median [Minimum-maximum], *Independent Samples T-Test, **Mann-Whitney U test, ***Pearson Chi-Square or Fisher's Exact test.			

Table 3. Comparison of postoperative and operative results of the groups based on the fat mass ratio threshold

	Fat mass ratio (FMR)		
	>0.26 (n=57)	≤0.26 (n=63)	p
Age (years) †	62.7±8.5	57.5±9.8	0.002*
Men‡	42 (73.7)	60 (95.2)	0.002*
Women‡	15 (26.3)	3 (4.8)	
Diabetes mellitus‡	34 (59.6)	20 (31.7)	0.004*
Hypertension‡	40 (70.2)	29 (46.0)	0.013*
Chronic obstructive pulmonary disease‡	5 (8.8)	6 (9.5)	0.999*
Hyperlipidemia‡	25 (43.9)	21 (33.3)	0.319*
Height (cm) †	166.4±8.5	170.9±7.2	0.002*
Body weight (kg) §	82.0 [60.0 – 135.0]	76.0 [54.9 – 100.0]	0.001**
Body mass index (kg/m^2)§	30.0 [24.2 – 44.0]	26.4 [18.4 – 31.1]	<0,001**
Body Surface Area (m^2)§	2.0 [1.6 – 2.5]	1.9 [0.0 – 2.2]	0.123**
NSTEMI‡	30 (52.6)	21 (33.3)	0.051*
STEMI‡	4 (7.0)	5 (7.9)	0.999*
STS score§	6.2 [0.3 – 13.0]	3.9 [1.3 – 14.1]	<0.001**
EuroSCORE score§	0.8 [0.4 – 3.3]	0.7 [0.3 – 2.4]	0.030**
Preoperative ejection fraction (%)§	60.0 [27.0 – 72.0]	60.0 [25.0 – 65.0]	0.632**
Total duration of intubation (hours)§	14.0 [7.0 – 240.0]	12.0 [7.0 – 480.0]	<0.001**
Time of extubation (hours)§	14.0 [7.0 – 36.0]	12.0 [7.0 – 480.0]	0.001**
Need for CPAP/vapotherm‡	21 (36.8)	7 (11.1)	0.002*
Need for inotropes‡	36 (63.2)	16 (25.4)	<0.001***
Atrial fibrillation‡	15 (26.3)	12 (19.0)	0.463*
Pulmonary Embolism‡	5 (8.8)	0 (0.0)	0.022*
Wound drainage‡	49 (86.0)	8 (12.7)	<0.001***
Length of stay in postoperative intensive care unit (days)§	2.0 [1.0 – 20.0]	1.0 [1.0 – 36.0]	0.001**
Length of hospitalization (days)§	11.0 [4.0 – 121.0]	7.0 [4.0 – 36.0]	<0.001**
Mortality‡	5 (8.8)	3 (4.8)	0.475*
‡: n (%), †: Mean ± Standard Deviation, §: Median [Minimum-maximum], *Independent Samples T-Test, **Mann-Whitney U test, ***Pearson Chi-Square or Fisher's Exact test.			

Physician - Aortic (Thoracic) Pathologies and Surgery/Endovascular Interventions

[MÖB-02]

Comparison of the Early and Mid-Term Results of Valve-Sparing Surgery *vs.* Valve Replacement Surgery for Type A Aortic Dissection Patients

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Objective: This study aimed to compare the early- and mid-term results of valve-sparing surgery and valve replacement surgery, which require different approaches to intraoperative/postoperative patient care, in patients with type A aortic dissection.

Methods: In this retrospective study, 112 consecutive patients (83 males, 29 females; mean age: 54.8±12.2 years) who underwent an operation for type A aortic dissection between February 2019 and September 2022 were examined. Patients were divided into two groups: those who underwent valve replacement surgery (modified Bentall procedure, SCI+AVR; n=26, 23.2%) and those who underwent valve-sparing surgery (isolated SCI, David II procedure, SCI+AV resuspension; n=86, 76.8%).

Results: It was observed that the cross-clamp and cardiopulmonary bypass times were longer and the need for postoperative mechanical support was higher in the valve replacement group ($p<0.05$). The early mortality rate was 30.8% (n=8) in the valve replacement group and 22.1% (n=19) in the valve-sparing group. The survival times were found to be 15.9 days in the valve replacement group and 123.5 days in the valve-sparing group. The mean postoperative control computed tomography time was 21.0±12.6 months. There was no postoperative sinus of Valsalva aneurysm in the valve-sparing group. Although the false lumen patency rate was not statistically significant, it was higher in the valve replacement group. After the operation, moderate to severe aortic regurgitation was not observed in any of the patients who underwent valve-sparing surgery with preoperative moderate to severe aortic regurgitation.

Conclusion: The results indicate that valve-sparing surgery was superior to valve replacement surgery for type A aortic dissection patients.

Keywords: Type A aortic dissection, aortic valve replacement, supracoronary graft interposition, modified Bentall procedure, aortic valve resuspension.

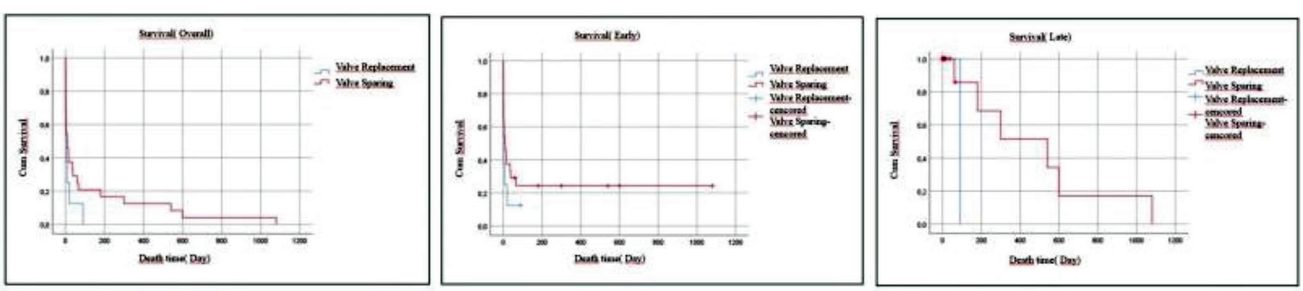

Figure 1. Survival graphics.

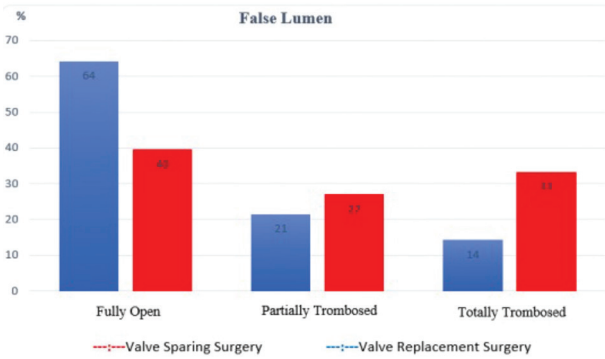

Figure 2. False lumen status.

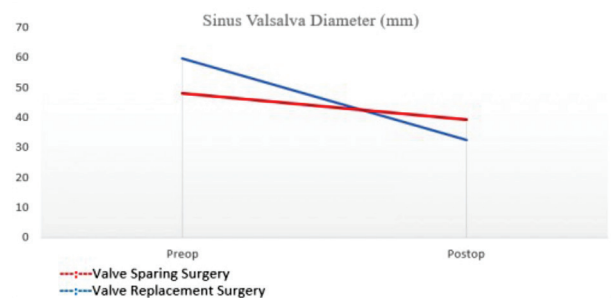

Figure 3. Sinus of Valsalva diameter.

Physician - Pediatric Cardiac and Vascular Surgery/Adult Congenital Heart Diseases

[MÖB-03]

Extra-Pericardial Modified Blalock-Taussig Shunt Via Sternotomy in Patients with A Right Aortic Arch

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Objective: The study aimed to describe the feasibility and results of a left modified Blalock-Taussig shunt (mBTS) through a sternotomy without opening the pericardium in patients with a right-sided aortic arch.

Methods: The study included eight patients (median age: 20 months; range, 10 to 56 months) who underwent a left mBTS. All mBTS procedures were performed through a median sternotomy without the use of cardiopulmonary bypass. Following sternotomy, the brachiocephalic trunk and left pulmonary artery were carefully identified and isolated without opening the pericardium. First, an end-to-side anastomosis was created between the Gore-Tex graft and the brachiocephalic trunk. Subsequently, the distal end-to-side anastomosis was performed between the graft and the left pulmonary artery. A single drain was positioned in the retrosternal space, and the sternum was closed in the standard manner.

Results: Six patients had tetralogy of Fallot, and two had a double-outlet right ventricle with pulmonary stenosis. The median weight was 8 kg (range, 6.1 to 12.8 kg). The procedure was feasible in all patients (Figure 1). The median shunt size was 5 mm (range, 4 to 5 mm), and the median intensive care unit stay was three days. There were no cases of early- or mid-term mortality, shunt failure, or thrombosis. Additionally, no patients developed postoperative pericardial effusion. Six out of eight patients underwent resternotomy for complete correction, with preoperative cardiac catheterization confirming shunt patency (Figure 2). Notably, no intrapericardial adhesions were observed during resternotomy.

Conclusion: This technique offers a significant advantage by avoiding intrapericardial adhesions, making it a viable alternative to standard sternotomy or thoracotomy approaches for mBTS in patients with a right-sided aortic arch.

Keywords: Congenital heart defects, tetralogy of Fallot.

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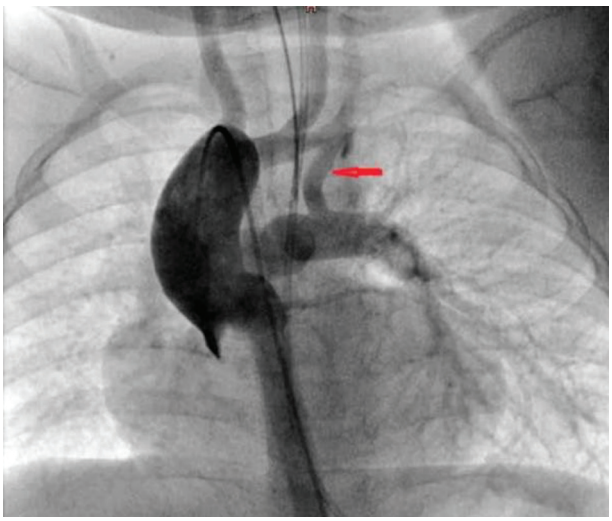

Figure 1. Cardiac catheterization performed to evaluate the pulmonary arteries and the shunt (arrow: modified Blalock-Taussig shunt).

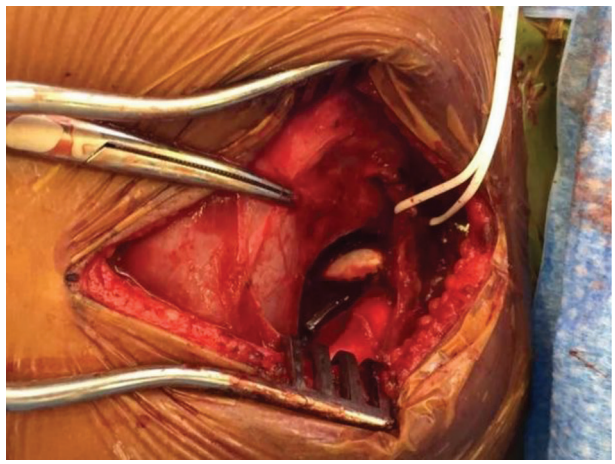

Figure 2. Intraoperative findings.

Physician - Peripheral Artery Diseases and Surgery/Percutan Interventions

[MÖB-04]

Demonstrative Thoracofemoral Extra-Anatomic Bypass: A Good Choice for Patients with High Risk for Laparotomy

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Extra-anatomic bypasses, known to have limited success rates for peripheral vascular surgery, are not the first choice of surgery. These surgeries have a wide range of configurations with different success rates. They are preferred in patients with high risk for abdominal approaches, such as those with adhesions or infections in the native area. We share a 50-year-old male thoracofemoral bypass patient with peripheral artery disease (PAD), claudication at 20 m, and a smoking habit. The patient described gastrointestinal symptoms such as constipation and distension. The patient was evaluated with contrast-enhanced computed tomography (Figure 1), which revealed that only the right renal artery was open after truncus celiacus in the abdominal aorta; the abdominal aorta and all other branches were chronically occluded. The patient had a history of abdominal surgery due to bladder stones and was diagnosed with moderate renal failure. It was observed that distal mesenteric bed perfusion was provided with collaterals, and collateral flow was provided to the lower extremity with epigastric arteries. A 10-mm Dacron graft was anastomosed to the thoracic aorta with a side clamp and tunneled from the left costophrenic sinus to the inguinal region. After the distal part of the left common femoral artery was sutured, a crossover bypass was performed with a graft of the same diameter (Figure 2). The patient's claudication complaints immediately disappeared after early postoperative mobilization, and the gastrointestinal symptoms began to regress after the first day. The patient was discharged on the fifth day. Contrast imaging was avoided due to the patient's renal dysfunction, but lower extremity pulses were palpable at the one-year follow-up. The thoracic aorta to femoral artery bypass approach is an easy and safe alternative solution for patients with peripheral arterial disease and high laparotomy risks.

Keywords: Extra-anatomic bypass, thoracofemoral bypass.

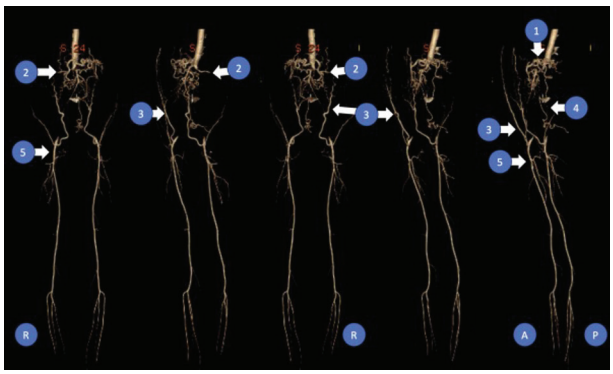

Figure 1. 1- Truncus celiacus, 2- Right renal artery, 3- Inferior epigastric artery - Anterior abdominal wall, 4- Mesenteric bed perfusion by collaterals, 5- Common femoral artery.
R: Right; A: Anterior; P: Posterior.

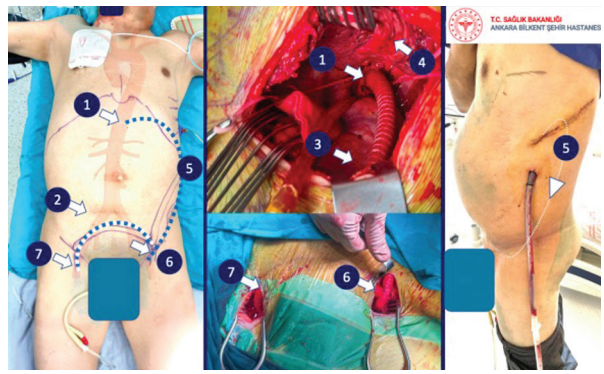

Figure 2. 1- Thoracic aorta end-to-side anastomosis with a 10-mm Dacron graft. 2- Suprapubic incision scar. 3- Left diaphragmatic surface. 4- Left lung. 5- Course of extra-anatomic bypass graft from the thoracic aorta. 6- Aortofemoral bypass. 7- Crossover bypass.

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Physician - Aortic (Thoracic) Pathologies and Surgery/Endovascular Interventions

[MÖB-05]

Comparative Retrospective Cohort Study of Carotid-Subclavian Bypass *vs. In Situ* Fenestration For Left Subclavian Artery Revascularization During Zone 2 Thoracic Endovascular Aortic Repair: A Single-Center Experience

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Objective: This study aimed to compare the carotid-subclavian bypass with in situ needle fenestration (ISNF) for left subclavian artery (LSA) revascularization and discuss the treatment approach.

Methods: All patients who underwent zone 2 thoracic endovascular aortic repair (TEVAR) with ISNF or carotid-subclavian bypass for LSA revascularization at our institution between February 2011 and February 2024 were retrospectively reviewed. Preoperative patient characteristics and primary outcomes, including operative mortality, transient ischemic attack or stroke, and spinal cord ischemia, were analyzed between groups.

Results: During the study period, 185 patients underwent TEVAR. Fifty-one of these patients underwent LSA revascularization with zone 2 TEVAR, with 32 of them being carotid-subclavian bypass and 19 of them being ISNF. The technical success rate was %100. There was no statistically significant difference between the groups regarding stroke, transient ischemic attack, spinal cord ischemia, and death (p>0.05).

Conclusion: Endovascular techniques, such as ISNF, have emerged as viable alternatives to traditional carotid-subclavian bypass for LSA revascularization in zone 2 TEVAR procedures. Our findings indicate that ISNF is a feasible and effective method, offering similar perioperative outcomes and mortality rates compared to carotid-subclavian bypass. After a precise patient selection process and under experienced hands, ISNF appears to be associated with similar perioperative outcomes and mortality rates with the carotid-subclavian bypass.

Keywords: *In situ* needle fenestration, carotid-subclavian bypass, zone 2 TEVAR, LSA revascularization.

Table 1. Outcomes

Mean Operation Time(min)		78 (52–124)	138 (64–248)	0.034
0–30 Days Mortality	5	2	3	0.603
1–24 Months Mortality	4	0	4	0.556
Total Hospital Duration	13.86 ± 22.97	10.36 ± 10.27	15.03 ± 25.75	0.116
Pre-op Hemoglobin Level (g/dL)	11.66 ± 1.89	12.27 ± 2.36	11.42 ± 1.66	0.452
Post-op Hemoglobin Level (g/dL)	10.42 ± 1.79	10.66 ± 2.07	10.32 ± 1.70	0.351
Pre-op Creatinine Level (mg/dL)	1.02 ± 0.50	1.04 ± 0.33	1.01 ± 0.56	0.140
Post-op Creatinine Level (mg/dL)	1.09 ± 0.58	1.23 ± 0.50	1.03 ± 0.61	0.68
Major Adverse Events in 30 days				
Stroke	3	1	2	0.807
Transient Ischemic Attack	1	1	0	0.273
Spinal Cord Ischemia	1	0	1	0.536
Endoleaks				
Type 1	3	0	3	0.551
Type 2	0	0	0	*
Type 3	0	0	0	*
Type 4	0	0	0	*
Patency During 24 Months	49	19	30	0.624
Necessity of Reintervention	5	2	3	0.915

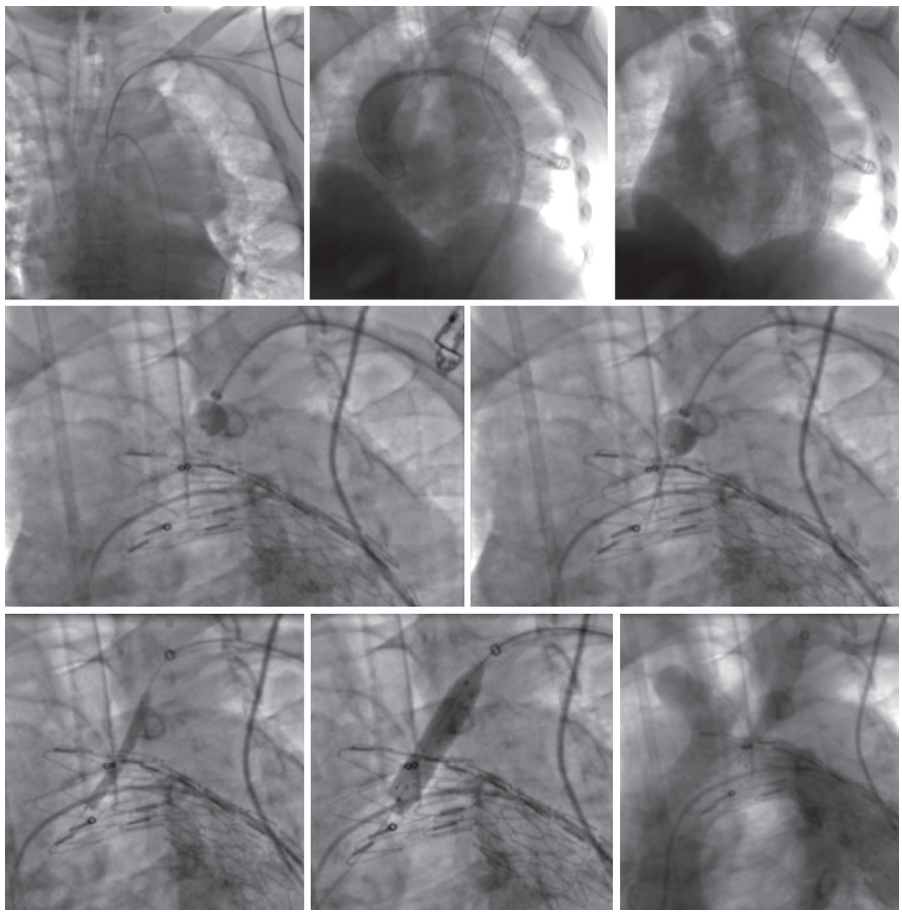

Figure 2. Angiographic images of left subclavian artery with *in situ* needle fenestration.

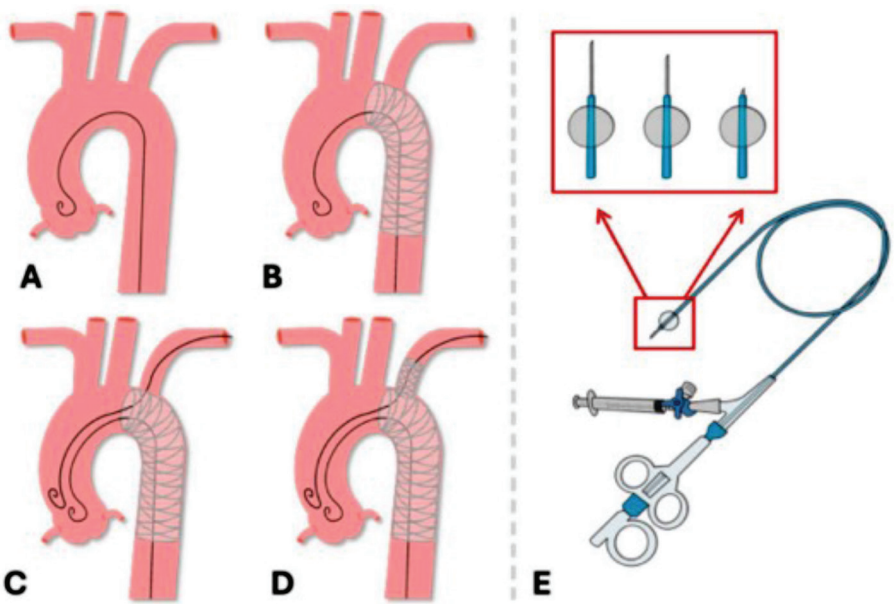

Figure 3. Operational details of left subclavian artery with *in situ* needle fenestration.

Physician - Pediatric Cardiac and Vascular Surgery/Adult Congenital Heart Diseases

[MÖB-06]

Clinical Outcomes of Injectable Biopulmonic Valve Replacement *vs.* Conventional Pulmonary Valve Replacement in Tetralogy of Fallot Patients with Severe Pulmonary Regurgitation: A Comparative Study

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Objective: This study aimed to compare early- to mid-term outcomes of injectable biopulmonic valve replacement without cardiopulmonary bypass and conventional pulmonary valve replacement in patients with severe pulmonary regurgitation following tetralogy of Fallot (TOF) corrective surgery.

Methods: The study was conducted with 22 patients between ?? 2011 and ?? 2020. Injectable pulmonary valve replacement was performed in nine patients, while 13 patients underwent bioprosthetic aortic valve replacement using a conventional surgical approach. An injectable valve was chosen for patients with a pulmonary annulus diameter ≤30 mm and ≥15 mm when there was no need for additional procedures.

Results: Comparing postoperative outcomes between the injectable valve group and the conventional surgery group, the mean duration of intensive care unit stay was 16.78±6.22 *vs.* 37.00±23.43 h (p=0.003); the mean postoperative mechanical ventilation time was 5.22±3.93 *vs.* 15.38±23.43 h (p=0.001); the mean volume of chest tube drainage was 206.67±108.16 mL *vs.* 513.08±274.11 mL (p=0.003); the mean inotropic score was 5.00±5.59 *vs.* 10.96±8.98 (p=0.05); the mean vasoactive score was 6.11±8.20 *vs.* 12.11±10.40 (p=0.04); and the mean length of hospital stay was 5.44±2.35 *vs.* 8.38±3.09 days (p=0.04).

Conclusion: Injectable pulmonary valve replacement, which can be applied without cardiopulmonary bypass, has advantages such as being less invasive and having better postoperative results compared to the conventional procedure. However, more comprehensive studies with long-term results are needed.

Keywords: Tetralogy of Fallot, pulmonary valve replacement, injectable valve.

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Mediterranean Cardiovascular Conference (MECC)

November 21-24, 2024 / Antalya, Türkiye

https://www.mecconference.org/en/

Oral Presentations

Physician - Vascular Acccess

[MSB-01]

Patency and Effectiveness of Vascular Access For Hemodialysis Patients: A Descriptive Study

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Objective: The study aimed to reveal the infection rates of permanent catheters and the thrombosis, maturation time, and patency rates of arteriovenous fistulas according to the regions in the arm in dialysis patients.

Methods: The study included a total of 109 arteriovenous fistulas and nine permanent catheters of 75 dialysis-dependent patients with chronic kidney disease from six different dialysis centers. Arteriovenous fistulas were examined in three groups according to their location in the forearm: distal radiocephalic, proximal radiocephalic, and brachial regions.

Results: Among those undergoing dialysis with a permanent tunneled catheter (PTC; n=9), 77.8% (n=7) used a PTC by choice, while 22.2% (n=2) used it due to heart failure instead of an arteriovenous fistula. Of the participants, 66.7% (n=50) used at least one PTC in their lifetime; 6% of these patients experienced a PTC infection, while 44% had a thrombosed fistula. Among all patients, 66 of the fistulas were patent, and 43 were thrombosed. Of these patients, 41.3% had a thrombosed distal radiocephalic fistula, 2.7% had a thrombosed proximal radiocephalic fistula, and 8.0% had a thrombosed brachial fistula. No relationship was found between the number of thrombosed fistulas and smoking, obesity, sex, or chronic diseases. The maturation time of arteriovenous fistulas was on average 38 days. Those under the age of 65 had shorter maturation times compared to those over the age of 65 ($p<0.05$).

Conclusion: Approximately half (41.3%) of dialysis-dependent patients had a thrombosed distal radiocephalic fistula. The maturation time of arteriovenous fistulas increases with age. There was no statistically significant difference in maturation times among distal radiocephalic, proximal radiocephalic, and brachial arteriovenous fistulas.

Keywords: Arteriovenous fistula, catheter, chronic renal failure, dialysis, permanent.

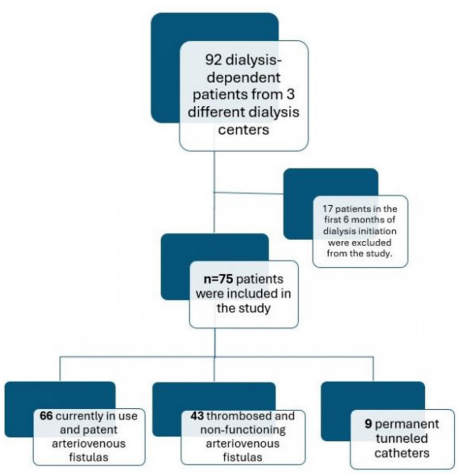

Figure 1. Flowchart of the study.

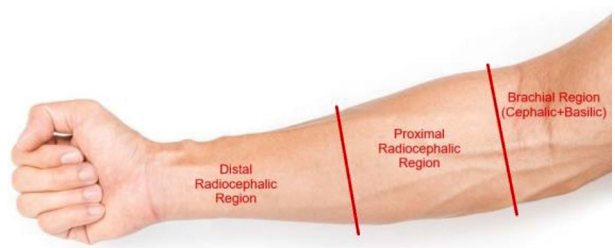

Figure 2. Fistula regions on the forearm.

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Physician - Venous and Lymphatic System Diseases and Surgery/Endovenous Interventions

[MSB-02]

Modern Approaches to Venous Ulcer Healing: A Study on Cyanoacrylate Embolization, Radiofrequency Ablation, and Laser Ablation

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Objective: The study aimed to investigate the effects of radiofrequency ablation (RFA), cyanoacrylate embolization (CE), and laser ablation (LA) in the treatment of perforating venous insufficiency.

Methods: One hundred eighteen patients with CEAP (Clinical, Etiological, Anatomical, and Pathophysiological) class 6 active ulcers were retrospectively reviewed between January 2018 and June 2023. The patients were divided into groups according to the treatment method: the CE group (n=55), the RFA group (n=63), and the LA group (n=30). Duplex scanning for venous ulcer and perforating insufficiency was performed in all patients, and healing rates at one-month, one-year, and two-year controls were calculated.

Results: At one month, occlusion rates were significantly lower for CE compared to 85%, RFA 90%, and LA 88% (p=0.05). The one- and two-year closure rates were 81% and 76% for CE, 84% and 78% for RFA, and 82% and 77% for LA, respectively. No significant difference was found between the one- and two-year closure rates. Deep vein thrombosis without pulmonary embolism was detected in five patients who underwent CE. The thrombus resolved in these patients after three months of anticoagulant therapy. All ulcers healed within three months.

Conclusion: Closure of perforator veins using minimally invasive techniques appears to predict wound healing with minimal morbidity. Radiofrequency ablation, CE, and LA are increasingly used for perforating vein failure in venous ulcer healing. In terms of deep vein thrombosis, RFA is safer than CE and LA.

Keywords: Cyanoacrylate embolization, laser ablation, perforating veins, radiofrequency ablation, venous ulcers.

Physician - Valvular Diseases and Surgery

[MSB-03]

Comparison of Preoperative Multislice Computed Tomography Measurements with Intraoperative Valve Sizes in Sutureless Rapidly Implantable Biological Aortic Heart Valve and Mechanical Aortic Valve Cases

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Objective: This study aimed to evaluate the alignment between preoperative multislice computed tomography measurements and intraoperative valve sizes in sutureless rapidly implantable biological aortic valve and mechanical aortic valve replacements.

Methods: The study included 40 patients (22 males, 18 females; mean age: 61.5±9.1 years) who underwent elective open heart surgery for aortic valve stenosis between February 20, 2023, and May 20, 2023. The patients underwent valve replacement with either sutureles biological valves (n=20) or mechanical valves (n=20). Data were collected from patient files and the hospital's database, including demographic, preoperative, intraoperative, and postoperative information.

Results: Patients had a mean height of 165.7±10.7 cm, weight of 83.0±15.9 kg, and body mass index of 30.3±5.5. Common comorbidities were diabetes mellitus (42.5%), hypertension (25%), atrial fibrillation (7.5%), and chronic obstructive pulmonary disease (7.5%). Mechanical valve patients had significantly longer cross-clamp and cardiopulmonary bypass times (p<0.001 and p=0.011, respectively). The mean sinotubular junction diameter was lower in the mechanical group (p=0.025). Although there was no significant difference in the mean value of the aortic annulus between the groups (p=0.171), the optimum and mean effective orifice area index values were found to be higher in patients in the sutureless group compared to those in the mechanical group (p<0.001 for both).

Conclusion: Preoperative multislice computed tomography is valuable for aortic valve replacement. Biological valves show advantages over mechanical valves in terms of shorter cross-clamp and cardiopulmonary bypass times. More importantly, surgeons tend to avoid procedures such as root enlargement with mechanical valves to reduce operative time, opting for smaller valve sizes. Sutureless valves allow for a larger effective orifice area and less anxiety during surgery, with reduced cross-clamp and bypass times.

Keywords: Aortic valve replacement, mechanical valve, multislice computed tomography, open heart surgery, sutureless valve.

Table 1. Examination of the effect of valve type on effective orifice area index

	Total	Mechanic	Sutureless	p value
Age	64 (54.25-68)	55.5 (47.5-65.75)	67 (61.75-69.75)	0.003**
Aortic annulus	23.4 (22.62-23.92)	23.4 (22.8-24.25)	23.25 (22.3-23.6)	0.171
Optimum EOAI (effective orifice area index)	1.22 (0.95-1.56)	0.96 (0.90-1.05)	1.55 (1.43-1.65)	<0.001**
EOAI (effective orifice area index)	1.09 (0.76-1.58)	0.77 (0.66-0.85)	1.58 (1.43-1.67)	<0.001**
BSA (body surface area)	1.94 (1.80-2.11)	1.97 (1.82-2.18)	1.88 (1.77-2.05)	0.221
BMI (body mass index)	29.1 (25.7-34.7)	29.1 (25.9-35.9)	28.9 (25.2-33.2)	0.583

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Physician - Experimental Researches

[MSB-04]

Ozone Administration Reduces Myocardial Ischemia Reperfusion Injury in Streptozotocin-Induced Diabetes Mellitus Rat Model

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Objective: This study aimed to investigate the effects of ozone therapy on myocardial ischemia/reperfusion injury in a diabetic rat model.

Methods: The experimental study included 38 male Wistar Albino rats weighing between 200 and 250 g. The rats were randomly assigned to five groups. The sham group included six rats, while the other groups had eight rats each. The other groups were the diabetic ozone group, the diabetic group, the diabetic ischemia/reperfusion group (DIR), and the diabetic ischemia/reperfusion ozone group (DIRO). A total of 32 rats received 65 mg/kg streptozotocin, and a week after the administration, diabetes was confirmed by measuring blood sugar. The rats were fed ad libitum for 40 days to reveal macrovascular complications of diabetes. Malondialdehyde, catalase, superoxide dismutase, paraoxonase-1, total oxidative status, total antioxidant status, and oxidative stress index were assessed. A TUNEL (terminal deoxynucleotidyl transferase dUTP nick end labeling) assay was employed to assess apoptosis.

Results: Histologic and biochemical assessments showed the benefits of ozone in myocardial ischemia/reperfusion injury in diabetic rats. The DIRO group was found to be superior to the DIR group.

Conclusion: Ozone has cardioprotective effects in streptozotocin-induced diabetic rats through its antioxidant properties against oxidative stress. The study is unique in terms of ozone's protective effects in diabetic rats against myocardial ischemia/reperfusion injury. However, further studies are needed to confirm our findings.

Keywords: Coronary artery disease, diabetes mellitus, experimental, myocardial ischemia, myocardial reperfusion injury, ozone, oxidative stress.

Figure 1.

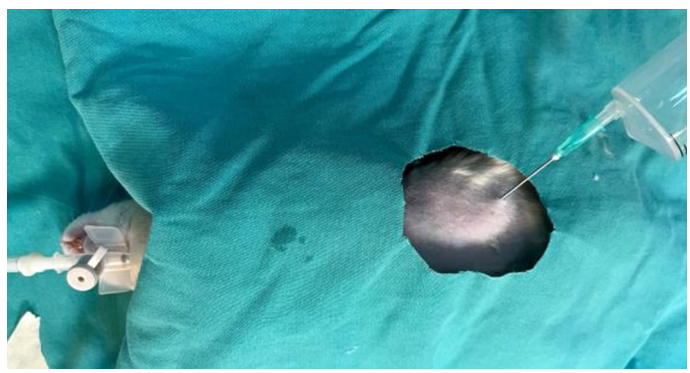

Figure 2.

Table 1.					
	Group S	Group D	Group DO	Group DIR	Group DIRO
Myocardial ischemia/reperfusion injury score	0.33±0.21	0.83±0.17	1.00±0.36	2.83±0.17	2.0±0.26
TUNEL+ cardiomyocytes/hpf	6.43±5.56	16.20±6.14	11.08±5.52	54.21±7.67	22.92±10.19

Table 2. Serum					
	Group S	Group D	Group DO	Group DIR	Group DIRO
TAS	1.20±0.07	1.08±0.08	1.10±0.06	1.93±0.38	1.41±0.17
TOS	9.62±1.38	12.05±0.80	12.72±0.53	15.39±5.14	19.05±4.6
OSI	0.85±0.16	1.16±0.14	1.19±0.10	1.11±0.33	1.0±0.15
PON-1	223.04±14.12	192.93±18.48	182.33±6.92	146.31±11.50	174.97±9.60
SOD	173.34±6.85	191.57±6.28	181.17±8.43	208.75±14.49	199.80±3.51
CAT	372.39±89.19	500.92±86.73	610.23±128.50	897.56±118.84	656.54±112.80
MDA	5.38±0.78	5.27±0.39	8.08±0.55	14.79±9.30	11.70±1.81

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Physician - Coronary Artery Diseases and Surgery

[MSB-05]

Early Discharge After Isolated Coronary Artery Bypass Graft Surgery Does Not Increase Risk of Rehospitalization

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Objective: This study aimed to investigate whether early discharge after coronary artery bypass grafting (CABG) is associated with increased rates of hospital readmission and emergency room (ER) presentation.

Methods: This retrospective cohort study utilized data from the Koşuyolu Adult Cardiac Surgery Quality Improvement Program database. Consecutive adults who underwent isolated CABG at a single institution between May 2023 and December 2023 were assessed for eligibility. Patients were excluded if they had surgery other than isolated CABG, experienced in-hospital mortality, or had a prolonged length of stay (>14 days) during index hospitalization. The study population was divided into early discharge (≤5 days) and late discharge (>5 days) groups. The primary endpoint was all-cause hospital readmission within 30 days of discharge, while the secondary endpoint was ER presentation for any reason within 30 days of discharge.

Results: The final cohort included 608 patients (228 early-discharge, 380 late-discharge). Median age was 61 years (interquartile range, 54-67). Groups were balanced in terms of demographics, risk profile, operative details, and outcomes. Thirty-day rehospitalization and ER presentation rates were lower in the early discharge group compared to the late discharge group; however, the differences were statistically insignificant (7.0% *vs.* 10.0%, p=0.211; 25.4% *vs.* 29.5%, p=0.283; respectively). Multivariate logistic regression analysis identified postoperative mechanical ventilation duration, sternal wound infection, postoperative stroke, and discharge with atrial fibrillation as the strongest predictors of hospital readmission within 30 days of discharge (odds ratio [OR]=1.049, 95% confidence interval [CI] 1.000-1.100; OR=10.268, 95% CI 1.882-56.032; OR=39.891, 95% CI 1.980-803.624; OR=24.724, 95% CI 1.499-407.804; respectively).

Conclusion: Early discharge after isolated CABG surgery was not associated with increased rates of hospital readmission or ER presentation within 30 days of discharge.

Keywords: Coronary artery bypass grafting, length of stay.

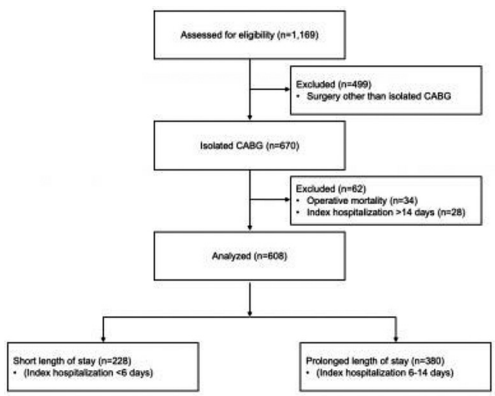

Figure 1. Flow diagram.

Table 1. Demographics, risk profile, operative details, and outcomes

	Early discharge (n=228)	Late discharge (n=380)	p value
Age (years, median [IQR])	59 (51-66)	62 (55-68)	<0.001
Female sex (%)	15.4	18.2	0.374
Recent MI (%)	42.9	52.3	0.127
Redo surgery (%)	0.0	1.0	0.295
Diabetes (%)	43.5	46.7	0.509
Hypertension (%)	44.7	49.9	0.220
Chronic hemodialysis (%)	0.57	0.69	0.688
Critical preoperative state (%)	1.1	4.2	0.280
LMCA disease (%)	29.0	42.2	0.546
LVEF (%, median [IQR])	65 (50-65)	60 (48-65)	0.046
Nonelective procedure (%)	41.7	46.9	0.307
Readmission* (%)	7.0	10.0	0.211
ER presentation* (%)	25.4	29.5	0.283

LMCA: Left main coronary artery; LVEF: Left ventricular ejection fraction; MI: Myocardial infarction; * Within 30 days of discharge.

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Physician - Heart Failure, Transplantation and Mechanical Support Systems

[MSB-06]

Retrospective Cohort Analysis of Ventricular Assist Device Driveline Infections: A Single-Center Experience

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Objective: This study aimed to discuss our approach to driveline infections (DLIs), which can be managed by debridement, open packing, delayed closure, closed catheter irrigation, and rectus muscle relocation, and define the risk factors.

Methods: This retrospective study reviewed all patients who underwent ventricular assist device (VAD) implantation at our institution between May 2011 and May 2023. Demographic data, comorbidities, VAD type, time from VAD implantation to infection, microbiological testing, surgical debridement, antibiotic therapy, infectious symptoms, hospital readmissions, postoperative complications, and overall survival were evaluated.

Results: During the study period, 90 patients underwent VAD implantation, and DLIs were detected in 20 patients. The mean VAD time was 561 days in all patients, and the mean VAD time was 1277 days in those with DLIs. A statistically significant relationship was found between the risk of DLI and the total duration of VAD time ($p<0.05$). Median time from VAD implantation to first DLI admission was 513 days. Most commonly detected pathogens were Staphylococcus spp. (64%) and *Pseudomonas aeruginosa* (25%). Surgical debridement was performed in 10 patients; nine had driveline relocation followed by vacuum-assisted closure until their culture results were negative.

Conclusion: Driveline infections endanger the final objectives of VAD therapy by disrupting patient autonomy, the chance of bridging to heart transplantation, and decreasing overall survival and quality of life. Management of DLI usually requires extended, repeated hospitalizations and intense outpatient care. Vacuum therapy and muscle relocation have emerged as essential adjuncts to treating DLIs. Surgical treatment modalities should be standardized.

Keywords: Driveline infections, surgical debridement, ventricular assist device.

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Others - Other

[MSB-07]

Optimizing Postoperative Cardiac Tamponade Outcomes With Posterior Pericardial Window

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Objective: The study aimed to assess the posterior pericardial windows technique in the management of pericardial effusion following cardiac surgery.

Methods: This single-center study examined the data of 1,752 patients who underwent cardiac surgery from 2018 onwards, excluding those who had off-pump coronary artery bypass grafts or emergency surgeries for conditions such as type 1 aortic dissection or infective endocarditis. Of the included patients, a posterior pericardial window was created in 349. The posterior pericardial window was created using electrocautery before the implantation of prosthetic valves or distal anastomosis. No other procedural changes were made.

Results: Postoperative drainage rates were monitored. Drains were removed on the second day after surgery. Of the patients with a posterior pericardial window, eight (2.3%) required revision due to tamponade within the first two postoperative days, compared to 53 (3.7%) of the patients without a posterior pericardial window. Patients who required revision were discharged on average seven days later, while those who did not require revision were discharged after five days.

Conclusion: The early detection and effective management of cardiac tamponade are crucial due to the potentially life-threatening outcomes. This study highlights the value of the posterior pericardial window technique in reducing complications associated with pericardial effusion following cardiac surgery. The findings support the need for further research to improve surgical approaches and enhance patient outcomes and safety.

Keywords: Cardiac tamponade, early tamponade, pericardial effusion, posterior pericardial window.

Figure 1. Intraoperative image demonstrating the creation of the posterior pericardial window using electrocautery.

Figure 2. Opening the posterior pericardial window with electrocautery.

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Physician - Valvular Diseases and Surgery

[MSB-08]

Comparison of Plegisol and del Nido Cardioplegia on Right Ventricular Function and Outcomes in Cardiac Surgery

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Objective: This study aimed to evaluate the impact of plegisol and del Nido cardioplegia on right ventricular (RV) function and assess the associated mortality and morbidity.

Methods: This single-center prospective study was conducted with 70 patients who underwent aortic valve and ascending aorta procedures between March 2022 and August 2023. Plegisol was used in 35 patients (Group P), and del Nido cardioplegia was used in 35 patients (Group D). Right ventricular function was assessed preoperatively and postoperatively using the following echocardiographic parameters: TAPSE (tricuspid annular plane systolic excursion), fractional area change (FAC), TDI, pulmonary pressure time (PPT), and RV strain. Additionally, NT-proBNP (N-terminus pro-B-type natriuretic peptide) levels and MELD-Na (model for end-stage liver disease-sodium) scores were recorded.

Results: On the fifth postoperative day, there were no statistically significant differences in strain, TDI, TAPSE, and FAC between the groups; however, PPT was significantly higher in Group D (mean PPT: 238±36 sec, p=0.002). At six months, the mean RV strain was -13.8±3.4 in Group P and -16.1±2.6 in Group D (p=0.007). The mean FAC was 35.1±7.6 in Group P and 40.3±5.5 in Group D (p=0.01). No significant differences were found in NT-proBNP levels. Intraoperative ventricular temperatures were consistently higher in Group D (p<0.001). The mean postoperative MELD-Na score was higher in Group P (13.9±7.2) compared to Group D (10.4±5.6, p=0.006). No significant difference was observed in postoperative mortality; however, hospitalization was longer in Group P (p=0.01).

Conclusion: This study is the first to simultaneously evaluate five parameters for assessing RV function and to compare Plegisol and del Nido cardioplegia. The RV function declined postoperatively in both groups, with dysfunction persisting longer in Group P. No differences were found in mortality or morbidity. Differences in echocardiographic and laboratory tests did not affect clinical outcomes.

Keywords: Cardioplegia, del Nido, failure, MELD, right ventricle, St. Thomas II.

Physician - Experimental Researches

[MSB-09]

The Impact of Renal Functions on Mortality in Patients Undergoing Surgery for Infective Endocarditis

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Objective: This study aimed to provide clinicians with valuable information on the prognostic importance of renal function tests in the management of infective endocarditis (IE) patients and to guide potentially more effective perioperative interventions.

Methods: In this study, the relationship between renal function tests and mortality in patients who underwent surgical treatment for IE between March 2020 and November 2023 was retrospectively examined. A total of 100 patients over the age of 18 were included in the study.

Results: Patients who experienced mortality had significantly higher creatinine levels (1.8 *vs.* 1.2 mg/dL, p=0.02) and lower glomerular filtration rates (53.4 *vs.* 82.1 mL/min/1.73 m^2, p=0.01). C-reactive protein levels were higher in the mortality group, but the difference was not statistically significant.

Conclusion: The results indicate that renal functions are directly related to mortality in disease groups with high mortality, such as IE. Therefore, we believe that performing the operation after correcting renal functions, obtaining a nephrology consultation, and planning the operation under optimal treatment, except in very urgent conditions, can reduce mortality.

Keywords: Infective endocarditis, renal function, mortality.

Table 1. Comparison of inflammatory markers and renal function between survival and mortality groups

Parameter	No mortality (n=66)	Mortality (n=34)	p-value
CRP (mg/L)	77.9±78.3	92.5±82.7	0.24
Creatinine (mg/dL)	1.2±1.0	1.8±1.3	0.02
GFR (mL/min/1.73 m^2)	82.1±35.4	53.4±32.4	0.01

Physician - Coronary Artery Diseases and Surgery

[MSB-10]

The Biomarker Potential of Serum-Derived Exosomes Carrying Autophagic Regulators in Carotid Artery Stenosis Patients

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Objective: This study aimed to investigate the biomarker potential of exosomes as autophagic regulators for discriminating ulcerated from smooth ones by serum-derived exosome isolation and real-time quantitative polymerase chain reaction (RT-qPCR) analysis.

Methods: Eight carotid artery stenosis (CAS) patients (6 males, 2 females; mean age: 65.7±11 years) were included in the study conducted. Plaque ulceration was determined by Doppler ultrasonography. Afterward, the serum was separated and exosome/exosomal RNA isolation was performed using an exoRNeasy Midi Kit. Transmission electron microscopy and nanoparticle tracking analysis were performed for exosome characterization. Finally, the expression of autophagy-related genes (Atg5, Atg12, Beclin, and LC3) was analyzed by RT-qPCR.

Results: Five (62.5%) patients had ulcerated carotid plaques. The patients' stenosis degree was 70% or greater. Based on the RT-qPCR (120 nm), Atg12, Beclin, LC3, and Atg5 levels were downregulated by 3.79-, 5.28-, 2.40- ($p>0.05$), and 4.83-fold ($p=0.02$) in ulcerated plaques, respectively.

Conclusion: Although further validation is needed, data suggests that autophagy-related mRNA cargoes of serum-derived exosomes may be potential biomarkers for risk stratification based on plaque surface morphology in CAS patients.

Keywords: Autophagy, carotid artery stenosis, exosome, ulcerated plaques.

Physician - Valvular Diseases and Surgery

[MSB-11]

Arrhythmia Course After Surgical Treatment of Mitral Annular Disjunction

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Objective: This study aimed to investigate the course of arrhythmia in patients with mitral annular disjunction (MAD) based on 24-h Holter electrocardiogram.

Methods: In this retrospective study, 140 patients who underwent mitral valve surgery for type 2 dysfunction between ?? 2017 and May 2024 were reviewed. Forty-five patients with MAD were identified. A history of arrhythmia was identified in 30 (18 females, 12 males; mean age: 38.5±13.76 years) of these 45 patients.

Results: The mean cardiopulmonary bypass time was 134.2 min, and the mean cross-clamp time was 99.1 min. One patient died due to low cardiac output. Control echocardiograms performed one month later showed no severe mitral regurgitation. The prevalence of supraventricular arrhythmia was 17.1% prior to surgery and 3.9% postoperatively. The prevalence of ventricular arrhythmia was 8.1% prior to surgery and 2.8% postoperatively. The relationship between MAD distance and the occurrence of arrhythmia was investigated. A notable correlation was observed between MAD exceeding 10 mm and a reduced prevalence of ventricular arrhythmia, with statistical significance ($p<0.05$).

Conclusion: Mitral annular disjunction can lead to severe arrhythmic episodes and sudden death. In the presence of MAD over 10 mm, surgical treatment may reduce the incidence of ventricular arrhythmias. Surgical treatment of MAD decreased the incidence of arrhythmia; therefore, early operation may be considered in the presence of severe arrhythmic events, even if mitral regurgitation is not severe.

Keywords: Arrhythmia, MAD, mitral valve surgery, mitral annular disjunction.

Table 1. Preoperative findings	
Findings	Data (n:30)
Sex (Female)	18 (60%)
Age	38,5 (±13,76)
Hypertension	10 (33%)
Diabetes mellitus	1 (3,3%)
Chronic obstructive pulmonary disease	1 (3,3%)
Arrhythmia history	30 (100%)
NYHA class	NYHA 3: 17 (56,6%) NYHA 4: 13 (43,3%)
LVEF (%)	58,43
LVEDD (mm)	58,03
LVESD (mm)	38,04
LA-Diameter (mm)	48,62
Mitral regurgitation	Moderate to severe: 8 (26,7%) Severe: 22 (73,3%)
Tricuspid regurgitation	None: 4 (13,3%) Mild: 24 (80%) Moderate: 2 (6,7%)
Preoperative T-wave inversion	14 (46,6%)
Preoperative supraventricular arrythmia	17.1%
Preoperative ventricular arrythmia	8.1%
Preoperative ICD history	2 (6,7%)
Preoperative ablation history	2 (6,7%)

Table 2. Intraoperative findings	
Findings	Data (n=30)
Sex (Female)	18 (60%)
Age	38.5±13.76)
Hypertension	10 (33%)
Diabetes mellitus	1 (3.3%)
Chronic obstructive pulmonary disease	1 (3.3%)
Arrythmia history	30 (100%)
NYHA class	NYHA 3: 17 (56.6%) NYHA 4: 13 (43.3%)
LVEF (%)	58.43
LVEDD (mm)	58.03
LVESD (mm)	38.04
LA-diameter (mm)	48.62
Mitral regurgitation	Moderate to severe: 8 (26.7%) Severe: 22 (73.3%)
Tricuspid regurgitation	None: 4 (13.3%) Mild: 24 (80%) Moderate: 2 (6.7%)
Preoperative T-wave inversion	14 (46.6%)
Preoperative supraventricular arrythmia	17.1%
Preoperative ventricular arrythmia	8.1%
Preoperative ICD history	2 (6.7%)
Preoperative ablation history	2 (6.7%)

Physician - Minimal Invasive, TAVI, Robotic Cardiac Surgery

[MSB-12]

Our Clinical Experience with Septal Myectomy in Hypertrophic Cardiomyopathy Patients

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Objective: This study aimed to share our surgical experience of patients with hypertrophic cardiomyopathy (HCM) treated successfully with surgical myectomy at a tertiary center that frequently utilizes minimally invasive approaches in clinical practice.

Methods: This study was conducted with eight patients (5 males, 3 females; mean age: 49.2±12.5 years) patients who underwent surgery for HCM between 2017 and 2024.

Results: All patients were symptomatic. Four of the patients had concomitant mitral valve pathologies requiring surgery, with one patient also having aortic valve pathology. Preoperative mean gradients were 49.1±22.8 mmHg at rest and 102.8±27.2 mmHg with the Valsalva maneuver. One surgery was performed via sternotomy. Two patients were operated on with anterolateral thoracotomy technique and five with a minimally invasive robotic approach. Four patients underwent isolated myectomy. The mean cardiopulmonary bypass time was 165.5±53.8 min, and the mean cross-clamp time was 112.1±42.5 min. No intraoperative complications were observed. A third-degree atrioventricular block, which was treated with an implantable cardioverter-defibrillator, was the only postoperative complication. The mean hospital stay was 7.5±2 days, with a mean intensive care unit stay of 2.38±1.77 days.

Conclusion: Hypertrophic cardiomyopathy is a genetic cardiac disorder with a heterogeneous spectrum of clinical manifestations. Septal reduction therapies are the primary treatment for patients. Septal myectomy has been shown to be effective, providing a reduction in outflow tract gradient and symptoms. Currently, myectomy is the recommended treatment for HCM, and it can be performed via conventional median sternotomy or minimally invasive approaches.

Keywords: Hypertrophic cardiomyopathy, minimally invasive robotic surgery, septal myectomy.

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Physician - Minimal Invasive, TAVI, Robotic Cardiac Surgery

[MSB-13]

Instutional ERAS Applications for Totally Endoscopic Mitral Valve Surgery

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Objective: This study aimed to present our institutional protocol for enhanced recovery after surgery (ERAS) and its results in patients who underwent totally endoscopic mitral valve surgery (TEMVS).

Methods: One hundred thirteen consecutive patients (63 females, 50 males; mean age: 54.7 years) who underwent TEMVS between 2021 and 2023 were included in this study. The TEMVS was performed using a three-dimensional endoscopic technique. Institutional protocols were as follows: *(i)* education on operative course and cessation of smoking and alcohol; *(ii)* anemia; *(iii)* optimization of blood glucose; *(iv)* rehabilitation; *(v)* anxiety and analgesia treatment; *(vi)* blood conservation techniques such as antifibrinolytic, acute normovolemic hemodilution, mini-incision, meticulous surgery by a three-dimensional endoscope; *(vii)* postoperative early extubation, prevention of nausea, aggressive analgesia, early mobilization, early removal of tubes; *(viii)* restrictive transfusion strategy; *(ix)* early discharge.

Results: The rate of intravenous iron therapy for anemia was 26.5%. The repair rate of a degenerative mitral valve was 96.9%. Among all patients, 68.1% did not receive any erythrocyte suspension, and 15.9% had only one unit. The mean extubation time was 5 h. Ninety-six percent of Foley catheters, 87% of all central venous catheters, and 93% of all drainage tubes were removed on the first postoperative day. The rate of respiratory, infectious, and renal complications was 9%, 3.5%, and 3.4%, respectively. The median intensive care unit stay was 1 day, and the median hospitalization time was 5 days. There was one mortality in the early postoperative period.

Conclusion: Totally endoscopic mitral valve surgery provides lesser surgical trauma. By the addition of well-established ERAS protocols, less complication, less transfusion, early recovery, and greater patient satisfaction can be achieved.

Keywords: Enhanced recovery, ERAS, mitral valve surgery, TEMVS, totally endoscopic mitral valve surgery.

Physician - Aortic (Thoracic) Pathologies and Surgery/Endovascular Interventions

[MSB-14]

Validation of the German Registry for Acute Aortic Dissection Type A Score After Aortic Dissection Surgery

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Objective: This study aimed to evaluate how the German Registry of Acute Aortic Dissection Type A (GERAADA) score performs in predicting operative mortality for ATAAD.

Methods: This retrospective study included 86 consecutive patients (60 males, 26 females; mean age: 61.37±12.96 years) who underwent surgical repair for ATAAD between January 2013 and December 2023. Data collection comprised the 11 preoperative main parameters required for calculation of the new GERAADA score: age, sex, previous cardiac surgery, inotropic support at referral, resuscitation before surgery, aortic regurgitation, hemiparesis, intubation/ ventilation at referral, preoperative organ malperfusion, extension of aortic dissection, and location of primary entry site.

Results: Two (2.3%) patients had a history of previous cardiac surgery. The GERAADA scores and postoperative results were compared. The overall 30-day mortality for the entire study cohort was calculated by the GERAADA score to be 22.94% (range, 5.8 to 81%). In comparison, the actual 30-day mortality rate of the study cohort was 32.55%. The GERAADA score showed discriminative power with an area under the curve of 0.867 (95% confidence interval 0.79–0.94).

Conclusion: The GERAADA score prediction of 30-day mortality after surgery is accurate, easily accessible due to its web-based platform, and can be calculated with basic preoperative clinical parameters.

Keywords: Aortic dissection, GERAADA, malperfusion, risk prediction.

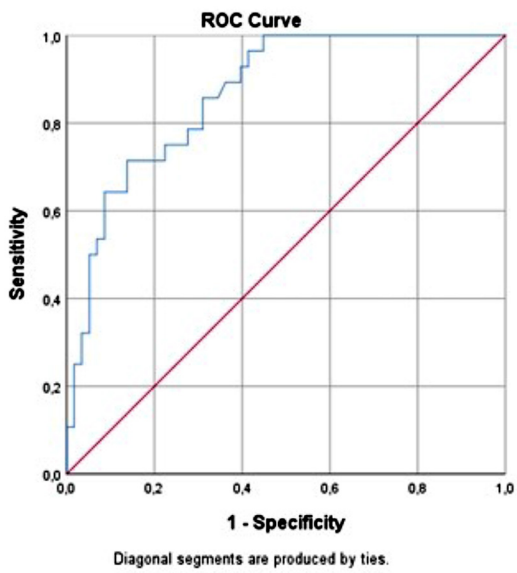

Figure 1.

Table 1. GERAADA score characteristics of all patients

Variables	Number of patients (%)
GERAADA characteristics	
Age (years)	61.37 ± 12.96
Gender (female)	26 (30.2%)
Resuscitation before surgery	4 (4.7%)
Previous cardiac surgery	2 (2.3%)
Intubation/ventilation at referral	11 (12.8%)
Catecholamines at referral	20 (23.3%)
Aortic valve regurgitation	
No	15 (17.4%)
I-II	44 (51.2%)
III-IV	16 (18.6%)
Unknown	11 (12.8%)
Malperfusion (clinical and radiological criteria)	
None	26 (30.2%)
Coronary	7 (8.1%)
Visceral	13 (15.1%)
Peripheral	26 (30.2%)
Unknown or other	23 (26.7%)
Preoperative hemiparesis	11 (12.8%)
Extension of dissection	
Aortic arch	69 (80.2%)
Supra-aortic vessels	17 (19.7%)
Descending or further downstream	72 (83.7%)
Unknown or other	3 (3.5%)
Location of primary entry in aortic arch	8 (9.3%)
Data are presented as mean ± SD or number and percentage.	

Physician - Experimental Researches

[MSB-15]

Histopathological Comparison of the Effectiveness of St. Thomas II and del Nido Cardioplegia Solutions with Respect to Myocardial Ischemia and Reperfusion in Rats

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Objective: This study aimed to compare the effectiveness of traditional St. Thomas II and the next-generation del Nido cardioplegia solutions in minimizing ischemia/reperfusion injury during open heart surgery in a myocardial ischemia/reperfusion model created in rats.

Methods: In this experimental study, 24 Wistar albino rats were divided into three groups: the sham group (normal saline), the St. Thomas II group, and the del Nido group. Cardioplegia was induced, and heart tissues were collected for histopathological analysis after 90 min. The number of macrophages was counted to assess inflammation.

Results: The mean macrophage count in ischemic tissues was similar across the sham, St. Thomas II, and del Nido groups. In tissues with reperfusion injury, the control group had fewer macrophages compared to the St. Thomas II and del Nido groups, but the difference between the two solutions was not statistically significant.

Conclusion: Both St. Thomas II and del Nido solutions were more effective than the control in preventing reperfusion injury. However, no significant difference was observed between the two cardioplegia solutions, possibly due to the short ischemia/reperfusion duration and the resilient nature of rat myocardium.

Keywords: Del Nido cardioplegia, histopathological examination, ischemia/reperfusion injury, myocardial protection, rat myocardium, St. Thomas II cardioplegia.

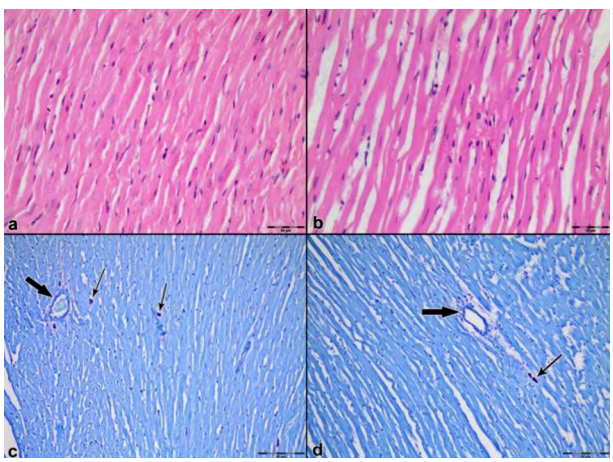

Figure 1. Group 1. a, c: Ischemia group; b, d: Reperfusion group. a, b: Heart tissue stained with hematoxylin-eosin. c, d: Heart tissue stained with toluidine blue. Blood vessel (thick black arrow), mast cell (thin black arrow). a, b: x400, c, d: x200.

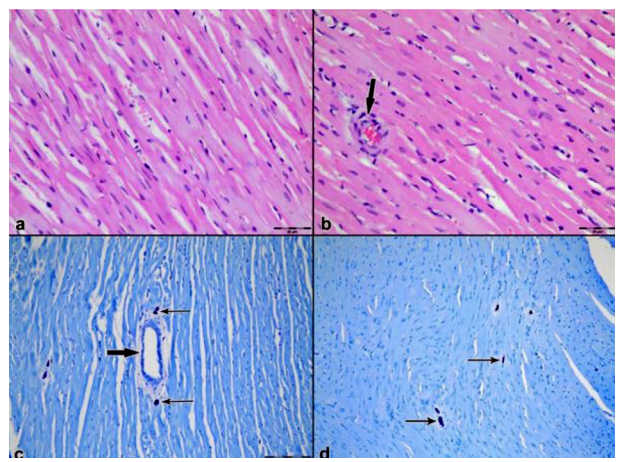

Figure 2. Group 2. a, c: Ischemia group; b, d: Reperfusion group. a, b: Heart tissue stained with hematoxylin-eosin. c, d: Heart tissue stained with toluidine blue. Blood vessel (thick black arrow), mast cell (thin black arrow). a, b: x400, c, d: x200.

Figure 3. Cross-clamp and cardioplegia application.

Table 1. Assessment of differences in mast cell count by group and time (*One-way analysis of variance, **Paired t-test)

	Control (n=8)	St. Thomas (n=8)	Del Nido (n=8)	
	Mean±SD	Mean±SD	Mean±SD	p-value*
Mast cell count				
Ischemia	33.4±7.7	33±8.7	34.2±6.1	0.95
Reperfusion	29.1±10.1	34.1±10.4	32.7±7.2	0.55
p-value**	0.02	0.19	0.61	

Physician - Aortic (Thoracic) Pathologies and Surgery/Endovascular Interventions

[MSB-17]

Novel "DR MÇ" Technique for the Distal Anastomosis of Hemiarc Replacement Surgery for Acute Type A Aortic Dissection

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Objective: This study aimed to define a novel technique to ensure the safety of distal anastomosis in acute type A aortic dissection, a condition with many possible complications.

Methods: The "DR MÇ" technique consisted of two components: reinforcing the wall of the dissected aorta and aorta-graft diameter matching. The first technique was applied in our clinic, but the second method had not yet been tested. First, a Teflon band was sutured around the outer wall of the aorta, leaving 5 mm of the aorta at the open end to later contribute to hemostasis during anastomosis. Afterward, the graft was sutured to the aorta; however, the sutures were closer to the anastomosis than to the fixing sutures of the Teflon band. This prevented the tearing of the aorta by distributing the axial forces on the aorta and the anastomosis. The adjustment of graft diameter for the aorta was done accordingly; the graft was cut in an oblique pattern, and an extra elliptical piece was sutured to one side of the graft. This method ensured durability (narrowing of the dissected aorta could cause tearing), and the remaining parts of the graft at the outer side of the anastomosis provided extra hemostatic support.

Results: Mortality was often caused by bleeding from the suture points covered by the Teflon. In our center, this method was applied in an attempt to provide better results; however, the sample size was insufficient to provide statistically significant results.

Conclusion: In acute type A aortic dissection, the endurance of aortic tissues is impaired, and therefore, conventional anastomosis may not be enough for hemostasis. This technique is a safer approach for aortic tissue endurance.

Keywords: Anastomosis, aortic dissection, ascending aorta, thoracic aorta.

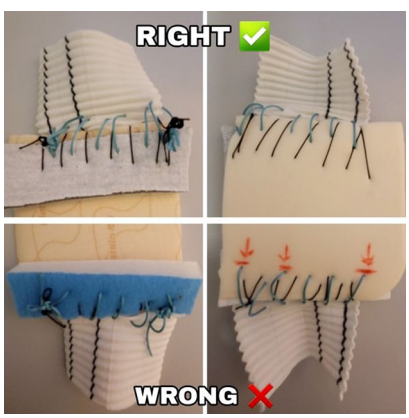

Figure 1. The black suture is the fixing sutures for the Teflon band to the outer wall of the aorta, the green sutures are the anastomosis. Note that the green sutures are more distal to the black sutures to evenly distribute the suture's axial forces, preventing the tearing of the aorta. The red arrows are the places expected to tear with the wrong technique.

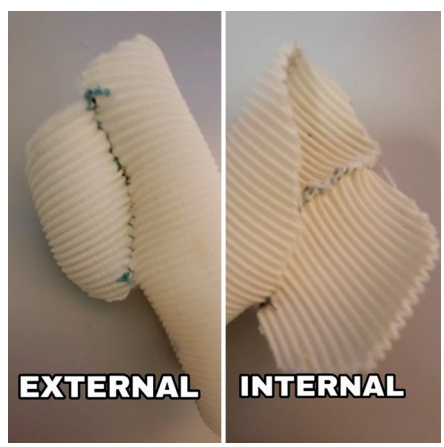

Figure 2. The extra piece of elliptic graft sutured to the oblique cut graft used to prevent the narrowing of the dissected aorta. Note that the curves of the edge are smooth because any narrow angled corner will pose a risk of bleeding.

Physician - Coronary Artery Diseases and Surgery

[MSB-18]

Impact of Posterior Pericardiotomy on Postoperative Clinical Outcomes in Isolated Coronary Artery Bypass Surgery

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Objective: This study aimed to evaluate the effectiveness of posterior pericardiotomy in preventing cardiac tamponade and its impact on clinical outcomes in patients undergoing isolated coronary artery bypass grafting (CABG).

Methods: This retrospective study included 384 elective patients who underwent isolated CABG between 2021 and 2024. Patients who underwent posterior pericardiotomy (Group 1) were compared with those who did not (Group 2). Group 1 included 178 patients (135 males, 53 females; mean age: 62.62±8.78 years), while Group 2 included 122 patients (98 males, 24 females, mean age 61.92±8.95 years). Clinical outcomes of patients who underwent revision surgery were analyzed.

Results: Post-intensive care unit (ICU) hospital stay ($p<0.001$), total hospital stay ($p<0.001$), rate of revision surgery ($p=0.027$), posterior tamponade ($p=0.001$), and postoperative atrial fibrillation (POAF; $p=0.034$) were significantly higher in Group 1. In patients who underwent revision surgery, ICU stay ($p<0.001$), post-ICU hospital stay ($p<0.001$), total hospital stay ($p<0.001$), posterior pericardial window opening ($p=0.026$), postoperative inotropic support requirement ($p<0.001$), tube thoracostomy due to pleural effusion ($p=0.002$), posterior tamponade ($p<0.001$), POAF ($p<0.001$), intra-aortic balloon pump usage ($p<0.001$), and rehospitalization ($p<0.001$) were significantly higher compared to those who did not undergo revision surgery. Receiver operating characteristic analysis and the area under the curve demonstrated that the model's performance in predicting these variables was moderate to good.

Conclusion: Posterior pericardiotomy effectively reduces the incidence of POAF and posterior pericardial tamponade without increasing postoperative complications, suggesting it is a beneficial technique in CABG.

Keywords: Coronary artery bypass surgery, revision surgery, POAF, posterior pericardiotomy, postoperative complications.

Table 1. Receiver operating characteristic analysis results

Variable	AUC value	Predictive power
Inotropic support requirement	0.67	Moderate
Pleural effusion	0.79	Good
Posterior tamponade	0.69	Moderate
POAF	0.76	Good
Intra-aortic balloon pump usage	0.76	Good
Rehospitalization	0.76	Moderate
Cardiopulmonary bypass time	0.76	Good
Cross-clamp time	0.75	Good
Posterior pericardial window	0.63	Moderate

Physician - Coronary Artery Diseases and Surgery

[MSB-19]

Effects of Early Coronary Artery Bypass Grafting on Stent and Graft Patency Following Successful Stenting for Acute Coronary Syndromes

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Objective: This study aimed to compare graft and stent patency in coronary stent implantation followed by early coronary artery bypass grafting (CABG) in patients with acute coronary syndrome (ACS).

Methods: Seventy-one patients who underwent coronary stenting for ACS followed by early CABG within 30 days were retrospectively evaluated between 2019 and 2022. The patients were divided into two groups: those who received bypass on the stented artery (n=39; mean age: 59.1±10.4 years) and the non-bypass group (n=32; mean age: 62.9±9.5 years).

Results: There was no significant difference in the mean ages of the two groups (p=0.114). The most frequently stented coronary artery was the right coronary artery (71.8%), and the most commonly used stent type was a drug-eluting stent (94%; p=0.414). In both groups, the most preferred dual antiplatelet regimen was acetylsalicylic acid+clopidogrel preoperatively (76.9% in the bypass group, 75% in the non-bypass group) and acetylsalicylic acid+clopidogrel postoperatively (79.5% in the bypass group, 87.5% in the non-bypass group). The mean follow-up time was 775.0±453.1 and 563.4±403.2 days in the non-bypass and bypass groups, respectively. The mortality rate was 7%. Coronary artery imaging was performed in 47 patients. In the non-bypass group, 86% of stents were patent, and 14% were occluded. In the bypass group, 81.8% of stents were patent, and 18.2% were occluded. In the bypass group, 81.8% of grafts were patent, and 18.2% were occluded. There was no significant difference in stent patency rates between the groups.

Conclusion: Continuing dual antiplatelet therapy in patients with patent stents before early CABG could be beneficial for achieving better outcomes. In our study, no significant statistical differences were observed between groups in terms of mortality and postoperative myocardial infarction rates.

Keywords: Coronary artery bypass grafting, coronary artery disease, cpercutaneous coronary intervention, coronary stent endothelialization.

Table 1. Characteristics of research participants

		n Avarage. ± SD	% Medyan (Min-Max)
Bypass to stented coronary artery*	Non-Bypass	32	45,1
	Bypass	39	54,9
Gender*	Female	8	11,3
	Male	63	88,7
Age (years)**		60,8 ± 10,1	60,0 (41,0 – 83,0)
DM*	-	44	62,0
	+	27	38,0
HL*	-	26	36,6
	+	45	63,4
CKD*	-	66	93,0
	+	5	7,0
EF*	Preoperative	50,3 ± 6,7	50,0 (25,0 – 61,0)
	Postoperative	49,7 ± 7,3	50,0 (30,0 – 65,0)
Preoperative Drug*	Asa + Dmah	54	76,1
	Asa	10	14,1
	Asa + Clopidogrel	5	7,0
	Dmah	2	2,8
Postoperative Drug*	Asa + Clopidogrel	59	83,1
	Asa	6	8,5
	Asa + Ticagrelor	4	5,6
	Asa + Warfmadin	1	1,4
Stented coronary arter*	Rca	49	69,0
	Om	11	15,5
	Cx	8	11,3
	Diagonal	2	2,8
	Rca - Om	1	1,4
Number of stents*	1	52	73,2
	2	19	26,8

*: n / %, **: Avarage ± Standart Deviation / Medyan (Min-Max)

Table 2. Characteristics of the participants

		n Ort. ± SS	% Median (Min-Max)
CTA/CAG*	CTA	40	56,3
	CAG	7	9,9
CTA/CAG Time (day)**		711,3 ± 446,2	690,0 (1,0 – 1.470,0)
CTA/CAG Stent*	Open	39	54,9
	Occluded	8	11,3
CTA/CAG Graft*	Open	14	19,7
	Occluded	5	7,0
Fllow-up (day)**		658,8 ± 436,4	600,0 (1,0 – 1.478,0)

*: n / %, **: Average± standard deviation / Median (Min-Max)

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Physician - Venous and Lymphatic System Diseases and Surgery/Endovenous Interventions

[MSB-20]

The Role of Vitamin D in the Development of Thrombosis in Varicose Veins

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Objective: This study aimed to investigate vitamin D levels in patients with varicose veins.

Methods: Seventy-five patients (25 males, 50 females; mean age: 47.78±12.84 years; range, 24 to 80 years) with varicose veins in the lower extremities between December 2021 and August 2024 were included in the study. In addition to routine laboratory tests, vitamin D, vitamin B12, magnesium, and folate levels were measured in all patients. Since it reflects both endogenous vitamin D production and exogenous vitamin D intake, vitamin D status was assessed by measuring 25-hydroxycholecalciferol levels.

Results: Thirty (40%) patients had thrombosis in their varicose veins. While the mean vitamin D level in patients without thrombosed varicose veins was 14.08±8.10 ng/mL, the mean vitamin D level in patients with thrombosed varicose veins was 12.19±6.92 ng/mL. The difference between the two groups was statistically significant ($p<0.05$).

Conclusion: Varicose veins that are thrombosed near the saphenofemoral or saphenopopliteal junctions may lead to complications such as spread to the deep venous system and subsequent embolization to the pulmonary vascular bed. Therefore, we believe that patients with thrombosed varicose veins should be surgically treated without delay. However, patients with nonthrombosed varicose veins may also be prone to thrombosis due to various known or unknown risk factors, such as stasis and vitamin D deficiency. Therefore, treatment of nonthrombosed varicose veins should also be planned.

Keywords: Thrombosis, vitamin D, varicose vein.

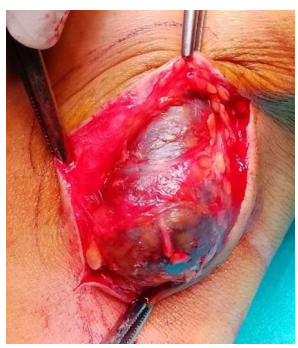

Figure 3. The thrombosed varicose vein next to the saphenopopliteal junction.

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Physician - Minimal Invasive, TAVI, Robotic Cardiac Surgery

[MSB-21]

Minimally Invasive Tricuspid Valve Surgery Without Inferior Vena Cava Clamping

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Objective: This study aimed to investigate the results of minimally invasive tricuspid valve surgery performed under vacuum assistance without inferior vena cava (IVC) clamping.

Methods: All 125 patients who underwent minimally invasive tricuspid valve surgery by the same surgical team between January 2023 and August 2024 were included in this study. Cannulation was performed peripherally, and the superior vena cava was clamped in all patients. The IVC was clamped in 112 patients (Group 1). In the remaining 13 patients (Group 2), vacuum assistance was used, and the IVC was not clamped during cardiopulmonary bypass. Operative success, morbidity and mortality rates, bleeding, and hemolysis were investigated in the postoperative period.

Results: The demographic characteristics were similar between groups. However, redo cases were more common in Group 2 compared to Group 1 (53.8% *vs.* 14.3%, p<0.01). A total of 121 mitral valve surgeries and 125 tricuspid valve surgeries were performed. The operation success rate was 100% in both groups. Operative mortality occurred in one patient in Group 1 (0.9%). Bleeding and other postoperative data were similar between the groups (p>0.05).

Conclusion: Minimally invasive tricuspid valve surgery can be safely performed by vacuum assistance without IVC clamping.

Keywords: Inferior vena cava clamping, minimally invasive tricuspid valve surgery, tricuspid valve replacement.

Table 1.

	Group 1 (n=112)	Group 2 (n=13)	p value
MV replacement	68 (62.4%)	7 (58.3%)	>0.05
MV repair	41 (37.6%)	5 (41.7%)	>0.05
TV replacement	5 (4.5%)	2 (15.4%)	>0.05
TV ring annuloplasty	17 (15.2%)	3 (23.1%)	>0.05
TV bicuspidization	90 (80.4%)	8 (61.5%)	>0.05
Ischemic time(min.)	75.9±14.2	72±13.9	>0.05
Bleeding	8 (7.1%)	1 (7.7%)	>0.05
Discharge(days.)	5.88±0.9	5.54±0.6	>0.05
Mortality	1 (0.9%)	0	>0.05

Physician - Venous and Lymphatic System Diseases and Surgery/Endovenous Interventions

[MSB-22]

Pharmacomechanical Thrombectomy and Catheter-Directed Thrombolysis with or Without Iliac Vein Stenting in the Treatment of Acute Iliofemoral Deep Vein Thrombosis

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Objective: This study aimed to evaluate and compare the outcomes and clinical efficacy of pharmacomechanical thrombectomy (PMCT) plus catheter-directed thrombolysis (CDT) and PMCT combined with CDT and venous stenting in the management of acute iliofemoral deep vein thrombosis and assess the long-term safety and efficacy of these interventions.

Methods: This retrospective case-control study involved 112 patients who presented with acute symptomatic iliofemoral deep vein thrombosis. All patients had a symptom duration of less than 14 days. Sixty-three patients underwent PMCT + CDT, while the remaining 49 underwent PMCT + CDT + venous stenting. Clinical features and outcomes were compared between the two groups. Additionally, patients were followed for 24 months after treatment, during which quality of life and severity of postthrombotic syndrome (PTS) were analyzed.

Results: Survival analyses for primary, primary-assisted, and secondary patency yielded comparable results for PMCT + CDT (p=0.74, p=0.58, and p=0.72, respectively). The two-year patency rate was high in both groups (85.7% for PMCT + CDT *vs.* 83.7% for PMCT + CDT + venous stenting). During the follow-up, there were no statistically significant differences observed in the incidence of PTS or the average Villalta score between the two groups. At 24 months after intervention, the incidence of PTS was 11.1% in the PMCT + CDT group and 22% in the PMCT + CDT + venous stenting group (p=0.381).

Conclusion: The results indicate that PMCT + CDT was effective in alleviating leg symptoms and reducing the occurrence of PTS, including the incidence of moderate-to-severe PTS. The utilization of PMCT + CDT + venous stenting therapy, tailored to individual clinical and venous conditions, may enhance long-term venous patency and lead to superior outcomes, including improved quality of life parameters.

Keywords: Deep vein thrombosis, endovascular procedures, thrombectomy.

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Others

[MSB-23]

Investigation of the Effects of Sex On Shunt Use in Patients Undergoing Carotid Endarterectomy

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Objective: This study aimed to investigate whether the use of shunts differs between sexes in patients undergoing carotid endarterectomy (CEA) and to reveal the effect of patient sex on postoperative events.

Methods: In this retrospective study, 225 patients (152 males, 73 females) aged 18 years and older who underwent CEA between September 2020 and November 2023 were analyzed. The patients were divided into two groups according to their sex. Patient characteristics were obtained from electronic medical records. Whether the use of shunts differed between the sexes and the outcomes were evaluated.

Results: Intraoperative shunt use was present in 60 (26.7%) patients; this rate was 30.9% in males and 17.8% in females. A statistically significant difference was found between the groups in shunt use (p=0.037); however, this difference did not affect perioperative complications.

Conclusion: The results revealed that the use of shunts was significantly higher in males than in females. This may be interpreted as indicative of a more complex or advanced disease in males, or it may reflect a surgical bias or different approaches to managing the perceived risks during CEA. Despite this difference in treatment approach, there was no significant difference in mortality and stroke rates between the sexes, which warrants further investigation of the criteria used for shunt use and its effect on outcomes.

Keywords: Carotid endarterectomy, sex, shunt.

Table 1. Shunt use, radiological findings, and distribution of symptoms by sex

	Total (n=225)	Female (n=73)	Male (n=152)	p value
Presence of symptoms, n (%)	149 (66.2)	46 (63)	103 (67.8)	0.481#
Degree of stenosis (%) (mean±SD)	83.95±9.99	84.06±9.8	83.89±10.11	0.91*
Use of shunt, n (%)	60 (26.7)	13 (17.8)	47 (30.9)	0.037#

Table 2.

	Total (n=225)	Female (n=73)	Male (n=152)	p value
Postoperative stroke, n (%)	2 (0.9)	0 (0)	2 (1.3)	0.455#
Nerve injury, n (%)	15 (6.7)	2 (2.7)	13 (8.6)	0.083#
Surgical revision, n (%)	13 (5.8)	2 (2.7)	11 (7.2)	0.176#
Hematoma, n (%)	24 (10.7)	6 (8.2)	18 (11.8)	0.41#
Stay in intensive care unit (days), m,(IQR)	1 (0)	1 (0)	1 (0)	0.977+

Perfusionist

[MSB-24]

Metabolomic Signatures of Hypothermia Under Cardiopulmonary Bypass: A Systematic Evaluation of Mild and Moderate Hypothermia on Urinary Metabolome Profiles

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Objective: This study aimed to investigate the differential impacts of mild (32 to 35°C) and moderate (26 to 31°C) hypothermia on urinary metabolome profiles during cardiopulmonary bypass (CPB) in adult cardiac surgery.

Methods: This randomized study included 32 patients who underwent CPB under hypothermic conditions (mild, n=16; moderate, n=16) using only the Bretschneider solution. Urine samples were collected at two time points: immediately before CPB initiation and 1 h after rewarming and termination of CPB. Urinary metabolomic analyses were conducted using gas chromatography-mass spectrometry and liquid chromatography-quadrupole time-of-flight mass spectrometry. Metabolite changes were evaluated using statistical methods, including the Mann-Whitney U test, principal component analysis, and partial least squares discriminant analysis.

Results: Significant differences in urinary metabolites were observed between the two hypothermia groups. Mild hypothermia resulted in increased levels of creatinine and 5,6-DHET and decreased levels of 2-methylbutyroylcarnitine and S-adenosylhomocysteine, suggesting a more favorable metabolic response with reduced stress. In contrast, the moderate hypothermia group exhibited increases in metabolites such as C17-sphinganine and ceramide (t18:0/16:0), indicating heightened metabolic stress and potential cellular damage. Principal component analysis and partial least squares discriminant analysis revealed distinct separations between the groups, highlighting greater metabolic perturbations with moderate hypothermia.

Conclusion: Mild hypothermia is associated with a more stable urinary metabolomic profile, whereas moderate hypothermia is linked to significant metabolic disruptions, necessitating careful monitoring and management. These findings provide valuable insights for optimizing hypothermia protocols during CPB.

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Ethics approval: *Ankara University School of Medicine, January 13, 2022 (İ01-12-22).*

Keywords: Cardiac surgery, cardiopulmonary bypass, hypothermia, metabolomics, urinary metabolome,

Physician - Valvular Diseases and Surgery

[MSB-25]

Mid-Term Results of Ozaki Procedure: Azerbaijan Experience

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Objective: This study aimed to report the outcomes of the Ozaki procedure, which involves reconstructing aortic valve leaflets with autologous pericardium, performed in a clinic in Azerbaijan.

Methods: This retrospective study analyzed 40 patients who underwent aortic valve reconstruction between August 2018 and June 2023. Patients were divided into two groups: Group A (mean age: 63 years) followed the traditional Ozaki technique, while Group B (mean age: 65 years) received an additional commissural reinforcement, a modification proposed by our team.

Results: Presenting symptoms were aortic stenosis or a combination of aortic stenosis and aortic regurgitation. Preoperative echocardiography showed peak and mean pressure gradients of 84±34.6 and 50.5±23 mmHg, respectively. Cardiopulmonary bypass and aortic cross-clamp times averaged 142 and 115 min for Group A and 144 and 107 min for Group B. There were no in-hospital mortalities or pacemaker implantations. No significant increases in aortic gradients were noted, and no reoperations were required. Four patients in Group A developed mild aortic regurgitation during follow-up, while in Group B, aortic regurgitation remained minimal or absent. The median follow-up periods were 64 months for Group A and 28 months for Group B. The study demonstrated 100% freedom from major adverse valve-related events during the follow-up.

Conclusion: Since its introduction, aortic valve neocuspidization has gained popularity. Mid-term results from the Ozaki procedure showed favorable outcomes in terms of mortality, valve gradients, and freedom from adverse valve-related events. While some studies have reported a slight increase in valve regurgitation following the Ozaki procedure, our novel additional commissural reinforcement technique provided a reduction in aortic valve regurgitation during follow-up. Further studies are needed to assess long-term results.

Keywords: Aortic valve, aortic valve disease.

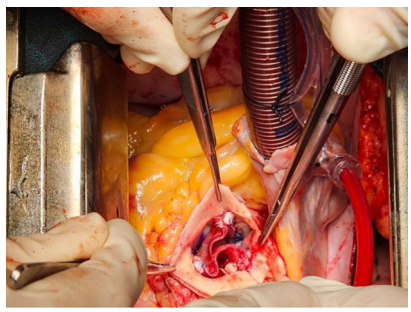

Figure 1. Image of the reconstructed valve with additional commissural reinforcement.

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Physician - Pediatric Cardiac and Vascular Surgery/Adult Congenital Heart Diseases

[MSB-26]

Minimally Invasive Right Vertical Axillary Thoracotomy for Repair of Congenital Heart Defects: Azerbaijan Experience

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Objective: This study aimed to assess the outcomes of a minimally invasive right vertical axillary thoracotomy approach for repairing various congenital heart defects in the pediatric population in Azerbaijan.

Methods: The retrospective study was conducted with 70 consecutive patients (median age: 5.5 years; range, 6 months to 13 years) who underwent repair of congenital heart defects using a minimally invasive right vertical axillary thoracotomy approach between April 2022 and September 2024. Of the patients, 44 had atrial septal defect (ASD), 13 had ventricular septal defect, seven had sinus venosus ASD with partial anomalous pulmonary venous drainage, and six had atrioventricular septal defect. The incision length ranged from 3.0 to 5.0 cm.

Results: The median weight was 15 kg (range, 6 to 41 kg). The median hospital and intensive care unit stays were 4 and 1 days, respectively. The median cardiopulmonary bypass and cross-clamp times were 51 and 23.5 min, respectively. No in-hospital deaths or conversions to median sternotomy occurred. One patient with sinus venosus ASD with partial anomalous pulmonary venous drainage experienced transient atrioventricular block, which resolved by the first postoperative day with a return to sinus rhythm. During follow-up, no late deaths, reoperations, surgery-related thoracic deformities, or breast asymmetry were observed.

Conclusion: The minimally invasive right vertical axillary thoracotomy approach can be safely employed for a broad spectrum of congenital heart defects, yielding excellent cosmetic outcomes. It represents a viable alternative to median sternotomy.

Keywords: Congenital heart defect, minimally invasive surgery.

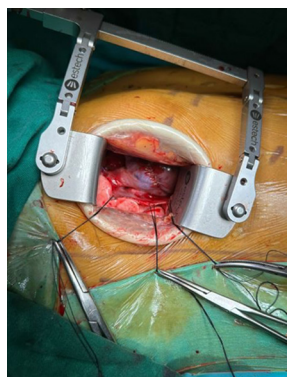

Figure 1. Intraoperative findings.

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Perfusionist

[MSB-27]

Delta Neutrophil Index And Mortality During Cardiopulmonary Bypass: An Observational Study

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Objective: This study aimed to investigate the relationship between the delta neutrophil index (DNI) during cardiopulmonary bypass (CPB) and postoperative mortality.

Methods: This retrospective cohort study was conducted with 200 patients who underwent open heart surgery with CPB between May 1, 2023, and March 1, 2024. Demographic data, laboratory results, and surgery durations were collected. Delta neutrophil index values were measured at specific intervals.

Results: Age, pump time, and cross-clamp duration were found to be associated with mortality. Higher DNI levels were significantly correlated with longer CPB times and increased mortality.

Conclusion: This study confirms that DNI is a strong biomarker for predicting mortality. The clinical utility of this biomarker should be further assessed through additional research.

Keywords: Cardiopulmonary bypass, death, delta neutrophil index.

Table 1. Evaluation of exposure factors associated with mortality status

Variables	Odds Ratio	95% Confidance Interval (Lower-Upper)	p-value
Age	1.06	1.03-1.11	<0.001
Pump Time	1.05	1.04-1.07	<0.001
Cross-clamp Time	1.13	1.09-1.17	<0.001

Table 2. Evaluation of differences in measurements according to pump time based on mortality status (Student's t-test)

Measurements	Ex (Mean±SD)	Non-Ex (Mean±SD)	p-value
Ig% (DNI)-ind	1.17±0.99	0.44±0.34	<0.001
Ig% (DNI)-5 min	1.91±1.01	0.99±0.61	<0.001
Ig% (DNI)-45 min	1.47±1.04	1.23±0.94	0.26
Ig% (DNI)-90 min	1.81±0.86	1.01±0.77	0.001
Ig% (DNI)-post-op	2.01±1.43	0.51±0.28	<0.001

Perfusionist

[MSB-28]

Treatment of Ruptured Abdominal Aortic Aneurysm: Long-Term Results of Endovascular Aortic Aneurysm Repair Versus Open Surgery

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Objective: This study aimed to investigate whether endovascular aortic aneurysm repair (EVAR) had a long-term survival benefit compared to open repair in ruptured abdominal aortic aneurysms (rAAAs).

Methods: This retrospective study involved 58 patients (mean age: 69.6±10 years) who underwent either open surgery or EVAR for rAAA between January 2015 and June 2024.

Results: Open surgery and EVAR groups were similar in terms of age. There were more male patients in the open surgery group. Intensive care unit and hospital stays were similar in both groups. The mean follow-up time was 41.2±40 months. The estimated cumulative survival rate in Kaplan-Meier analysis was %87.9 for the EVAR group and %40 for the open surgery group. Most of the deaths occurred in the first 30 days postoperatively. The reason for high mortality in open surgery was due to the hemodynamic status at arrival to the emergency service. Hemodynamically unstable patients usually had no time to wait for stent graft availability, and direct open surgery was required in these patients. A secondary factor that was important for successful treatment was the patient's anatomic convenience with EVAR treatment. Conversion to open surgery was approximately 40% due to the anatomy of the hostile neck and iliac vessels.

Conclusion: An experienced team and a hybrid operation room with adequate equipment for optimal imaging and conversion to open surgery are essential for reducing mortality in rAAA. Mortality and morbidity with EVAR appear to be low compared to open surgical treatment in patients with rAAA.

Keywords: Abdominal aortic aneurysms, complications, endovascular aneurysm repair, open surgery, mortality.

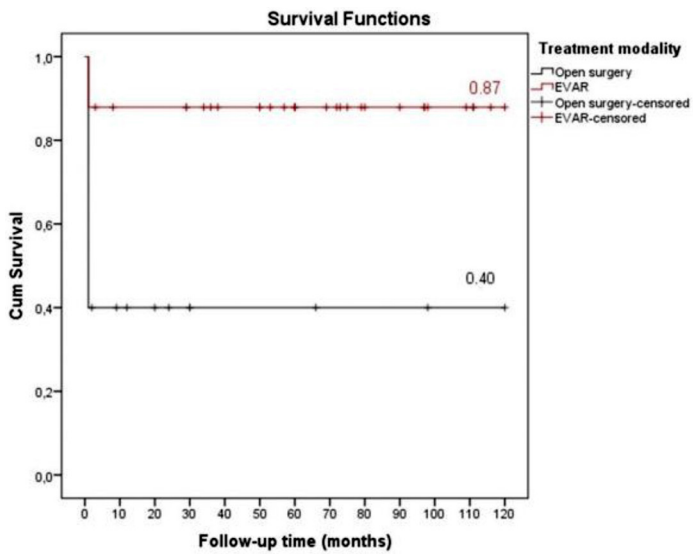

Figure 1. Cumulative survival rates in open surgical treatment and EVAR according to Kaplan-Meier analysis.

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Physician - Valvular Diseases and Surgery

[MSB-29]

Comparative Analysis of Mechanical and Bioprosthetic Valves in Tricuspid Valve Replacement

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Objective: This study aimed to identify whether mechanical or bioprosthetic valves offer better outcomes by analyzing early- and long-term results in tricuspid valve replacement (TVR).

Methods: A retrospective analysis was conducted with 83 patients who underwent TVR between 2014 and 2023. Forty-eight patients (31 females, 17 males; mean age: 55.7±11.65 years) underwent surgery with bioprosthesic valves, while mechanical valves were used in the remaining 35 patients (23 females, 12 males; mean age: 50.7±12.08 years). Demographic, clinical, and surgical data were analyzed. Key outcomes included early and late mortality, reoperation rates, and postoperative complications.

Results: There was no significant difference between the mean ages of the two groups ($p<0.05$). Early and late mortality rates showed no significant differences between the groups. Risk factors for mortality included impaired right ventricular function, combined surgeries, and reoperations for both groups. Comorbidities were more common in the bioprosthetic group. The redo surgery rate was 67%, with higher early mortality compared to primary procedures. While 39% of the cases were combined surgeries, 61% were isolated TVR. The choice of valve type varied over the years, with an increased preference for mechanical valves in patients already on anticoagulation therapy, consistent with guideline recommendations. In the bioprosthetic group, three patients experienced valve degeneration, and two required redo TVR. In the mechanical group, one patient had a stuck valve, and two underwent redo TVR.

Conclusion: This study highlights that both valves have comparable outcomes in TVR. Considering patient-specific risk factors and shared decision-making with the patient are emphasized. Early surgical intervention before right ventricular deterioration may improve long-term results.

Keywords: Replacement, tricuspid, valve.

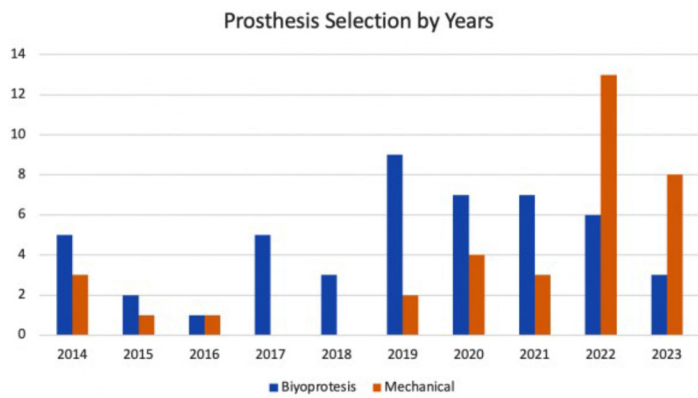

Figure 1. Prosthesis selection by years.

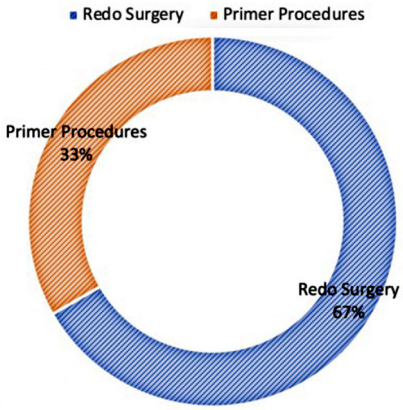

Figure 2. Surgical situation.

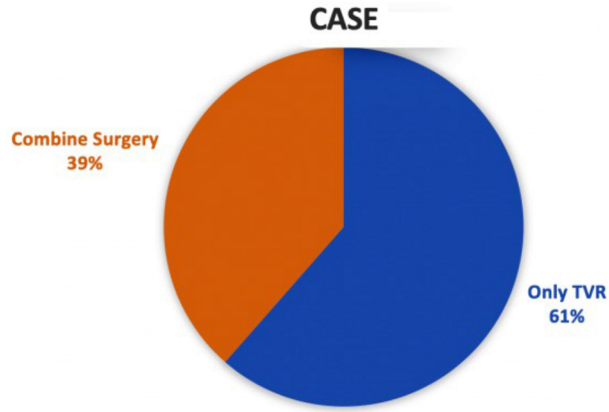

Figure 3. Case type.

Table 1. Demographic data

	Mechanical (n=35)	Bioprosthesis (n=48)	p
Female n (%)	23 (65.7%)	31 (64.6%)	0.915
Average age (Mean±SD)	50.69±12.08	55.74±11.65	0.047*
HT n (%)	13 (43.3%)	18 (56.3%)	0.309
DM n (%)	13 (43.3%)	11 (34.4%)	0.469
Pulmonary disease n (%)	10 (13.3%)	14 (43.8%)	0.400
CKD n (%)	2 (6.7%)	8 (25%)	0.05
CVE n (%)	4 (13.3%)	4 (12.5%)	0.922
Sinus rhythm n (%)	9 (30%)	7 (21.9%)	0.963
Pace rhythm n (%)	1 (3.1%)	1 (3.1%)	0.963
Previous cardiac surgery n (%)	26 (74.3%)	28 (58.3%)	0.132
EF (Mean±SD)	52.67±8.84	51.72±7.22	0.486
Service stay duration days (min-max)	8.9-2.30	12.2-3.75	0.729
Intensive care hospitalization duration days (min-max)	4.1-1.21	5.9-1.45	0.725

Table 2. Comparison of early mortality according to valve preference

	Bioprosthesis (n=35)	Mechanical (n=31)	Total (n=66)	p
Ex	5 (14.3%)	3 (9.7%)	8 (12.1%)	0.713
Non-ex	30 (85.7%)	28 (90.3%)	58 (87.9%)	

Table 3. Comparison of late mortality according to valve preference

	Bioprosthesis (n=30)	Mechanical (n=28)	Total (n=58)	p
Ex	3 (10%)	2 (7.1%)	5 (8.6%)	1
Non-ex	27 (90%)	26 (92.9%)	53 (91.4%)	

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Physician - Valvular Diseases and Surgery

[MSB-30]

Clinical Outcomes of Bicuspid Aortic Valve Pathologies Treated with Tricuspidization Using the Ozaki Procedure

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Objective: This study aimed to share early- and mid-term results in patients with bicuspid aortic valve (BAV) disease who underwent tricuspidization with the Ozaki procedure.

METHOD: The data of 44 patients (32 males, 12 females; mean age: 51.47±15.18 years) diagnosed with BAV who underwent tricuspidization with the aortic valve neocuspidization technique between February 2019 and July 2024 were retrospectively analyzed.

Results: Additional surgical procedures were performed on 21 (47.72%) patients with BAV morphology. Echocardiographic measurements showed a significant reduction in preoperative peak and mean aortic valve pressures at one and 12 months. In patients who underwent simultaneous surgical procedures, the mean aortic cross-clamp time was 111±29.7 min, and the mean cardiopulmonary bypass time was 153±43.9 min. For isolated BAV defects, the mean aortic cross-clamp and cardiopulmonary bypass times were 89.9 ±19.5 and respectively. During the follow-up period, no patient required mechanical aortic valve replacement. One patient required pacemaker implantation on the seventh postoperative day due to the development of a third-degree atrioventricular block. In one patient, an ischemic cerebrovascular event occurred in the early postoperative period.

Discussion: Although aortic valve neocuspidization requires experience, the application of standardized procedures allows for successful outcomes in BAV defects through the tricuspidization procedure. The tricuspidization procedure provides a more physiological structure and excellent hemodynamic performance of the aortic valve.

Keywords: Autologous pericardium, bicuspid aortic valve, Ozaki procedure, tricuspidization.

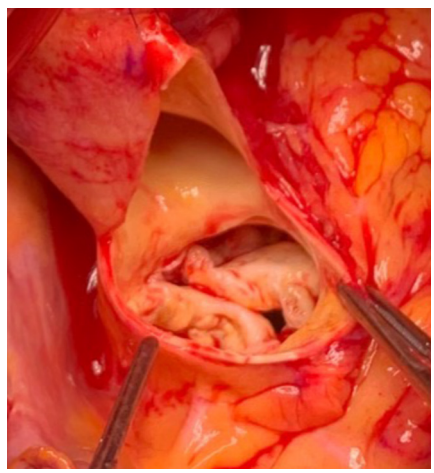

Figure 1. An image of aortic stenosis due to bicuspid aortic valve.

Figure 2. An image of a resected aortic valve.

Figure 3. An image of tricuspidization using the Ozaki procedure.

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Physician - Venous and Lymphatic System Diseases and Surgery/Endovenous Interventions

[MSB-31]

Treatment of Nutcracker Syndrome: Outcomes with Left Renal Vein Transposition and Stenting

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Objective: This study aimed to share our experiences and outcomes with left renal vein (LRV) transposition and endovascular stenting in treating Nutcracker syndrome.

Methods: Data of 20 female Nutcracker syndrome patients (mean age: 24 years) who underwent LRV transposition (n=15) or stenting (n=5) between July 2019 and June 2024 were retrospectively reviewed. Primary endpoints were morbidity and mortality. Secondary endpoints included late complications, patency, freedom from reintervention, and resolution of symptoms.

Results: There were no major complications or mortality after either procedure. The most common signs and symptoms associated with LRV entrapment were left flank pain (100%, n=20), proteinuria (88%, n=15), and hematuria (47%, n=9). After both procedures, classical symptoms resolved in 89.5% (n=17) of patients for left flank pain, 57.8% (n=11) for proteinuria, and 82.3% (n=15) for hematuria. Four patients required reintervention [three after LRV transposition (two for occlusion and one for stenosis) and one after stenting (occlusion)]. The one-year primary patency rate was 87%, and the primary assisted patency rate was 100%. One-year primary patency rates were 91% for the transposition group and 75% for the stent group. The one-year freedom from reintervention was 83%.

Conclusion: Both procedures can be used as primary treatments and have their advantages. This study shows that both methods are safe and effective.

Keywords: Endovascular stent, left renal vein entrapment, left renal vein transposition, Nutcracker syndrome, Nutcracker phenomenon, vascular compression syndrome.

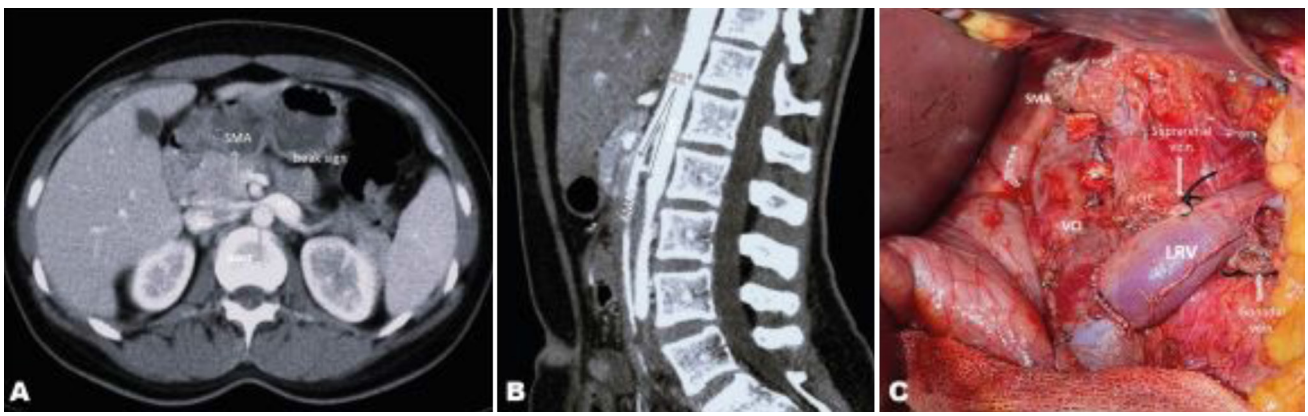

Figure 1. (A) The axial view of the computed tomography (CT) aortogram shows the "beak sign," an accurate diagnostic indicator of and the result of the compression of the left renal vein (LRV) between the abdominal aorta and the superior mesenteric artery. (B) Computed tomography section displaying nutcracker syndrome. Sagittal CT view of the aortomesenteric region illustrates an angle measuring less than 35° (measured at 21°) between the abdominal aorta and the superior mesenteric artery, meeting the CT criteria for nutcracker syndrome. (C) Intraoperative image of LRV transposition.

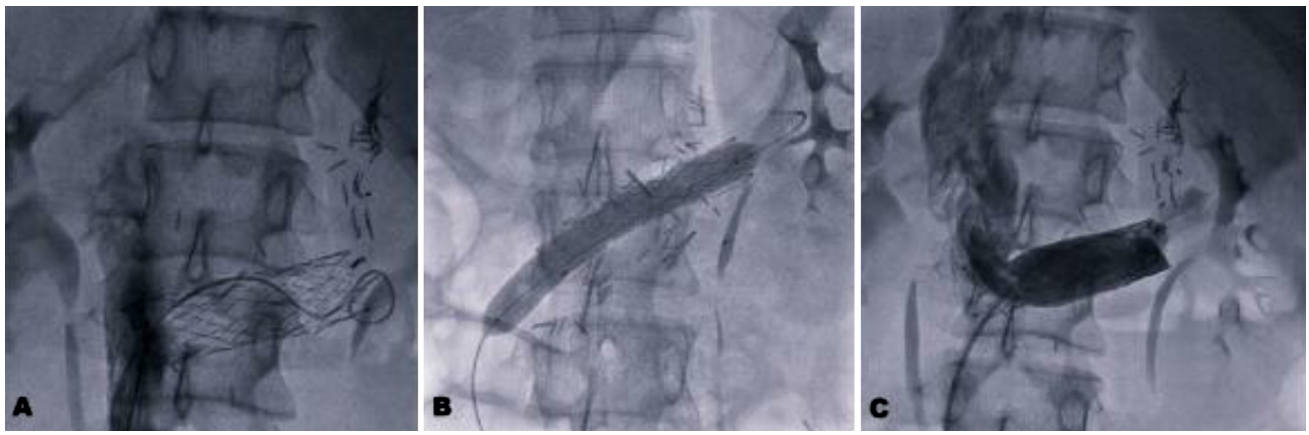

Figure 2. (A) Placement of a self-expandable venous stent (Abre Venous, Medtronic). (B) Postdilation of the LRV stent. (C) Venography of the LRV after stent placement.

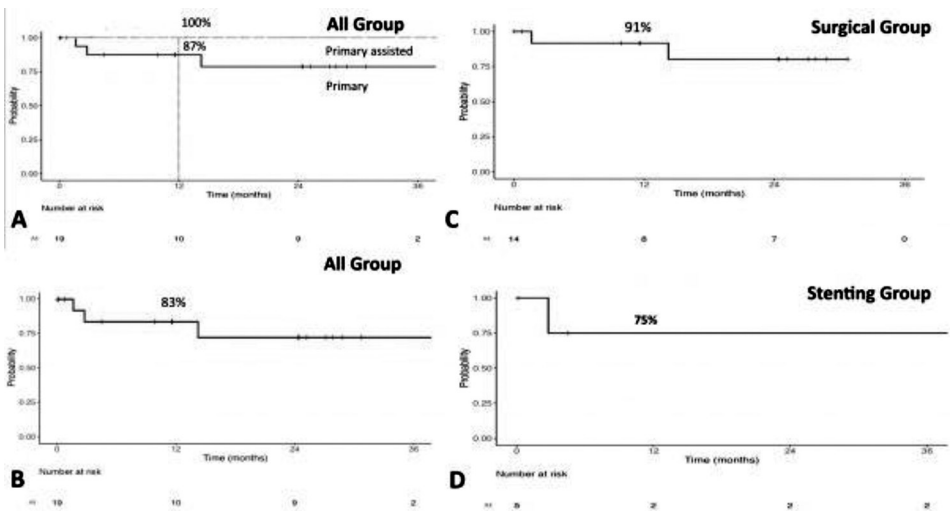

Figure 3. (A) The primary patency and primary assisted patency for 19 patients at 12 months were 87.5% and 100%, respectively. (B) Freedom from reintervention of the transposed left renal vein for 19 patients at 12 months was 83%. (C) The primary patency rate for the transposition group at 12 months was 91.7%. D- The primary patency rate for the stent group at 12 months was 75%.

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Physician - Coronary Artery Diseases and Surgery

[MSB-32]

Comparison of Platelet Changes Between Mini-Extracorporeal Circulation and Conventional Cardiopulmonary Bypass

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Objective: This study aimed to evaluate the efficacy of mini-extracorporeal circulation (MECC) in reducing platelet damage compared to conventional cardiopulmonary bypass (CCPB).

Methods: Sixty-seven patients (52 males, 15 females; mean age: 63.04±8.08 years) who underwent isolated coronary artery bypass grafting between August 2022 and February 2024 were retrospectively analyzed. The patients were divided into two groups: CCPB (n=37) and MECC (n=30). Demographic data, comorbidities, operative variables, laboratory values, and drainage volume data were collected from electronic medical records.

Results: No significant difference in median drainage volume was found between the MECC group and the CCPB group (300 mL *vs.* 350 mL; p=0.178). There was no statistically significant difference between the groups regarding cardiopulmonary bypass time and cross-clamp time (p=0.160 and p=0.158, respectively). There was no significant difference between the groups in preoperative and postoperative platelet counts (p=0.687 and p=0.335, respectively). The mean decrease in postoperative platelet count was 0.89±3.99% in the MECC group and 13±2.98% in the CCPB group. The difference in platelet count change between the groups was found to be statistically significant (p=0.028).

Conclusion: This study suggests that mini extracorporeal circulation significantly reduces postoperative platelet decline compared to conventional cardiopulmonary bypass, indicating its potential to better preserve platelet levels.

Keywords: Conventional cardiopulmonary bypass, mini-extracorporeal circulation, platelet count.

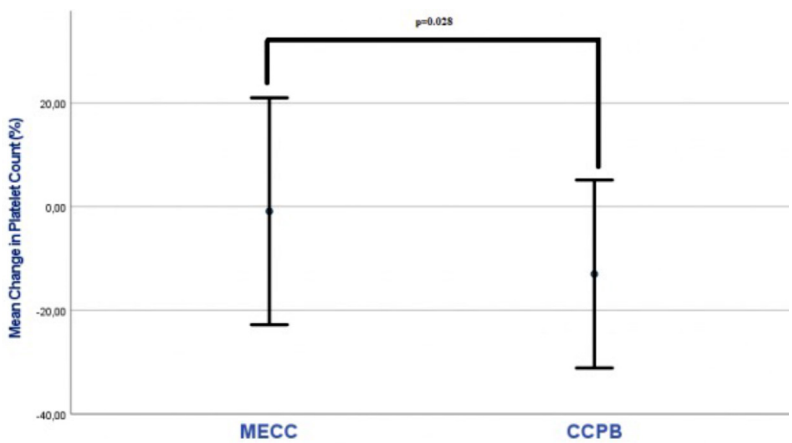

Figure 1. The difference in platelet count change between the groups.

Physician - Valvular Diseases and Surgery

[MSB-33]

Postoperative Early- to Mid-Term Results of the Ozaki Procedure Applied to Aortic Valve Pathologies

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Objective: This study aimed to evaluate our early- to mid-term results with the aortic valve neocuspidization technique (Ozaki procedure) in aortic valve pathologies.

METHOD: This study retrospectively examined the data of 243 patients (172 males, 71 females; mean age: 53.11±18.3 years; range, 17 to 82 years) who underwent the Ozaki procedure between February 2019 and August 2024.

Results: The primary pathology was aortic insufficiency in 52 (21.3%) patients and aortic stenosis in 201 (82.7%) patients. The aortic valve morphology was trileaflet in 196 (80.6%) patients, bileaflet in 44 (18.1%) patients, unicuspid in two (0.8%) patients, and quadricuspid in one (0.4%) patient. Additional cardiac surgical procedures were performed on 99 (40.7%) patients. Preoperative echocardiographic findings in patients with aortic stenosis showed a peak gradient of 91.39±33.1 mmHg and a mean gradient of 54.9±18.3 mmHg. The mean cross-clamp time was 110.2±35.6 min, while the cardiopulmonary bypass time was 141.2±39.6 min. Postoperative echocardiographic findings showed significant improvement in peak and mean gradients at six months (18.3±6.2 and 8.9±2.4 mmHg) and one (15.6±5.7 and 8.7±3.5 mmHg), two (14.2±4.7 and 7.7±2.5 mmHg), three (13.69±3.8 and 6.4±3.7 mmHg), and four (12.4±3.8 and 6.3±2.4 mmHg) years.

Conclusion: Aortic valve neocuspidization is a viable technique for all aortic pathologies. It offers advantages such as achieving good hemodynamics postoperatively, avoiding anticoagulant medications, and allowing additional surgical procedures.

Keywords: Aortic valve surgery, aortic valve repair, autologous pericardium, Ozaki procedure.

Physician - Aortic (Abdominal) Pathologies and Surgery/Endovascular Interventions

[MSB-34]

Clinical Outcomes and Applications of Bypass Procedures on Intra-Abdominal Visceral Arteries

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Objective: This study aimed to evaluate the clinical effectiveness, indications, and patient profiles of bypass procedures performed on intra-abdominal visceral arteries.

Methods: Ten patients who underwent between 2019 and 2024 were included in the study.

Results: In five patients (4 females, 1 male; range, 38 to 64 years), the procedure was part of a hybrid treatment due to aortic pathology. The procedure was performed due to mesenteric ischemia in three patients (2 males, 1 female; range, 50 to 65 years), following left renal artery injury in one female patient (aged 67 years), and due to a pancreatic tumor in another female patient (aged 57 years), which required a bypass to the hepatic artery. During follow-up, no early mortality was observed.

Conclusion: Bypass procedures on intra-abdominal visceral arteries yield successful outcomes in treating arterial stenosis causing mesenteric ischemia, as part of hybrid treatments for aortic pathologies, and in abdominal surgeries requiring revascularization.

Keywords: Abdominal aortic aneurysm, endovascular aneurysm repair, occlusive mesenteric ischemia.

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Others

[MSB-35]

Initial Single-Center Experience: Outcomes of Minimally Invasive Extracorporeal Circulation *vs.* Conventional Circuits in Cardiac Surgery

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Objective: This study aimed to present our early experience with minimally invasive extracorporeal circulation (MiECC) circuits and compare it with conventional cardiopulmonary bypass (cCPB).

Methods: Two hundred thirty-nine patient registries (169 males, 70 females; mean age: 63.5 years) who underwent surgery were retrospectively analyzed between June 2021 and February 2024. All patients were operated by the same surgical team with a restrictive blood transfusion protocol.

Results: Forty-five (18.8%) cases were identified as MiECC. Most of the operations were coronary artery bypass grafting. Significant differences were observed between those operated on with MiECC and cCPB regarding the transfusion of red blood cell (RBC) suspensions and the total amount of drainage. No significant differences were observed in the duration of intubation, incidence of postoperative acute kidney injury, and intensive care unit or hospital stay. In geriatric patients, transfusion of RBC suspensions and drainage was significantly lower. Duration of intubation and intensive care unit or hospital stay did not reach statistical significance. In patients with an ejection fraction ≤45, transfusion of RBC suspensions were similarly low.

Table 1. MiECC vs cCPB

	MiECC (n=45) (18.8%)	cCPB (n=195) (81.3%)	p
CABG*	31 (68.9%)	121 (62.1%)	
Valve surgery*	7 (15.6%)	29 (14.9%)	
Combined*	6 (13.3%)	42 (21.5%)	
Aort*	1 (2.2%)	3 (1.5%)	
Age**	63 (16)	64 (12)	0.380
CPB (min)**	113 (49)	115 (67)	0.465
Cross-clamp (min)**	77 (38)	78 (47)	0.747
EF ≤45***	5/45	46/195	
Age ≥60***	31/45	133/195	
Drainage (mL)*	300 (200)	400 (350)	0.001
Drainage ≥1000 mL (yes/no)	1/44	19/175	>0.05
RBC 0-1st day (units)**	0 (1)	1 (3)	0.001
RBC total (units)**	1 (2)	2 (3)	<0.001
Entubation duration (hours)**	9 (6)	9 (9)	0.077
ICU stay (days)**	8 (2.5)	3 (2)	0.939
Hospital stay**	7 (5)	7 (4)	0.190
Postoperative AKI (yes/no)	15/30	64/127	>0.05
Hospital mortality (yes/no)	4/41	17/174	>0.05

* n (percentage); ** Median(IQR); *** (n/total).

Conclusion: The utilization of MiECC resulted in a reduction in transfusion of RBC suspensions and postoperative drainage. No significant differences were observed in intubation time, postoperative acute kidney injury, hospitalization, or mortality. Although intubation time was observed to be shorter, no statistically significant result could be reached. There is a potential for bias in patient selection due to the potential benefits of MiECC. We believe that with a larger number of blinded studies, the benefits of MiECC can be demonstrated in more detail, particularly in specialized populations such as geriatric patients and patients with low EF.

Keywords: Cardiopulmonary bypass, cardiac surgery, geriatric, low ejection fraction, MiECC.

Table 2. MiECC vs cCPB in geriatric patients

	MiECC	cCPB	p
CPB (min)*	113 (51)	115 (63)	0.263
Cross-clamp (min)*	74 (40)	78 (41.5)	0.412
Drainage (mL)*	300 (200)	400 (425)	0.035
Drainage ≥1000 mL (yes/no)	1/30	17/115	>0.05
RBC 0-1st day (units)*	0 (1)	2 (3)	0.001
RBC total (units)*	1 (3)	3 (4)	0.002
Entubation duration (hours)*	9 (6)	11 (9)	0.05
ICU stay (days)*	3 (3)	3 (3)	0.954
Hospital stay*	7 (8)	7 (4.5)	0.611
Postoperative AKI (yes/no)	12/19	48/81	>0.05
Hospital mortality (yes/no)	4/27	15/114	>0.05

* Median (IQR).

Table 3. MiECC vs cCPB in patients with low ejection fraction

	MIECC	cCPB	p
CPB (min)*	121 (66.5)	138 (50)	0.724
Cross-clamp (min)*	86 (29.5)	90 (37)	0.329
Drainage (mL)*	350 (225)	450 (225)	0.469
Drainage ≥1000 mL (yes/no)	0/5	4/41	>0.05
RBC 0-1st day (units)*	0 (0.5)	1.5 (3)	0.018
RBC total (units)*	1 (2)	3 (3.75)	0.020
Entubation duration (hours)*	10 (7.5)	12 (9.75)	0.199
ICU stay (days)*	3 (1.5)	3 (3.75)	0.911
Hospital stay*	7 (29)	7.5 (6.75)	0.936
Postoperative AKI (yes/no)	0/5	14/30	>0.05
Hospital mortality (yes/no)	0/5	6/38	>0.05

* Median (IQR).

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Physician - Aortic (Thoracic) Pathologies and Surgery/Endovascular Interventions

[MSB-36]

Long-Term Results of Covered Endovascular Aortic Bifurcation Repair in Complex Aortoiliac Disease: A Two-Year Follow-Up

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Objective: This study aimed to investigate the two-year outcomes of covered endovascular reconstruction of the aortic bifurcation (CERAB) in patients with complex aortoiliac occlusive disease.

Methods: This retrospective study was conducted with 40 patients (33 males, 7 females) with aortoiliac occlusive disease categorized as TASC (Trans-Atlantic Inter-Society Consensus Document on Management of Peripheral Arterial Disease) II B, C, and D, based on computed tomography angiography findings. All patients underwent the CERAB procedure. The study assessed procedural outcomes, including clinical and symptomatic improvements, as well as patency rates, over a two-year follow-up period.

Results: The technical success rate was 100% across all procedures. At 36 months, the overall primary patency, assisted primary patency, and secondary patency rates were 85%, 90%, and 92.5%, respectively.

Conclusions: The two-year outcomes of this study suggest that CERAB offers patency rates comparable to those reported in other studies for complex aortoiliac occlusive diseases. The procedure showed favorable patency rates, particularly for more advanced TASC II B, C, and D lesions.

Keywords: Aortoiliac occlusive disease, aortic bifurcation, CERAB procedure, endovascular.

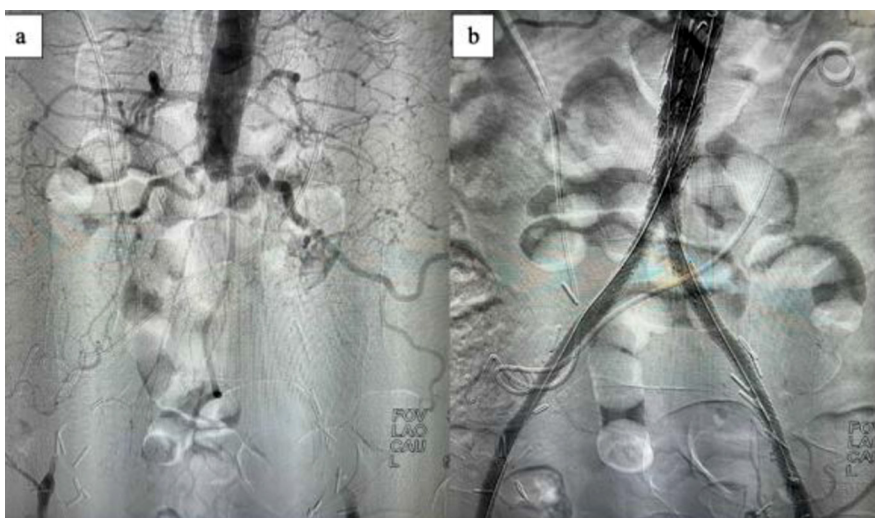

Figure 1. Intraoperative (a) and post-CERAB (b) aortography.

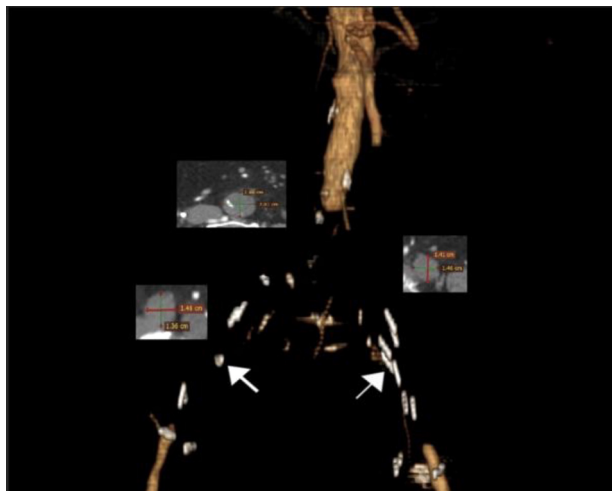

Figure 2. ?????.

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Physician - Venous and Lymphatic System Diseases and Surgery/Endovenous Interventions

[MSB-37]

Comparison of Radiofrequency Ablation and Cyanoacrylate Closure for Large-Diameter Great Saphenous Vein Insufficiency

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Objective: This study aimed to compare radiofrequency ablation (RFA) and cyanoacrylate closure (CAC) for large-diameter great saphenous vein (GSV) insufficiency between diameters of 12 and 16 mm.

Methods: This single-center retrospective study was conducted with 142 patients who underwent endovenous treatment with RFA (Group A; n=71) or CAC (Group B; n=71) for GSV insufficiency between June 2015 and June 2021. The patients who were followed for at least two years were included in the study. Patients who had a 12- to 16-mm target vessel diameter and two with grade 3 or 4 reflux were included. During follow-up, patients were evaluated with duplex ultrasonography and the Venous Clinical Severity Score (VCSS) at 1, 6, 12, and 24 months.

Results: The mean GSV diameter was 13.21±1.00 for Group A and 13.51±0.97 for Group B. The groups did not differ in terms of age, sex, body mass index, clinical, etiological, anatomic, and pathophysiologic classification, GSV diameter, reflux grade, target GSV length, preoperative VCSS, complications, postoperative 24-h pain status, and postoperative 14-day patient satisfaction scale. The procedure time was significantly shorter in Group B. At one and six months, duplex ultrasonography revealed partial closure, and patency rates in Group B were significantly higher than those in Group A. At 12 and 24 months, closure rates did not show a statistically significant difference between the groups. Preoperative and one-month VCSS measurements did not show a statistically significant difference between groups. The 6-, 12-, and 24-month VCSS measurements of Group A were significantly higher than those in Group B.

Conclusion: The complication rates were similar between the two techniques. Cyanoacrylate closure had a shorter procedure time. Although the closure rates in the early postoperative period were better in the RFA group, long-term follow-up demonstrated similar patency rates. The functional results in the long-term follow-up were better in the RFA group.

Keywords: Nonthermal endovenous ablation, radiofrequency ablation, saphenous vein.

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Physician - Heart Failure, Transplantation and Mechanical Support Systems

[MSB-38]

The Journey of Intracorporeal Left Ventricular Assist Devices in Pediatric Patients: From HVAD to Heartmate 3

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Objective: This study aimed to compare the outcomes of HVAD (Heartware Ventricular Assist Device) and HeartMate 3 (HM3) used as a bridge to transplantation in end-stage heart failure.

Methods: This retrospective study included 34 patients under 18 years of age who underwent HVAD (n=22; 13 females, 9 males; mean age: 12.7 years) or HM3 (n=12; 8 females, 4 males; mean age: 12.9 years) implantation at a single center between 2012 and 2024. Kaplan-Meier analysis was conducted to assess survival.

Results: There were no significant differences between the HVAD and HM3 groups in terms of age (p=0.78), weight (44.3 *vs.* 37.7 kg, p=0.25), height (155.6 *vs.* 151.5 cm, p= 0.49), body surface area (1.92 *vs.* 1.76 m^2, p=0.29), and sex (p=0.66). The mean cardiopulmonary bypass time was higher in the HM3 group (59 *vs.* 78.5 min, p<0.05). The average support duration was 899 days. Postoperative complications showed no statistically significant differences in infection (n=5 *vs.* n=2, p=0.68) and cerebrovascular accidents (n=4 *vs.* n=0, p=0.11) between the HVAD and HM3 groups, while pump thrombosis showed a statistically significant difference (n=8 *vs.* n=0, p<0.05). During the five-year follow-up, nine patients underwent heart transplantation, 17 patients were on device follow-up, and eight patients died (seven patients with HVAD and 1 patient with HM3; p=0.12).

Conclusion: HeartMate 3 represents an outstanding option for pediatric patients due to its low complication rates and high survival rates. Further research is needed to develop an intracorporeal device suitable for implantation in neonates and infants.

Keywords: HeartMate 3, HM3, HVAD, Left ventricular assist device, pediatric left ventricular assist device.

Physician - Coronary Artery Diseases and Surgery

[MSB-40]

Near-Infrared Spectroscopy and Lactate Measurements in Coronary Artery Bypass Grafting: A Retrospective Study

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Objective: This study aimed to investigate the potential correlation between lactate levels and near-infrared spectroscopy (NIRS) measurements during coronary artery bypass grafting.

Methods: In this retrospective study, 48 patients who underwent coronary artery bypass grafting were examined. The relationship between lactate levels recorded during the operation and the simultaneously measured right and left NIRS values were statistically analyzed.

Results: A moderate positive correlation was found between six different lactate measurements obtained at specific time intervals during coronary bypass surgery and the concurrently recorded NIRS values. The correlation coefficients were r=0.484 and p=0.004 for right NIRS and r=0.4364 and p=0.010 for left NIRS.

Conclusion: The findings suggest that NIRS could be a potential tool for assessing metabolic status. While most studies focus on comparing postoperative clinical outcomes between patients with and without NIRS, research specifically targeting changes in NIRS values during cardiopulmonary bypass is limited. Further studies with larger sample sizes are needed to elucidate the clinical benefits of NIRS during cardiopulmonary bypass.

Keywords: Coronary bypass, lactate, near-infrared spectroscopy.

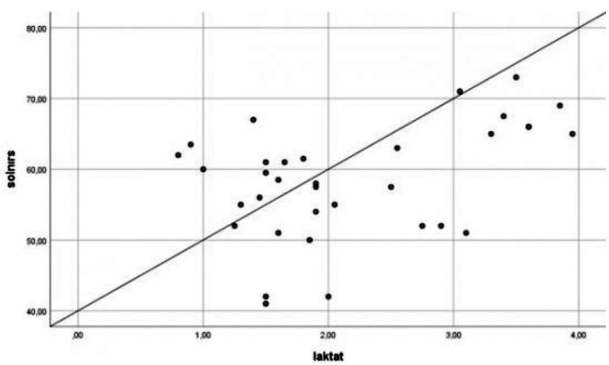

Figure 1. Left NIRS.

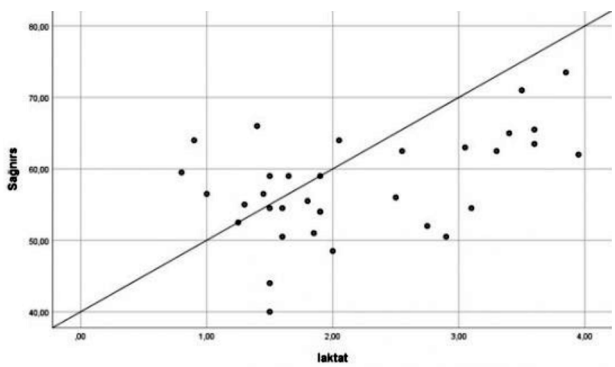

Figure 2. Right NIRS.

Physician - Valvular Diseases and Surgery

[MSB-41]

Comparison of del Nido Cardioplegia with Blood Cardioplegia in Coronary Artery Bypass Grafting Combined with Mitral Valve Replacement

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Objective: The study aimed to compare del Nido cardioplegia (DNC) with blood cardioplegia (BC) in coronary artery bypass grafting (CABG) combined with mitral valve replacement.

Methods: This single-center retrospective cohort study was conducted. Sixty patients who underwent CABG (up to triple bypass) combined with mitral valve replacement were divided into DNC and BC groups, with thirty patients in each group.

Results: Both groups demonstrated similar baseline characteristics, including age, sex, cardiac/noncardiac comorbidity, and preoperative echocardiographic parameters. Compared to the BC group, the DNC group demonstrated significantly lower cardioplegia volume (1130.00±194.1 mL *vs.* 884.33±156.8 mL, p=0.001), cardiopulmonary bypass time (121.70±13.57 min *vs.* 110.90±12.52 min, p=0.002), aortic clamp time (101.37±13.87 min *vs.* 91.37±11.58 min, p=0.004), and need for intraoperative defibrillation (21 events *vs.* 6 events, p=0.001). Postoperative creatine kinase-MB levels and troponin levels were significantly lower in the DNC group than in the BC group. Postoperative hemoglobin and hematocrit levels were significantly higher in the DNC group than in the BC group. The intubation period in intensive care unit was significantly shorter in the BC group (6.82±1.57 h *vs.* 8.13±12.21 h, p=0.037); however, intensive care unit stay, total hospital stay, and postoperative complication rates were not significantly different between the groups. At predischarge echocardiography, the DNC group demonstrated significantly higher ejection fraction rates than the BC group (47.79±5.50 and 45.72±5.86, respectively; p=0.005).

Conclusion: Del Nido cardioplegia presented better intraoperative and postoperative results. Therefore, it can be concluded that DNC is an effective and safe alternative to BC for CABG combined with mitral valve replacement.

Keywords: Cardioplegic solutions, coronary artery bypass, heart arrest, induced, mitral valve surgery, treatment outcome.

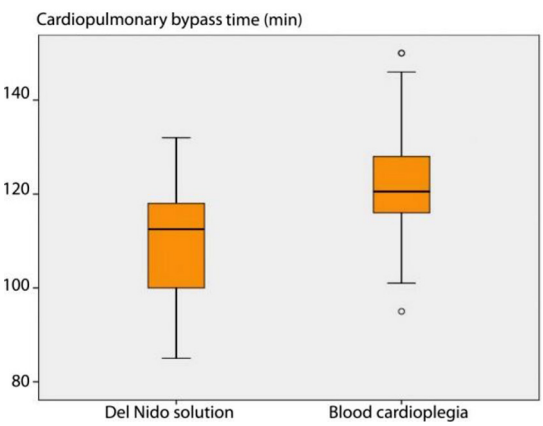

Figure 1.

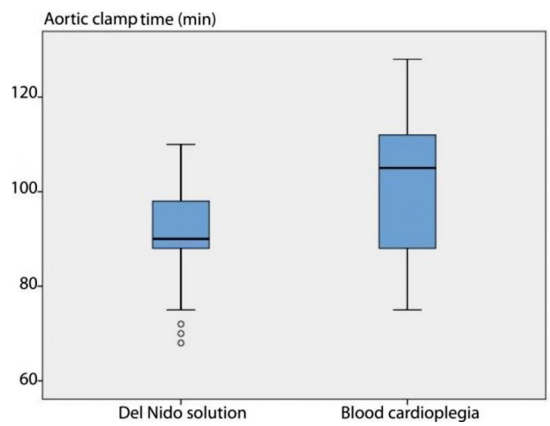

Figure 2.

Physician - Coronary Artery Diseases and Surgery

[MSB-42]

Impact of Phosphorylcholine-Coated Circuits on Inflammatory Response and Renal Function: A Retrospective Study in Coronary Artery Bypass Grafting

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Objective: This study aimed to evaluate the effects of phosphorylcholine-coated circuits compared to traditional standard tubing sets on postoperative inflammatory response, renal function, and intubation duration.

Methods: This retrospective study was conducted with 45 patients who underwent coronary artery bypass grafting. Surgeries were performed by the same team. The patients were divided into two groups: standard tubing sets were used for Group 1 (n=12), and phosphorylcholine-coated sets were used for Group 2 (n=33). Data from the operation were analyzed.

Results: No significant difference was found between standard and phosphorylcholine-coated tubing sets regarding lactate levels after bypass and in intensive care ($p>0.05$). C-reactive protein levels were similar on the first day but lower in the phosphorylcholine group on the second day ($p<0.05$). Preoperative glomerular filtration rates were similar on the first day, but higher glomerular filtration rates were noted on the second day in the phosphorylcholine group ($p<0.05$). Intubation duration was shorter with phosphorylcholine-coated circuits, with no differences in erythrocyte suspension and drainage volumes ($p>0.05$).

Conclusion: Phosphorylcholine-coated circuits reduced postoperative inflammatory response, preserved renal function, and shortened intubation duration. Although coated systems may improve cardiac surgery outcomes, no system completely prevents pathological inflammatory responses. Collaboration between biomedical engineering and cardiac surgery teams is essential for further advancements.

Keywords: Cardiopulmonary bypass, phosphorylcholine-coated circuits.

Table 1. Patient data

	Group 1 (n=12)	Group 2 (n=33)	
	Mean±SD	Mean±SD	p-value
Lactate at CPB exit (mmol/L)	2.34±1.12	2.5±1.13	0.681*
Initial lactate in ICU (mmol/L)	1.45±0.64	1.89±1.10	0.198
Day 1 CRP (mg/L)	86.60±38.14	86.23±32.20	0.973
Day 2 CRP (mg/L)	222.72±56.32	177.40±48.88	0.010
Intubation duration (hours)	11.84±6.57	7.23±2.65	0.001*
Preoperative GFR (mL/min)	73.76±17.87	84.64±16.23	0.056
Postoperative Day 2 GFR (mL/min)	63.84±27.10	82.99±24.95	0.029
Drainage on Day 1 (mL)	750±574.45	984.72±672.82	0.284*
Drainage on Day 2 (mL)	620.83±443.87	531.94±249.61	0.390*
Erythrocyte suspension given during surgery	1.5±1.24	1.31±1.03	0.595
Erythrocyte suspension given in ICU	2.17±1.89	1.56±1.84	0.328*

Others

[MSB-43]

Pulmonary Endarterectomy in Chronic Thromboembolic Pulmonary Hypertension: Our Initial Experience

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Objective: This study aimed to share the early results of the pulmonary endarterectomy program recently implemented in our clinic in the treatment of chronic thromboembolic pulmonary hypertension.

Methods: Eighteen patients (10 females, 8 males; mean age: 46 years) who underwent pulmonary endarterectomy between October 2022 and August 2024 were included in the retrospective study. Perioperative and follow-up data, including age, in-hospital mortality, and the length of intensive care unit and hospital stays after pulmonary endarterectomy, were evaluated.

Results: The majority of the patients (n=16) were New York Heart Association class III or IV before surgery. According to the University of California, San Diego level classification, almost all patients had at least level 1 and 2 lesions in one or more pulmonary artery (n=17). Cardiopulmonary bypass time, cross-clamp time, and total circulatory arrest time were 174.8±16.6, 34.7±12.2, and 21,7±6.2 min, respectively. The in-hospital mortality rate was 5.5% (n=1), and the morbidity rate was 16.6% (n=3). Extracorporeal membrane oxygenation was performed on two patients (one venoarterial, one venovenous). Both patients were successfully weaned off ECMO. However, the patient who received venoarterial ECMO died due to multiorgan failure in the second postoperative month. After pulmonary endarterectomy, the durations of mechanical ventilation, intensive care stay, and hospital stay before discharge were 6.1±13.1, 17.8±14.7, and 20.01±13.9 days, respectively. The systolic and mean pulmonary artery pressure fell from 97.6±22.6 and 63.1±18.1 mmHg before surgery to 42.5±12.8 and 25.7±6.1 mmHg after surgery.

Conclusion: Pulmonary endarterectomy is a highly effective treatment for chronic thromboembolic pulmonary hypertension, providing dramatic clinical improvement in the early term with acceptable mortality and morbidity rates.

Keywords: Chronic thromboembolic pulmonary hypertension, pulmonary endarterectomy.

Figure 1. ?????.

Physician - Coronary Artery Diseases and Surgery

[MSB-44]

Evaluation of Sternum Closure Methods with Clinical Results in Open Heart Surgery

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Objective: This study aimed to investigate the clinical results of sternum closure methods after open heart surgery with median sternotomy.

Methods: This retrospective study screened 2,662 patients who underwent open heart surgery. Classical steel wire, Flexigrip + steel wire combination, sternal cable, sternal band, and Robicsek were used as sternum closure methods in patients. The causality relationships of sternal dehiscence, diabetes mellitus, chronic obstructive pulmonary disease, impaired kidney function, and demographic characteristics of the patients were investigated.

Results: Ninety-six patients developed dehiscence, and 60% of them had diabetes, 25% had impaired renal function, and 21% had chronic obstructive pulmonary disease. The treatment success rate was 88% when using the Flexigrip + steel wire combination in patients undergoing sternal dehiscence repair, and the treatment success rate was 76% using a standard steel wire. The combination of Flexigrip + steel wire significantly reduced the risk of sternal dehiscence compared to the use of classical steel wire in sternal closure. Vacuum-assisted closure devices were beneficial in draining wounds and shortened the healing time.

Conclusion: Flexigrip + steel wire combination in sternal closure significantly reduced the risk of sternal dehiscence in patients with diabetes mellitus, chronic obstructive pulmonary disease, and impaired kidney function.

Keywords: Debridement, sternal dehiscence, sternum, surgery, wound infection.

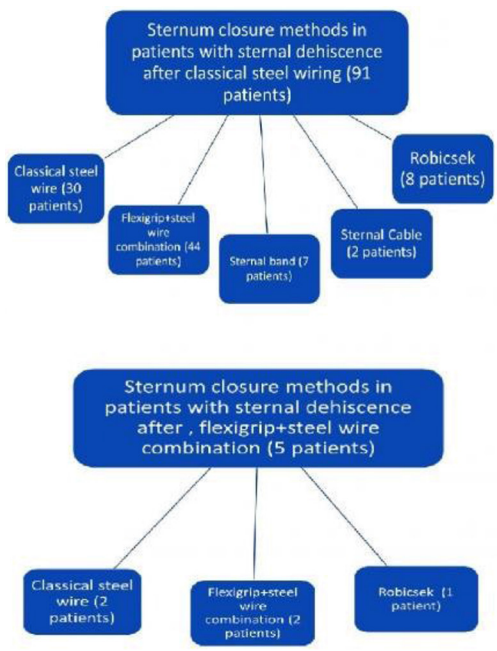

Figure 1. Sternum closure methods in patients with sternal dehiscence.

Table 1. Healing status of the patients after sternal dehiscence repair.

Sternal Closure method	Number of patients (n)	Number of patients healed (n, %)	Patients requiring additional debridement and reintervention (n, %)
Classical steel wire	30	23 (76.4%)	7 (23.3%)
Flexigrip+steel wire combination	44	39 (88.6%)	5 (97.5%)
Sternal cable	7	5 (71.4%)	2 (28.5%)
Sternal band	2	1 (50%)	1 (50%)
Robicsek	9	7 (77.7%)	2 (22.2%)
Total	96	79 (82.2%)	17 (17.7%)

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Physician - Minimal Invasive, TAVI, Robotic Cardiac Surgery

[MSB-45]

Minimally Invasive Mitral Valve Surgery in Fibrillation or Beating Heart: A Comparative Study

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Objective: This aimed to share our results of minimally invasive mitral valve surgery in fibrillation or beating heart.

METHOD: The postoperative outcomes of 33 patients (mean age: 61.7 years) who underwent mitral valve surgery in fibrillation (n=14) or beating heart (n=19) with minimally invasive methods between February 2019 and May 2024 were retrospectively analyzed.

Results: Twenty-seven patients underwent isolated mitral valve surgery. Thirty patients were reoperated cases. The mean cardiopulmonary bypass duration of patients operated on with a beating heart was 204±62 min, while it was 148±37 min in the fibrillation group. The mean duration of postoperative hospitalization was 14±15 days for patients operated on with beating heart and 9±3 days in the fibrillation group. The mean drainage amount was 580±488 mL in patients operated on with beating heart and 680±520 mL in the fibrillation group. There was no stroke in both groups. There was no significant difference in terms of the compared parameters and early postoperative mortality in both groups.

Conclusions: Right anterolateral thoracotomy has advantages in reoperated mitral valve surgery such as no sternotomy, avoidance of possible complications, limited dissection of adhesions, and less postoperative drainage. Mitral valve surgery in a beating heart or fibrillation are methods that can be used in the same patient group. Both methods have advantages and disadvantages, but both methods are effective and safe in reoperated patients.

Keywords: Beating heart, fibrillation, minimally invasive, mitral valve surgery.

Physician - Minimal Invasive, TAVI, Robotic Cardiac Surgery

[MSB-47]

Minimally Invasive Cardiac Surgery with Subareolar Incision

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Objective: This study aimed to share the results of minimally invasive cardiac surgery performed with a subareolar incision at our clinic.

METHOD: Eight female patients (mean age: 54±14.16 years) who underwent minimally invasive cardiac surgery with a subareolar incision between April 2023 and August 2024 were included in this retrospective study.

Results: Of the patients, six underwent isolated mitral valve surgery, while two had combined mitral and tricuspid valve surgeries. None of the cases required sternotomy. Peripheral arterial cannulation was performed in one patient, while central arterial cannulation was used in seven patients. Internal left atrial appendage plication was performed in seven patients. The mean cardiopulmonary bypass time was 114±30.37 min, and the mean aortic cross-clamp time was 72.75±25.78 min. The mean postoperative intensive care unit stay was 3±3.81 days, while the mean postoperative hospitalization time was 8.75±5.54 days. Among the patients with bioprosthetic valves, one required reoperation seven months later due to infective endocarditis.

Conclusion: The subareolar incision technique in minimally invasive cardiac surgery represents a significant advancement, offering notable benefits in terms of cosmetic outcomes, reduced pain, and faster recovery. While it presents certain challenges and limitations, it provides a valuable option for a select group of patients and procedures. As surgical techniques and technologies continue to evolve, the role of the subareolar incision is likely to expand, offering further opportunities for patients seeking less invasive cardiac treatments.

Keywords: Minimally invasive cardiac surgery, mitral valve surgery, subareolar incision.

Figure 1. Postoperative image of subareolar incision.

Physician - Valvular Diseases and Surgery

[MSB-48]

Emergency Surgical Aortic Valve Replacement in Patients Following Failed Valve-in-Valve Transcatheter Valve Procedure: A Case Series

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Valve-in-valve transcatheter aortic valve implantation (TAVI) has become a less invasive alternative to reoperation for elderly or high-risk patients with failed bioprosthetic valves. Data from the EuRECS-TAVI (European Registry on Emergent Cardiac Surgery during TAVI) registry, covering 27,760 TAVI procedures, demonstrated that emergency cardiac surgery due to TAVI complications occurs in 0.76 to 0.98% of cases. The most common reasons include ventricular perforation (28.3%), annular rupture (21.2%), valve migration/embolization (12.7%), and aortic dissection (11.8%).

Keywords: Heart valve prosthesis implantation.

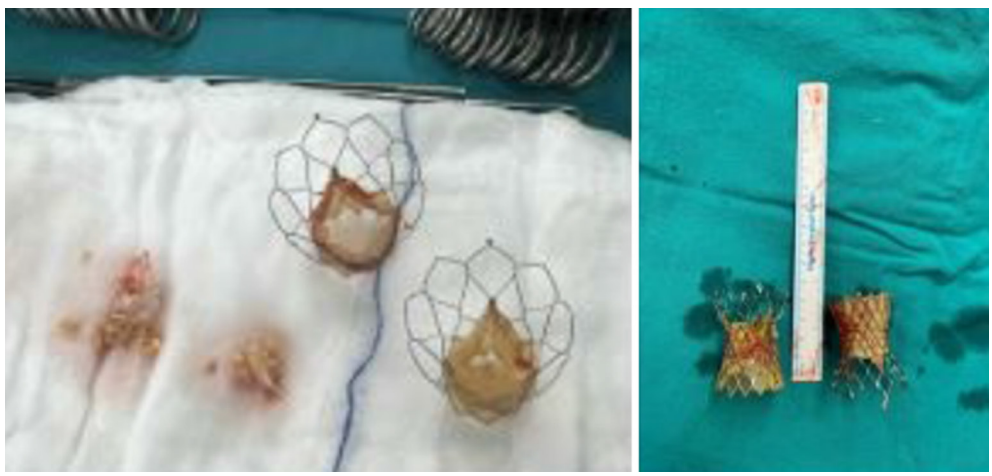

Figure 1. Intraoperative photographs of surgical transcatheter aortic bioprosthesis explantation.

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3. Division of Cardiac Surgery, Department of Surgery, Division of Cardiology, Department of Medicine, Western University, London Health Sciences Center, London, Ontario, Canada.

Physician - Physician - Aortic (Thoracic) Pathologies and Surgery/Endovascular Interventions

[MSB-49]

Postoperative Aortic Valve Insufficiency: Outcomes of Aortic Valve Preservation in Type A Aortic Dissection

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Objective: The study aimed to assess the impact of preserving the aortic valve during supracoronary aortic interposition on aortic valve function in patients with type A aortic dissection.

Methods: The study included 95 patients (65 males, 30 females; mean age: 58.94±11.4 years) who underwent supracoronary aortic interposition due to type A aortic dissection between 2019 and 2023. Patients who completed early- and mid-term postoperative follow-ups were included in the study. Patients who died or had aortic valve replacement were excluded. Preoperative and postoperative transthoracic echocardiography results were compared for aortic insufficiency (AI).

Results: Preoperative echocardiography showed no AI in 39 patients. During follow-up, 27 patients still had no AI. Mild AI developed in eight patients, and moderate AI developed in four. Preoperative mild AI was present in 40 patients, with 24 maintaining the same degree of AI, six showing no AI, and 10 progressing to moderate AI. Of 16 patients with preoperative moderate AI, seven showed regression to mild AI postoperatively, while five had unchanged moderate AI. Five patients with moderate AI underwent aortic resuspension. Among these patients, AI persisted at the same level postoperatively in one patient, two patients had no AI, and two had mild AI.

Conclusion: The degree of aortic valve insufficiency is crucial in type A dissection surgery. Assessing the aortic valve structure and preserving valves that do not require replacement can reduce cross-clamp time, complications, and mortality. Regular transthoracic echocardiography follow-up is essential to monitor the progression or regression of AI in these patients.

Keywords: Aortic dissection, aortic insufficiency.

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Physician - Physician - Aortic (Thoracic) Pathologies and Surgery/Endovascular Interventions

[MSB-50]

Early Results of Patients Who Underwent Button Bentall Operation

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Objective: This study to analyze the early-term results of patients who underwent button Bentall operation.

Methods: Twenty-one patients (12 males, 9 females; 50.67±13.79 years) who underwent an elective button Bentall operation between 2020 and 2023 were included in the study. Patients who were pregnant or breastfeeding, those younger than 18 years of age, who underwent emergency operation, who had type 1 aortic dissection, and who underwent additional valve operations other than aortic valve, infective endocarditis, and reoperations were excluded.

Results: Ten (47.6%) patients had bicuspid aortic valve structure, and all patients had severe aortic valve insufficiency. Four (19%) patients required early revision surgery due to hemorrhage. No mortality was observed during the hospitalization period. The mean cross-clamp time was 87.33±16.77 min, and the mean cardiopulmonary bypass time was 118.81±19.88 min.

Conclusion: In our study, early in-hospital mortality was not observed and we believe that this difference may be due to the small number of patients. Nevertheless, button Bentall operation for ascending aortic aneurysm and valve insufficiency appears to be a safe surgical treatment method with short-term results.

Keywords: Aneurysm, aorta, Bentall.

Table 1. ?????.

	Parameters	Mean±SD
Preoperative	Ascending aortic diameter (mm)	51.14±2.49
	EF	57.38±6.24
Operative	Cross-clamp (minutes)	87.33±16.77
	CPB (minutes)	118.81±19.88
Postoperative	Intensive care unit (days)	3.1±1.33
	Total hospitalization (days)	10.52±3.75

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Physician - Aortic (Abdominal) Pathologies and Surgery/Endovascular Interventions

[MSB-51]

Thrombus Localization and Its Impact on Aneurysm Sac Volume Shrinkage and Lumbar Artery Count After Endovascular Aortic Aneurysm Repair

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Objective: This study aimed to investigate the relationship between thrombus localization, sac volume shrinkage, and the number of patent lumbar arteries following endovascular aortic aneurysm repair (EVAR).

Methods: A total of 143 patients who underwent elective EVAR were included in the study. Preoperative and postoperative thrombus volume and localization were assessed, along with lumbar artery counts. Thrombus was categorized as either anterior, posterior, circular, or absent. A postoperative sac volume reduction ≥10% was considered positive remodeling.

Results: Results demonstrated that patients with a posteriorly localized thrombus exhibited significantly more significant sac volume shrinkage ($p=0.017$) and fewer patent lumbar arteries (mean: 3.1±1.6; $p=0.002$). In contrast, circular thrombus localization was associated with less sac shrinkage and a higher number of patent lumbar arteries, which likely impeded effective remodeling. The presence of more than three patent lumbar arteries ($p<0.001$) and thrombus occupying ≥25% of the neck ($p=0.049$) were negatively correlated with sac shrinkage, suggesting an increased risk of secondary interventions.

Conclusion: These findings highlight the critical role of thrombus localization and lumbar artery count in determining sac remodeling outcomes after EVAR. Posterior thrombus placement may promote effective sac shrinkage by reducing blood flow through lumbar arteries, thus potentially lowering the need for secondary interventions.

Keywords: EVAR, lumbar arteries, sac volume shrinkage, secondary interventions, thrombus localization.

Physician - Pediatric Cardiac and Vascular Surgery/Adult Congenital Heart Diseases

[MSB-52]

Neonatal Thrombosis in Pediatric Patients: A Report of Two Cases

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This study presented the management of neonatal arterial thrombosis secondary to hypernatremia and breech presentation trauma. In the first case, an 18-day-old male born at 41 weeks gestation presented with ischemic left foot and absent peripheral pulses in both legs. Abdominal duplex ultrasonography revealed extensive aortic thrombosis from the infrarenal level to the lower extremity trifurcation arteries. An embolectomy was planned. Heparin infusion and hyperbaric oxygen therapy was administered to minimize the amputation level following the embolectomy. After consultation with the relevant departments, the patient was followed in the ward for autoamputation. In the second case, a male infant born at 39 weeks, presented with cyanosis in the left upper extremity, absent Moro reflex in the left arm, and abdominal swelling. Ultrasound showed no flow in the left brachial artery. A computed tomography scan revealed shoulder dislocation and total thrombosis of the left axillary artery. An embolectomy and debridement were performed to prevent further tissue loss, followed by heparin infusion and hyperbaric oxygen therapy. A below-elbow amputation was performed. Collagen wound dressing and skin grafting were applied for wound healing, and the patient was discharged after graft epithelialization. Neonatal arterial thrombosis poses a high risk of severe complications, permanent tissue damage, and mortality. Key causes include malignant diseases, autoimmune conditions, perinatal asphyxia, trauma, and dehydration. Rapid medical and surgical intervention is essential to prevent long-term outcomes.

Keywords: Arterial thrombosis, embolectomy, neonatal coagulopathy, pediatric patient.

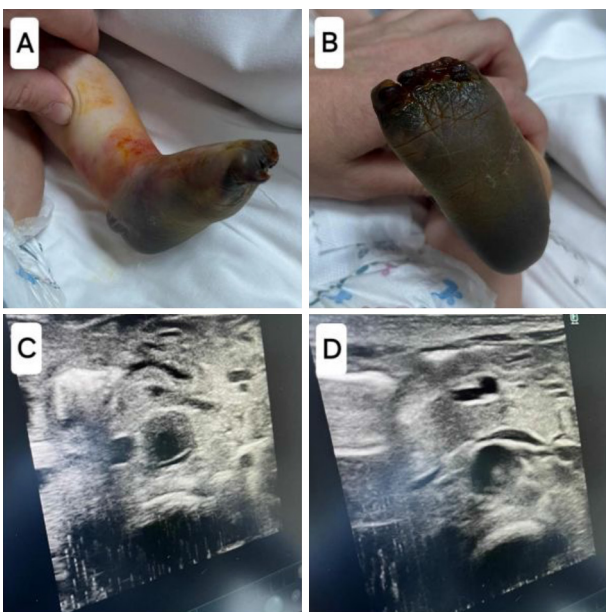

Figure 1. (A, B) The left lower extremity of the first patient upon admission to our clinic. (C, D) Duplex ultrasonography showing the persistence of a thrombus in the aorta.

Figure 2. (A) The left upper extremity of the second patient upon the admission to our clinic. (B) Debridement of necrotic tissues (C) A below-elbow amputation (D) Skin graft.

Physician - Venous and Lymphatic System Diseases and Surgery/Endovenous Interventions

[MSB-53]

Clinical Efficacy and Safety of Using N-Butyl Cyanoacrylate in the Treatment of Perforator Vein Insufficiency

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Objective: This study aimed to evaluate the efficacy of a nonthermal and nontumescent embolization method using N-butyl cyanoacrylate for managing perforator incompetence.

Methods: This single-center retrospective study analyzed 98 consecutive patients diagnosed with perforator vein insufficiency treated with N-butyl cyanoacrylate. The study protocol included physical examinations, Doppler ultrasonography, venous clinical severity scoring, CEAP (Clinical, Etiological, Anatomical, and Pathophysiological) classification, and quality of life assessments before and after the procedure. The primary goal was to compare clinical, functional, and duplex ultrasonography parameters in managing varicose vein diseases with isolated primary perforator incompetence using duplex ultrasonography-guided N-butyl cyanoacrylate treatment. Furthermore, the study evaluated the occlusion rate, procedural pain, phlebitis, ecchymosis, and paresthesia.

Results: The occlusion rate at six months was 96.9%, with a significant reduction in pain and other symptoms of chronic venous insufficiency. The incidence of complications was low. Phlebitis was observed in 3.4% of cases, ecchymosis in 2.8%, and transient paresthesia in 1.7%. There were no reports of severe adverse events, such as deep vein thrombosis or allergic reactions.

Conclusion: Interruption of perforators effectively reduces the symptoms of chronic venous insufficiency and promotes rapid ulcer healing. This nontumescent, nonthermal embolization method can be safely applied with high success rates. The results of this study suggest that N-butyl cyanoacrylate is a viable option for treating perforator incompetence.

Keywords: N-butyl cyanoacrylate, perforator vein incompetence, venous ulcer.

Figure 1. Image demonstrating perforator vein insufficiency.

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Physician - Aortic (Thoracic) Pathologies and Surgery/Endovascular Interventions

[MSB-54]

The FLOZ Procedure: Enforced Ozaki Opeation As A New Option for the Aortic Root

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Objective: This study aimed to introduce our implementation of a novel approach combining two reconstructive approaches: the Ozaki operation and the Florida sleeve procedure.

Methods: The study included six male patients (range, 37 to 64 years) with the aortic root pathology requiring aortic root replacement. All operations were performed by one surgeon, and all potential benefits and disadvantages of a novel technique were thoroughly discussed with the patients. Three patients had aortic stenosis with the aortic root dilatation, and three patients had aortopathy with aortic insufficiency, where aortic cusps were not subject to repair. All operations were accomplished by performing the Florida sleeve part of the operation first, completing the operation by implanting autopericardial cusps in appropriate sizes, as in the Ozaki technique.

Results: There was no mortality or major morbidity after these operations. The mean cross-clamp time was 98±21 min. All patients spent one to two days in the intensive care unit. The mean follow-up time was 12±6 months. None of the patients developed more than Grade 1 aortic insufficiency postoperatively. None of the patients required warfarin.

Conclusion: The findings demonstrate that the reconstructive approach of the reinforced Ozaki root repair, termed the FLOZ (Florida + Ozaki) operation, may be safely and reproducibly performed in a wide cohort of patients requiring aortic root management.

Keywords: Aortic root repair, Florida sleeve, Ozaki operation.

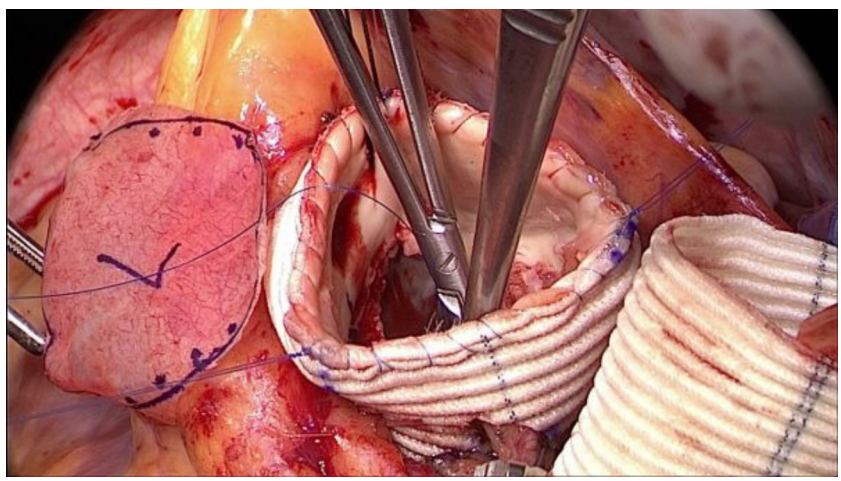

Figure 1. Intraoperative view of the FLOZ operation at the neocusp implantation stage, following completion of the Florida sleeve.

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Physician - Valvular Diseases and Surgery

[MSB-55]

Surgical Treatment of Infective Endocarditis

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Objective: This study aimed to offer an analysis of our surgical experience in patients with active infective endocarditis (IE).

Methods: The retrospective study included 29 patients who underwent surgery for active IE between December 1, 2022, and August 31, 2024. Patients received valve replacement or repair, debridement of infected tissues, or explantation and replacement of infected prosthetic devices.

Results: The operative and early mortality rate was 30% (n=9). Postoperative complications occurred in 24.1% of patients. Advanced age, heart failure, prosthetic valve endocarditis, and *Staphylococcus aureus* infection were associated with higher mortality rates. Postoperative complications included reexploration of the thoracic cavity, pacemaker implantation, hemodialysis, deep sternal infections, and further valve surgery for three patients.

Conclusion: Surgical treatment of IE remains crucial and life-saving, particularly for patients unresponsive to antibiotic therapy or those with complications. Early diagnosis, prompt antibiotic initiation, and timely surgical intervention are essential for optimal outcomes.

Keywords: Heart surgery, infective endocarditis, valve surgery.

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Physician - Physician Abstract » Peripheral Artery Diseases and Surgery/Percutan Interventions

[MSB-56]

Comparison of Drug-Coated Balloon Angioplasty Alone and Directional Atherectomy Combined with Drug-Coated Balloon Angioplasty in Patients with Lower Extremity Peripheral Arterial Disease with Claudication

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Objective: The objective of the study was to compare drug-coated balloon (DCB) angioplasty alone and directional atherectomy (DA) combined with DCB angioplasty in patients with lower extremity peripheral arterial disease (LE-PAD).

Methods: A total of 226 patients treated with DCB angioplasty alone (Group A) and DA combined with DCB angioplasty (Group B) were enrolled in the retrospective study. Patients with severe and occluded LE-PAD were included. Demographic data, atherosclerotic vessel properties, and procedural data were recorded. Success rates (technical, procedural, and clinical) were presented for both groups.

Results: For baseline characteristics, only tobacco use and hyperlipidemia were higher in Group B (p=0.001 and p=0.010, respectively). For the ankle-brachial index, no significant difference existed at the 1-, 3-, 6-, 12- or 24-month follow-ups. No significant difference existed for the Rutherford class at the first, third, sixth, or 12th months according to the groups. A significant difference was found at the 24-month Rutherford levels. The incidence of severe claudication in Group A was significantly higher than in Group B (n=13, 12.4% *vs.* n=3, 2.8%; p=0.035). The stenosis rate after predilatation in Group B was significantly higher than in Group A (54.56±5.36 *vs.* 59.20±6.21, p=0.012). The distribution of full patency at 12 months was significantly higher in Group B than in Group A. The rate of 70 to 100% stenosis at 12 months was significantly higher in Group A than in Group B. The distribution of the patients who were lost to follow-up and those who died during the follow-up, secondary results, primary patency rates, and two-year disease-free survival rates were also similar between the groups.

Conclusion: Directional atherectomy combined with DCB is superior for the long-term treatment of LE-PAD.

Keywords: Atherectomy, balloon angioplasty, peripheral arterial disease, vessel preparation.

Physician - Minimal Invasive, TAVI, Robotic Cardiac Surgery

[MSB-59]

Comparison of Outcomes in Patients Undergoing Mitral Valve Surgery and Cryoablation with Sternotomy and Thoracotomy

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Objective: This study aimed to show the differences in the results of cryoablation simultaneously applied with the operation to convert atrial fibrillation (AF) to sinus rhythm in patients with AF who underwent mitral valve surgery and the differences in the thoracotomy and sternotomy groups.

Methods: A total of 62 patients who underwent mitral valve surgery in a single center between 2017 and 2023 were included in the study. The patients were divided into two groups: the sternotomy group and the thoracotomy group. Patient data in the study were obtained by file scanning and current patient records. In the study, the preoperative demographic characteristics, the medications, additional diseases, echocardiographic findings, mitral valve pathologies, laboratory values, AF types of the patients, data related to the operation, intensive care unit and hospital stays, and data on postoperative early- and mid-term complications were recorded.

Results: The length of hospital stay, the age at surgery, and the preoperative left atrium diameter and alanine transaminase value were found to be higher in the sternotomy group. The preoperative albumin value was higher in the thoracotomy group compared to the sternotomy group. In addition, a tricuspid ring was more frequently applied in the sternotomy group. The cardiopulmonary bypass period was significantly longer in the thoracotomy group. The rate of respiratory failure and pericardial effusion development were significantly higher in the sternotomy group. No significant difference was found in terms of postoperative rhythms, laboratory values, and other complications in both groups.

Conclusions: Cryoablation is an effective method in correcting existing AF to sinus rhythm. In patients who undergo cryoablation simultaneously with mitral valve surgery, thoracotomy produces more positive results than sternotomy.

Keywords: Atrial fibrillation, cryoablation, mitral valve, sternotomy, thoracotomy, minimal invasive mitral surgery.

Physician - Coronary Artery Diseases and Surgery

[MSB-61]

Open Heart Surgery in Patients with A Lung Mass: A Single-Center Experience

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Objective: This study aimed to share our experience with patients with heart disease requiring open heart surgery who also had a concomitant lung mass.

Methods: This retrospective study included 22 patients (20 males, 2 females; mean age: 63.6 years; range, 43 to 79 years) who required open heart surgery and had a detected lung mass during preoperative evaluation. All the patients were discussed between cardiac and thoracic surgery teams, and different approaches according to patient and mass characters were chosen. Thoracic computed tomography and positron emission tomography scans and, when needed, biopsies were used to determine mass characters.

Results: Seven patients were deemed to have small benign nodules, and it was decided not to intervene on the mass. A biopsy before surgery was performed in two patients, and an intervention was not deemed necessary in these patients. One patient was evaluated as having late-stage lung cancer, and no cardiac surgical intervention was performed. Ten patients underwent cardiac surgery and lung resections or lobectomies in a simultaneous operation. Two of the patients subsequently underwent a separate thoracic surgery after the cardiac surgery. There was no perioperative mortality or myocardial infarction.

Conclusion: Managing patients with both cardiac disease requiring surgery and a lung mass is complex and necessitates a multidisciplinary approach. The decision to perform combined surgery or staged procedures should be individualized based on patient-specific factors, the nature of the lung mass, and the urgency of the cardiac condition. While outcomes for combined procedures are generally favorable in well-selected patients, they require meticulous perioperative planning and long-term follow-up.

Keywords: Cardiac surgical procedures, lung neoplasms, thoracic surgery.

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Physician - Coronary Artery Diseases and Surgery

[MSB-62]

Comparison of Left Internal Mammary Artery to the Left Anterior Descending Artery Graft Patency

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Objective: This study aimed to compare the efficacy of the bidirectional palpation test and the results of transit time flow meter (TTFM) measurements by examining graft patency through early-period coronary computed tomography angiography.

Methods: The study was designed as a retrospective-prospective hybrid cohort study. Graft patency in the left internal mammary artery (LIMA) to left anterior descending artery anastomosis of 73 patients was evaluated. The results of the bidirectional palpation test and TTFM measurements performed during coronary artery bypass grafting were compared with contrast-enhanced coronary computed tomography angiography performed in the early postoperative period.

Results: Graft patency was statistically significantly higher in patients with a positive bidirectional palpation test compared to those with a negative test ($p<0.001$). Similarly, graft patency was significantly higher in patients with a mean flow of 10 mL/min or more compared to those with a mean flow below 10 mL/min ($p=0.001$).

Conclusion: A significant positive correlation was revealed between the bidirectional palpation test and the mean flow measured by TTFM. Additionally, both the bidirectional palpation test and TTFM accurately demonstrated the intraoperative LIMA graft patency. These findings indicate that both tests can be reliably used in the assessment of the LIMA to left anterior descending artery anastomosis.

Keywords: #CABG #coronary artery bypass grafting #LIMA to left anterior descending artery anastomosis #transit time flow meter #coronary computed tomography angiography #graft patency.

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Others

[MSB-63]

The Demographic Impact of Coronavirus Disease 2019 on Open Heart Surgery: A Cardiac Center Perspective

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Objective: This study aimed to present the demographic changes from the pre-COVID-19 (coronavirus disease 2019) pandemic period to the postpandemic period.

Methods: In this retrospective study, 12,409 cases of adult open heart surgery performed between March 2018 and March 2024 were reviewed. The cases were divided into three groups: the pandemic group spanning from March 2020, when the pandemic was declared, to March 2022, when pandemic restrictions were lifted in Türkiye; the prepandemic group from March 2018 to March 2020; and the postpandemic group from March 2022 to March 2024. The cases were statistically analyzed based on parameters such as age, sex, weight, height, body mass index, body surface area, surgical timing, and procedure type.

Results: Statistically significant increases in mean age were observed for cases before, during, and after the pandemic ($p<0.05$). In the pandemic group, the proportion of male patients, isolated coronary bypass surgeries, and emergency surgical procedures were significantly higher compared to the prepandemic and postpandemic groups ($p<0.05$). Additionally, the rate of combined complex surgery with coronary bypass significantly increased after the pandemic compared to before and during the pandemic ($p<0.05$).

Conclusion: The age of cases undergoing open heart surgery has advanced over time. The increase in the rate of emergency surgical procedures and coronary bypass surgeries after the pandemic suggests both direct and indirect effects of COVID-19.

Keywords: Cardiac surgery, COVID-19, demographic.

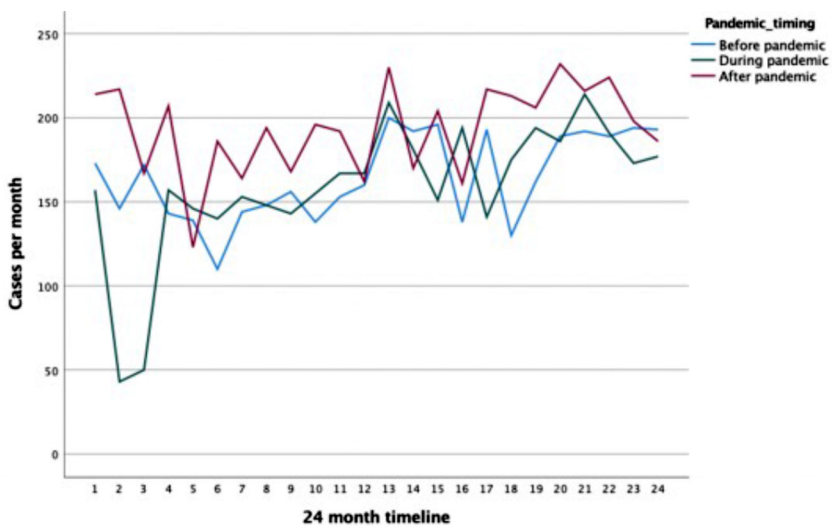

Figure 1. Case count by timeline.

Physician - Heart Failure, Transplantation and Mechanical Support Systems

[MSB-64]

Heartmate 3 In Heart Failure Treatment: Initial Experience of A Newly Established Mechanical Circulatory Support and Heart Transplantation Center

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Objective: This study aimed to share our experience with HeartMate 3 (HM3), a ventricular assist device.

Methods: Seven male patients with the diagnosis of end-stage heart failure underwent HM3 implantation between August 2023 and August 2024. Three patients were INTERMACS (Interagency Registry for Mechanically Assisted Circulatory Support) Stage 1 (42.8%), three patients were INTERMACS Stage 2 (42.8%), and one patient was INTERMACS Stage 3 (14.2%). A bridge to transplant was aimed in 71% of patients, with the rest being destination therapy. One patient underwent reexploration in the early postoperative period due to hemorrhage. Warfarin sodium and acetylsalicylic acid were given for anticoagulation and antiaggregation therapy, with a target INR (international normalized ratio) between 2.5 and 3.0.

Results: Overall support time was between 230 and 395 days, with a mean of 253 days. Two patients developed acute renal failure during the early postoperative period. One patient underwent mediastinal exploration during the early postoperative period due to hemorrhage. One patient developed an outflow graft thrombosis requiring corrective reoperation. This patient died on the first postoperative day due to an intractable right ventricular failure. The mortality rate was 14.2% in this series.

Conclusion: In certain cases with advanced heart failure, patients can be severely impaired and symptomatic despite maximum medical treatment. Since donor organ availability is limited in the current social environment, left ventricular assist device implantation is the only logical option for the treatment of this patient group as a bridge to transplant or destination therapy.

Keywords: Heart failure, Heartmate 3, left ventricular assist device.

Physician - Vascular Acccess

[MSB-65]

Investigation of the Effect of Ipsilateral Central Venous Catheter on Arteriovenous Fistula

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Objective: This study aimed to assess the association between a history of ipsilateral central venous catheter (CVC) and arteriovenous fistula (AVF) failure.

Methods: Ninety-eight patients who underwent primary distal radiocephalic AVF between July 2023 and June 2024 were retrospectively examined through institutional records and follow-up examination notes.

Results: Arteriovenous fistula failure was observed in 28 (28.6%) patients. Sixteen (16.3%) of these patients had ipsilateral CVCs at the time of operation, and 31 (31.6%) had a history of ipsilateral CVC. The analysis revealed a statistically significant association between ipsilateral CVC at the time of operation and AVF failure (p=0.03). No relationship was observed between the history of ipsilateral CVC and AVF failure. Those with higher levels of low-density lipoprotein cholesterol and hemoglobin A1c had higher AVF failure rates (p=0.045 and p=0.048, respectively).

Conclusion: Although the history of ipsilateral CVC was not associated with AVF failure, ipsilateral CVC at the time of the operation was found to be related to higher AVF failure rates. Avoiding interventions to ipsilateral vasculature preoperatively appears to be beneficial for AVF success. Moreover, preoperatively optimizing patients' blood sugar and cholesterol levels may be favorable.

Keywords: Arteriovenous fistula, arteriovenous fistula failure, central venous catheter.

Physician - Valvular Diseases and Surgery

[MSB-66]

Does Balloon Dilatation Increase the Need for A Permanent Pacemaker in Sutureless Aortic Valve Replacement?

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Objective: This study aimed to present the results of balloon dilatation in sutureless valves considering the temporary and permanent need for a pacemaker.

Methods: Thirty-eight patients (27 females, 11 males; mean age: 69.42±4.85 years; range, 61 to 82 years) who underwent surgical aortic valve replacement with a sutureless aortic valve bioprosthesis between January 2019 and June 2024 and received balloon dilation at 4 atm (standard atmosphere) pressure for 30 sec during the procedure were retrospectively evaluated. Demographic data, preoperative and postoperative echocardiographic data, and postoperative follow-up data of the patients were collected.

Results: On preoperative echocardiographic evaluation, the mean aortic root diameter was 20.99±2.24 mm, the ejection fraction was 59.29±9.57%, and the mean preoperative aortic valve gradient was 38.08±7.31 mmHg. Isolated aortic valve replacement was performed in 22 (57.9%) patients, concomitant coronary bypass was performed in 14 (36.8%) patients, and ascending aorta replacement was performed in two (5.3%) patients. A small valve was inserted in six patients, a medium valve in 13 patients, a large valve in 17 patients, and an extra-large valve in two patients. The mean postoperative aortic valve gradient was 11.52±3.36 mmHg. After surgery, three (7.9%) patients were transferred to the intensive care unit with temporary pacemakers. Permanent pacemaker implantation was required in three (7.9%) patients due to complete atrioventricular block.

Conclusion: Although the clinical results with sutureless aortic bioprostheses are satisfactory, the use of balloon dilatation increases the need for permanent pacemakers.

Keywords: Aortic, balloon, pacemaker, sutureless.

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Physician - Coronary Artery Diseases and Surgery

[MSB-69]

Can OPCAB in Proximal Left Anterior Descending Artery Lesions Be A Criterion for Determining the Indication?

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Objective: This study aimed to demonstrate the early mortality results of the minimally invasive off-pump coronary artery bypass surgery.

Methods: Fifteen patients (11 males, 4 females; mean age: 62 years) who underwent OPCAB between December 2021 and July 2024 were retrospectively analyzed. All patients had a left anterior descending artery (LAD) stent and in-stent stenosis or stent thrombosis. All patients underwent left internal mammary artery to LAD anastomosis on a beating heart without cardiopulmonary bypass via thoracotomy.

Results: There was no early mortality. The mean duration of hospitalization was 5.1 days. One patient developed postoperative atrial fibrillation. All patients were discharged. One patient was reintubated due to pleural effusion after discharge.

Conclusion: We believe that not performing sternotomy and not using cardiopulmonary bypass are important in terms of reducing procedure-related comorbidities and could have significant effects on the patient's treatment decision. Moreover, the use of a left internal mammary artery to LAD anastomosis appears to be more advantageous than percutaneous coronary intervention in terms of long-term patency.

Keywords: Minimally invasive direct coronary artery bypass, off-pump coronary artery bypass.

Physician - Coronary Artery Diseases and Surgery

[MSB-70]

Prognostic Value of the Hemoglobin, Albumin, Lymphocyte, Platelet Score in Predicting One-Year Mortality and Complications in Patients Undergoing Isolated Coronary Artery Bypass Grafting

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Objective: This study aimed to investigate the relationship between the hemoglobin, albumin, lymphocyte, platelet (HALP) score, a novel scoring system that reflects systemic inflammation, and one-year mortality and complications in patients undergoing coronary artery bypass grafting (CABG).

Method: The retrospective study included 359 consecutive patients (287 males, 72 females; mean age: 60.9±?? years) diagnosed with coronary artery disease who underwent CABG between January 2020 and February 2023. Patients with concomitant mitral valve replacement, aortic surgery, carotid endarterectomy, aortofemoral bypass, intracardiac tumor excision, mediastinal tumor excision, or those who underwent emergency or urgent procedures were excluded from the study. The patients were divided into two groups based on a HALP score cutoff value of 34.1. Group 1 included patients with a HALP score lower than the cutoff value, while Group 2 included those with a HALP score higher than the cutoff value.

Results: The one-year mortality rate was significantly higher in Group 1 compared to Group 2 (16% *vs.* 5%). Additionally, rates of major adverse cardiovascular and cerebrovascular events, atrial fibrillation, high-dose inotropic support, pneumonia, pleural effusion, prolonged intubation, acute kidney injury, cerebrovascular events, and length of stay in both the intensive care unit and hospital were significantly higher in Group 1 than in Group 2.

Conclusion: The findings of our study indicate that the HALP score can be used to assess one-year mortality and complication risks in patients undergoing isolated CABG. However, to establish it as an independent factor, further analyses with a larger patient population are warranted.

Keywords: Albumin, coronary artery bypass grafting, hemoglobin, leukocytes, mortality, platelet.

Physician - Coronary Artery Diseases and Surgery

[MSB-71]

Optimizing Total Coronary Revascularization: Exploring Total Coronary Revascularization with Anterior Thoracotomy Access Via Third *vs.* Fourth Intercostal Space in Coronary Artery Bypass Graft Surgery

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Objective: This study aimed to assess the feasibility and comparative advantages of accessing total coronary revascularization with right anterior thoracotomy (TCRAT) for coronary artery bypass grafting (CABG) through the third and fourth intercostal spaces.

Methods: A retrospective analysis was conducted on 465 patients who underwent CABG utilizing TCRAT via either the third or fourth intercostal space between January 2022 and April 2024. The third intercostal space was utilized in 315 (67.7%) patients (Group 1), while the fourth intercostal space was utilized in 150 (32.2%) patients (Group 2). Data regarding patient demographics, intraoperative details, postoperative outcomes, and long-term follow-up were collected and analyzed. The primary endpoints included procedural success, perioperative complications, and left internal mammary artery (LIMA) length.

Results: The LIMA length was significantly higher in Group 2 (16.8±0.18 cm *vs.* 18.2±1.12 cm, p=0.013), despite efforts to turn the retractor back and remove the distal side in Group 1. The mean cardiopulmonary bypass time was shorter in Group 1 (73.8±17.2 min *vs*. 89.3±13.4 min) since CPB was not needed for proximal LIMA harvesting, and proximal anastomosis was mostly performed with a cross-clamp. However, cross-clamp time was similar between the groups.

Conclusion: Total coronary revascularization with right anterior thoracotomy for CABG surgery is feasible and effective when accessed through either the third or fourth intercostal space. The fourth intercostal space may provide slightly better visualization for the distal part of LIMA, a longer LIMA graft, and lesser rib fracture, leading to lesser postoperative pain. On the other hand, the third intercostal space is best for proximal LIMA harvesting with lesser LIMA injury without the need for CPB initiation for proximal LIMA harvesting. Surgeon preference, patient anatomy, and procedural considerations should guide the choice of intercostal space for TCRAT implementation in CABG.

Keywords: CABG, LIMA length, TCRAT.

Physician - Minimal Invasive, TAVI, Robotic Cardiac Surgery

[MSB-72]

Comparison of Different Surgical Approaches for Ascending Aortic Surgery with or without Aortic Valve Involvement: Right Anterior Minithoracotomy Versus Conventional Median Sternotomy

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Objective: This study aimed to present our initial clinical experience and show the feasibility and safety of the right anterior minithoracotomy (RAT) approach for ascending aorta surgery with or without aortic valve involvement.

Methods: This single-center study included 112 patients who underwent ascending aortic replacement with or without aortic valve intervention between September 2018 and March 2024. Patients with aortic dissection and a history of previous cardiac surgery were excluded. RAT was performed in 48 (42.9%) patients, and conventional median sternotomy was performed in 64 (57.1%) patients. The primary endpoints included operative variables, reoperation for bleeding, transfusion requirements, extubation time, length of intensive care unit (ICU) and hospital stays, and postoperative complications. The secondary endpoint was 30-day mortality. Ascending aorta and aortic valve morphology were evaluated preoperatively using computed tomography angiography and Doppler echocardiography. Surgical procedures for both groups included the Bentall procedure, valve sparing root replacement (the David procedure), supracoronary ascending aorta replacement, and supracoronary ascending aorta replacement+aortic valve replacement.

Results: Total operation time was significantly lower in the conventional median sternotomy group (237.84±24.87 min *vs.* 259.57±27.41 min, p=0.0001). The mean ventilation time (12.73±2.96 h *vs.* 19.43±4.21 h) and the mean length of ICU stay (1.71±0.86 days *vs.* 3.6±1.71 days) were both shorter in the RAT group (p<0.0001 for both). The rate of wound infection was significantly lower in the RAT group (p=0.036).

Conclusion: Right anterior minithoracotomy is a novel and promising approach for ascending aortic surgery with or without aortic valve involvement. This study suggests that this approach is both feasible and safe. Furthermore, it has the advantages of better wound healing, shorter ICU and hospital stays, less blood transfusion, and a quicker extubation period.

Keywords: Aorta, minimally invasive, RAT.

Physician - Pediatric Cardiac and Vascular Surgery/Adult Congenital Heart Diseases

[MSB-73]

Hypertrophic Obstructive Cardiomyopathy Management in the Pediatric Population: The Dilemma of Mitral Valve Replacement

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Objective: This study aimed to share our surgical experience with 10 pediatric patients with hypertrophic cardiomyopathy (HOCM).

Methods: This study included 10 HOCM patients, aged between 8 months and 18 years, who underwent surgery due to conditions such as aortic insufficiency, mitral insufficiency, significant narrowing of the left ventricular cavity, and left ventricular outflow tract (LVOT) obstruction.

Results: Two patients underwent isolated myectomy, while the remaining eight underwent myectomy combined with mitral valve replacement (MVR). Myectomy was performed via aortotomy, left atriotomy, and apical ventriculotomy. All patients had preoperative signs of systolic anterior motion (SAM) and a gradient in the LVOT. In the two patients who underwent isolated myectomy, SAM signs persisted postoperatively. Additionally, the gradient in the LVOT was measured to be higher in isolated myectomy cases compared to cases in which MVR was performed. Despite being in the pediatric age group with narrow annuli, all patients tolerated the MVR procedure with low-profile valves.

Conclusion: According to our experience, simultaneous MVR in pediatric HOCM cases requiring surgery is more effective in enlarging the left ventricular cavity and reducing the gradient in the LVOT, as it allows both the removal of the mitral valvular apparatus and the prevention of SAM. It provides a greater cavity volume gain compared to the alternative manipulation of the mitral valve apparatus. In our clinic, MVR surgery combined with myectomy is safely performed in pediatric HOCM cases.

Keywords: Hypertrophic obstructive cardiomyopathy, mitral valve replacement.

Figure 1. Image of miyocardial tissue from a patient with HOCM.

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Physician - Aortic (Abdominal) Pathologies and Surgery/Endovascular Interventions

[MSB-74]

Endovascular Aortic Aneurysm Repair, Thoracic Endovascular Aortic Repair (TEVAR) Methods Used in Our Clinic and Comparison of Results

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Objective: This study aimed to describe the cases treated with endovascular aortic aneurysm repair (EVAR) and thoracic endovascular aneurysm repair (TEVAR) and their results in our clinic.

Methods: This retrospective study included 30 patients (26 males, 4 females; mean age: 62.46 ±16.17 years; range, 18 to 77 years) who underwent endovascular repair for aortic aneurysms between July 2020 and June 2024. Demographic and clinical characteristics of the patients, aneurysm, surgery and methods, short- and long-term follow-up were analyzed.

Results: Traumatic aortic dissection was observed in four patients, and infrarenal abdominal aortic aneurysms were observed in 19 patients. The surgery was 90 min. All patients underwent complete recovery. No complications were observed in short-term follow-up.

Conclusion: In conclusion, EVAR and TEVAR can be performed safely with increasing experience. Our early surgical results are compatible with the literature.

Keywords: EVAR, TEVAR.

Mediterranean Cardiovascular Conference (MECC)

November 21-24, 2024 / Antalya, Türkiye

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Poster Presentations

Physician - Peripheral Artery Diseases and Surgery/Percutan Interventions

[MEP-02]

A Buerger's Patient with Brachial Artery Aneurysm

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Thromboangiitis obliterans (TAO) is a chronic, inflammatory and thrombotic vascular disease associated with tobacco use. This report described a TAO patient who underwent an aneurysmectomy due to a brachial artery aneurysm (BAA), which is not one of the classic findings of TAO and has no example in the literature. A 49-year-old male patient presented with swelling and pain in the right arm. In 2021, the patient was diagnosed with TAO. On physical examination, a pulsatile mass extending from the antecubital region was observed. Ultrasonography revealed aneurysmatic enlargement and mural thrombus (Figure1). Brachial aneurysmectomy was planned. The cephalic vein graft was interposed between the brachial artery and the radial artery. There was no flow issue. No postoperative complications were observed. The patient was discharged on the second day. Pathological examination was evaluated as compatible with TAO. After three months, the patient had no symptoms. Usually, BAA occurs due to arteriovenous fistula, trauma, or idiopathic causes. The TAO-specific findings in the pathological examination in this case is rare for BAA. Furthermore, BAA may contain specific pathological findings for TAO, which may be considered an atypical clinical presentation. Smoking may be a common etiological factor for TOA and BAA.

Keywords: Arteritis, brachial artery aneurysm, smoking, thromboangiitis obliterans.

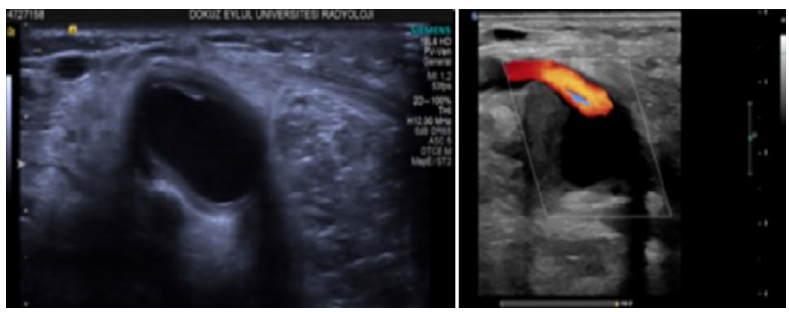

Figure 1. Aneurysmatic enlargement reaching a diameter of 15x25 mm in a segment of approximately 4 cm at the level of the brachial artery-radial artery junction in the right antecubital region.

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Physician - Pediatric Cardiac and Vascular Surgery/Adult Congenital Heart Diseases

[MEP-03]

Repair of the Cardiac Erosion Because of the Occluder Device, A Challenging Situation

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Atrial septal defect is the most common congenital heart disease in adults. Atrial septal occluder devices are popular for treating secundum atrial septal defects. However, it has risks of complications such as cardiac tissue erosion, thrombus, and effusion. A 63-year-old female patient with atrial septal erosion who underwent intervention for secundum atrial septal defect three years ago presented to the clinic. We removed the occluder device and successfully repaired the atrial septum with bovine. While intravascular techniques have been developed for the closure of atrial septal defects, surgery remains important in treatment. Furthermore, occluder devices have important risks. This case demonstrates a successful repair after cardiac tissue erosion due to the occluder device.

Keywords: Atrial septal defect sinus venosus, atrial septum, atrial, cardiac catheterization, heart septal defects, septal occluder device.

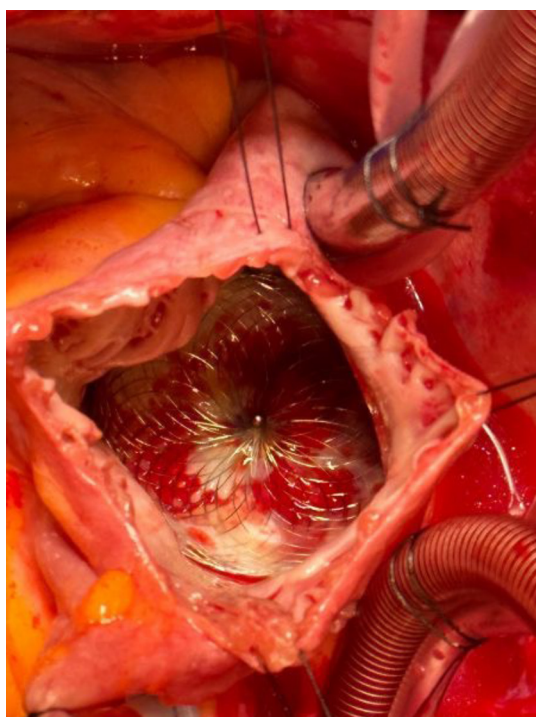

Figure 1. Amplatzer on septal wall.

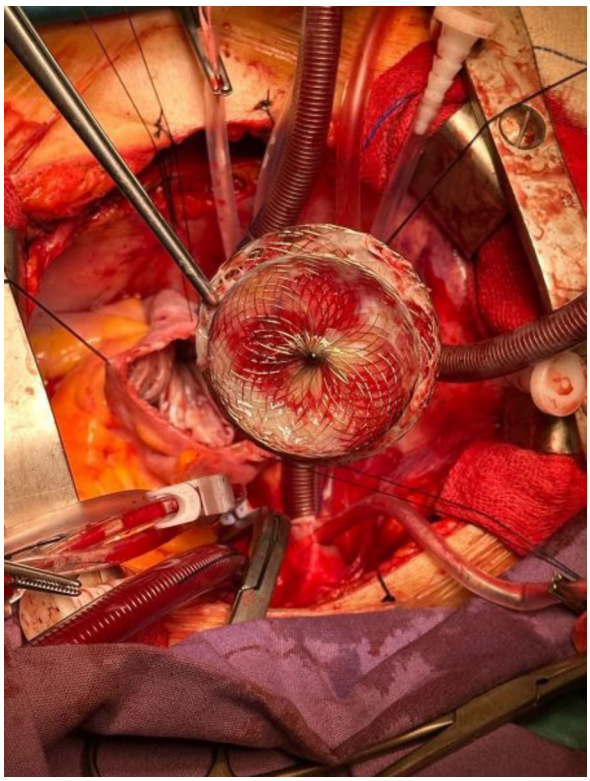

Figure 2. Amplatzer, resected.

Figure 3. Postrepair image.

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Physician - Vascular Acccess

[MEP-05]

Surgical Approach to Brachial Arteriovenous Fistula Thrombosis: A Case Report

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For chronic hemodialysis patients to have long-term vascular access, arteriovenous (AV) fistulas are essential. Immediate intervention is necessary for AV fistula thrombosis, a common complication in hemodialysis patients. To guarantee the fistula's long-term patency, surgical thrombectomy is crucial. Vascular access should be preserved in cases with issues, according to the literature. This case report aimed to provide a literature review and surgical management of brachial AV fistula thrombosis in hemodialysis patients. A 41-year-old female patient who was on hemodialysis for three years due to chronic renal failure presented to the clinic. On physical examination, no thrill was obtained from the left brachial AV fistula. The patient underwent emergency surgery. After systemic heparinization, the cephalic vein was explored from two places, and thrombectomy was performed. The cephalic vein was harvested from the forearm and a bypass was performed from the brachial artery to the cephalic vein. The patient was discharged without any postoperative complications. During the follow-up, the fistula remained functional, and hemodialysis continued without any problems. Surgical thrombectomy allows early treatment of thrombosis and preserves the continuity of vascular access required for hemodialysis. Regular follow-up of patients is critical for early diagnosis and treatment of AV fistula thrombosis, improving the patient's quality of life and ensuring uninterrupted continuation of dialysis treatment. This case demonstrates that vascular access can be achieved with surgical thrombectomy and bypass application in a patient with brachial AV fistula thrombosis, highlighting the importance of surgical approach in the management of AV fistula complications.

Keywords: Arteriovenous fistula thrombosis, chronic kidney failure, renal dialysis, thrombectomy.

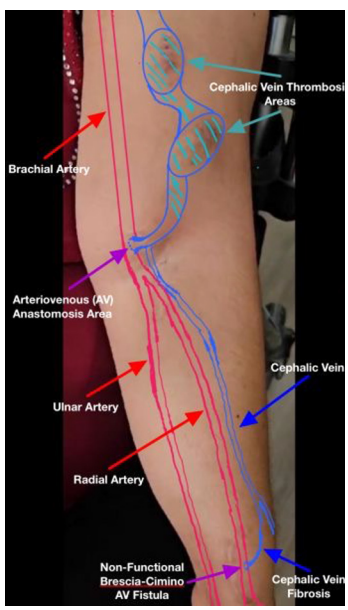

Figure 1. Schematic representation of cephalic vein thrombosis and nonfunctional Brescia-Cimino arteriovenous fistula.

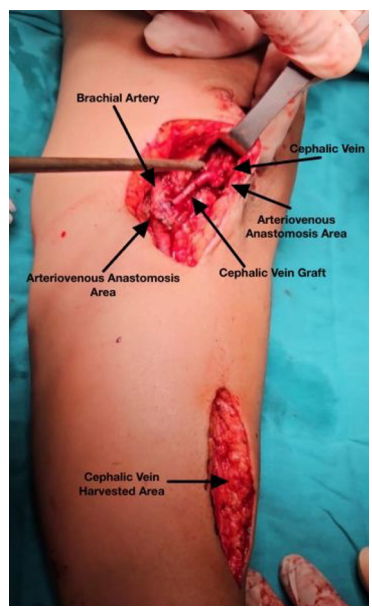

Figure 2. Intraoperative view of arteriovenous anastomosis using cephalic vein graft for brachial artery repair.

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Physician - Vascular Acccess

[MEP-07]

External Iliac Vein Injury and Retroperitoneal Hematoma After Femoral Dialysis Catheter Insertion: A Case Report

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In patients with chronic kidney disease undergoing hemodialysis, dialysis catheters are frequently used to provide vascular access. However, this procedure can lead to significant complications. Retroperitoneal hematoma is a rare but potentially life-threatening complication of femoral vein catheterization. This case report discusses the surgical management of a retroperitoneal hematoma that developed after the insertion of a left femoral dialysis catheter. A 21-year-old female patient with a known history of chronic kidney disease secondary to bilateral hydronephrosis who was on hemodialysis for five years presented to the clinic. After the insertion of a left femoral dialysis catheter, the patient developed severe abdominal pain, nausea, and vomiting. Contrast-enhanced computed tomography revealed that the left femoral catheter had migrated into the retroperitoneal space, forming a large hematoma. Emergency surgical intervention was performed, including the removal of the catheter, evacuation of the retroperitoneal hematoma, and repair of the external iliac vein. Additionally, the gynecology department performed surgical intervention on an ovarian cyst, and the general surgery team controlled the bleeding. The patient had an uneventful follow-up. The literature indicates that appropriate surgical intervention positively influences prognosis in such cases. Awareness of possible complications during femoral vein catheterization can prevent delays in diagnosis and improve patient survival. As demonstrated in this case report, timely surgical intervention without removing the catheter is crucial in preventing additional complications in cases of retroperitoneal hematoma.

Keywords: Chronic, femoral vein catheterization, renal dialysis, renal insufficiency, retroperitoneal hematoma, vascular access.

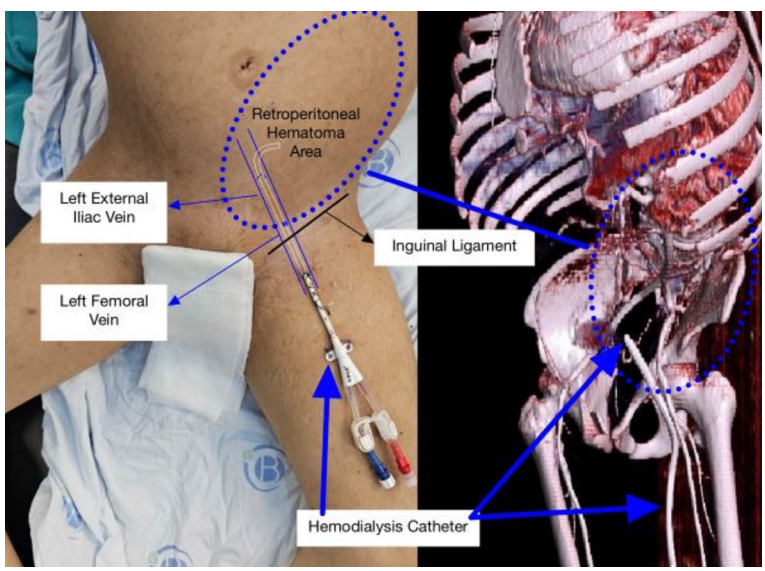

Figure 1. Localization and extent of the retroperitoneal hematoma following left femoral vein hemodialysis catheter insertion.

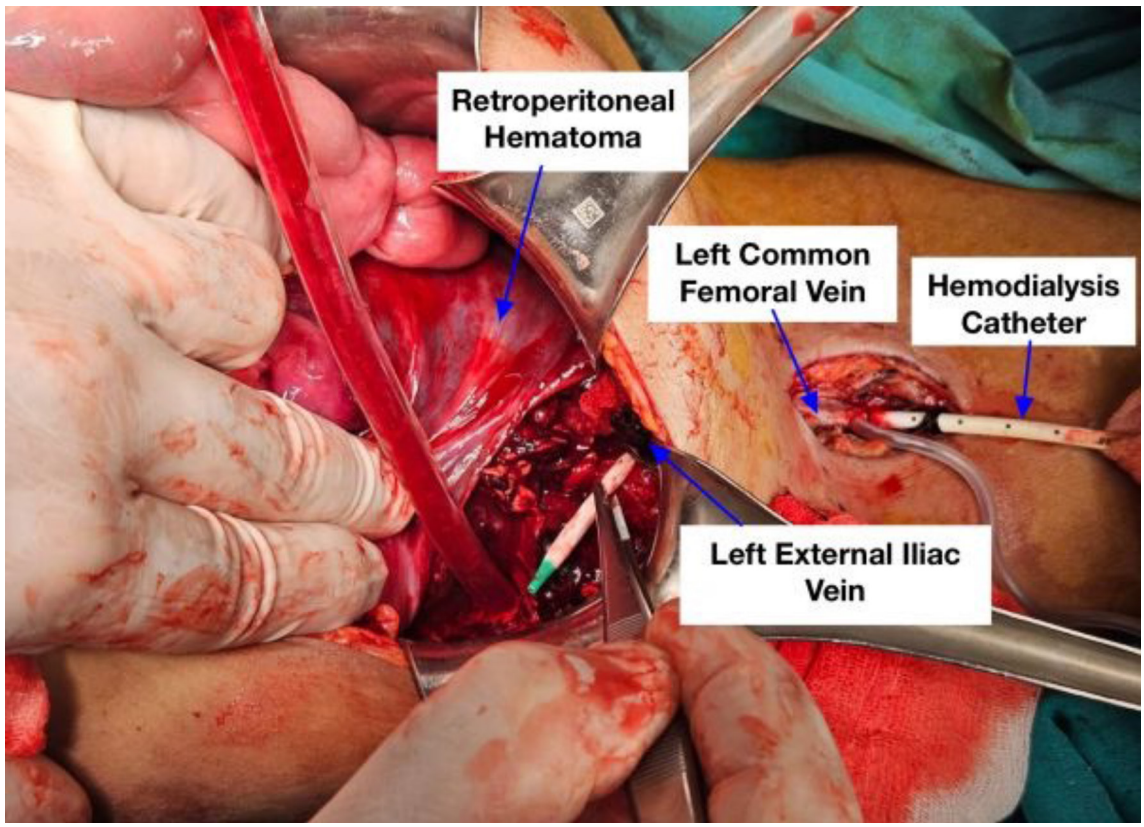

Figure 2. Intraoperative view of retroperitoneal hematoma with left common femoral vein and external iliac vein exposure.

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Physician - Minimal Invasive, TAVI, Robotic Cardiac Surgery

[MEP-10]

Our Experience With Axillary Cannulation in Minimally Invasive Bypass Patients

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Objective: This study aimed to evaluate the outcomes of patients operated on using extracorporeal membrane oxygenation (ECMO) cannulas inserted into the axillary artery via the Seldinger technique after exploring the axillary artery.

Method: Eighteen patients who underwent minimally invasive bypass surgery with an ECMO cannula via axillary artery cannulation between January 2024 and August 2024 were retrospectively reviewed.

Results: All 18 patients had successful ECMO axillary artery cannulation without any incidents of axillary artery damage. There were no cases of ischemia, edema, or permanent neurological deficits in the right upper extremity, and no infections were observed at the cannulation site. The mean time to extubation after the operation was 6 h, the mean intensive care unit stay was 1.05 days, and the mean hospital stay was 5.9 days. No prolonged intubation or mortality was observed.

Conclusion: As the prevalence of minimally invasive direct coronary artery bypass grafting increases, so does the need for alternative cannulation techniques. Axillary artery cannulation presents as a significant option. Its primary benefits include providing antegrade cerebral and systemic perfusion and eliminating the risk of retrograde embolization. However, local complications such as brachial plexus and axillary artery damage may occur. The use of the Seldinger technique with an ECMO cannula can minimize these risks. Our study found no systemic or local side effects with this technique in the operated patients.

Keywords: Axillary cannulation in minimally invasive bypass.

Physician - Heart Failure, Transplantation and Mechanical Support Systems

[MEP-11]

Replantation of Traumatic Limb Loss: A Case Report of Multidisciplinary Approach with Cardiopulmonary Bypass Technique for Ischemic Perfusion

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Reimplanting a traumatically amputated limb requires minimal ischemia duration with adequate perfusion at low temperatures. Cardiopulmonary bypass (CPB) techniques play a significant role in the limb salvage algorithm in reducing ischemia time, allowing planning, and preventing reperfusion injury. A 23-year-old female was admitted to the emergency department due to a traffic accident. The right arm at the shoulder and the left arm at the elbow were amputated. The patient was initially taken into surgery due to injuries to the liver and spleen. During this process, a CPB circuit was used to perfuse the amputated limb.

The total cold ischemia time of the limbs was 90 min. The right arm's brachial and the left arm's radial arteries were used for arterial cannulation. A 10-Fr arterial cannula was placed in the left brachial artery. The right radial artery was cannulated with a 20-gauge branula and connected to the arterial cannula via a vascular line. The limbs were placed in a sterile container at an angle of 20°C. The venous flow was first accumulated and then returned to the CPB circuit using a sucker. Since the weights of the amputated limbs were unknown, appropriate cannula sizes and flow rates were determined using the rule of nine. The weight was calculated as 2 kg, and the surface area as 0.12 m^2. Tissues were perfused at 25°C for 224 min with a maximum flow rate of 288 mL/min. After CPB, replantation of both amputated limbs was performed by plastic surgery. The right arm was demarcated, and a secondary amputation was made on the 21st postoperative day. The left arm was consistent with positive findings in the motor and sensory examinations approximately six months later.

Figure 1. Appearance of the replanted forearms before amputation.

Figure 2. Cardiopulmonary bypass circuit is perfusing the amputated forearm.

Complex limb salvage procedures require a multidisciplinary approach. Cardiopulmonary bypass plays a critical role in the algorithm in prolonging the critical period of ischemia, facilitating replantation planning, and preventing reperfusion injury.

Keywords: Cardiopulmonary bypass, noncardiac surgery, perfusion, replantation.

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Physician Abstract » Aortic (Thoracic) Pathologies and Surgery/Endovascular Interventions

[MEP-12]

Rare and Catastrophic Complication After Bentall Operation: Right Coronary Artery Button Pseudoaneursym Repaired with Modified Cabrol Technique

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Coronary artery pseudoaneurysm is a rare but fatal complication that can be seen following the Bentall operation. Modified techniques have reduced these complications but they have not completely eliminated them. In this case report, we presented a 65-year-old female patient who underwent a Bentall procedure in 2012 and endovascular coil repair of a right coronary artery button pseudoaneurysm in 2016. Right femoral artery and vein cannulation was performed, and systemic cooling was started. Cardiopulmonary bypass was instituted, and the patient was cooled to 18°C. Deep hypothermic circulatory arrest was started, and resternotomy was performed (deep hypothermic circulatory arrest duration was 7 min). The aneurysm sac was opened. Of the coronary buttons the left main coronary artery orifice was not suitable for direct reimplantation to the new ascending graft, reimplantation was performed with the modified Cabrol technique using an 8-mm Dacron graft. The right coronary artery orifice was primarily closed, and bypass was performed on the Cabrol graft with a saphenous vein graft. The patient was rewarmed and weaned off cardiopulmonary bypass without complication. Intraoperative control fiberoptic bronchoscopy and transesophageal echocardiography showed that the trachea and pulmonary artery compression were completely eliminated. The patient was extubated on time during the intensive care course and made an uneventful recovery. Coronary button pseudoaneurysm complication after modified Bentall surgery requires urgent surgical repair. The modified Cabrol technique can be a lifesaver in such complications and redo cases. Although there are authors who recommend interventional methods first in this complication, we believe that early surgical intervention is more appropriate as it will become more complicated over time.

Keywords: Bentall procedure, coronary artery pseudoaneursym, coronary button pseudoaneurysm, modified Cabrol technique.

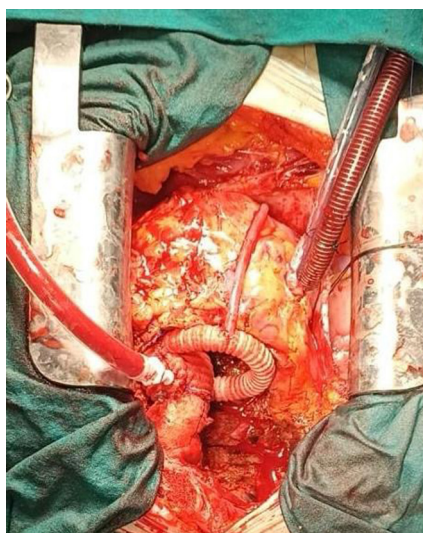

Figure 1. Intraoperative image of the modified Cabrol technique.

Figure 2. Pseudoaneurysm compressing the right pulmonary artery and trachea.

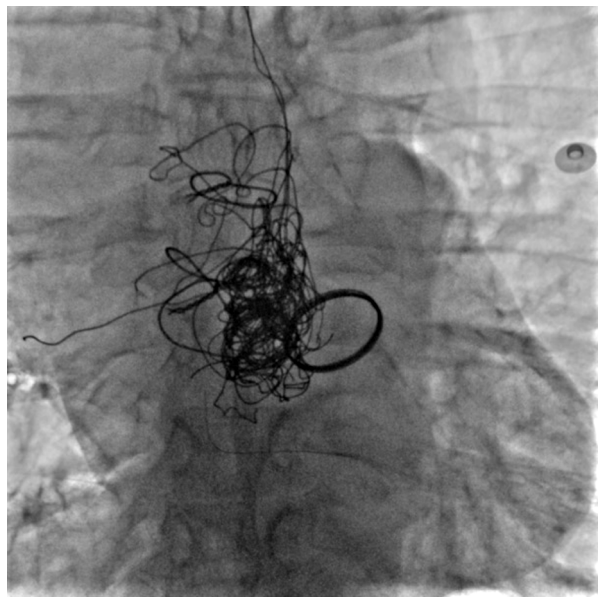

Figure 3. Endovascular coil seen on fluoroscopy.

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Physician - Aortic (Thoracic) Pathologies and Surgery/Endovascular Interventions

[MSB-15]

Arch Replacement in An Elderly Patient With Multiple Comorbidities

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Herein, we presented a case of an extensive aortic arch aneurysm in an elderly patient with significant comorbidities. A 76-year-old male with a history of inguinal hernia, chronic atrial fibrillation, and a stenotic coronary stent presented with an 8-cm ascending aorta and arch aneurysm. The patient also had a single culprit lesion in the left anterior descending artery. Computed tomography revealed the ascending aneurysm starting from the sinotubular junction (STJ) and extending to the proximal descending aorta, with a localized dissection near the subclavian artery origin. The right subclavian artery was used for arterial cannulation and unilateral anterior cerebral perfusion (ACP). After a median sternotomy, the ascending aorta appeared significantly dilated, starting at the STJ, and leaving no room for the inner curvature, making it challenging to apply a clamp. Consequently, the patient was cooled to 20°C, and ACP was initiated via the innominate artery. A 26-mm straight graft was used for the extended hemiarch replacement. After 35 min of ACP and lower body ischemia, the graft was clamped, ACP was stopped, and rewarming commenced, proximal anastomosis was done at the STJ. The saphenous vein graft was then anastomosed to the left anterior descending artery. The patient had an uneventful recovery without any neurological deficit. The one-year computed tomography scan showed a durable repair. Aortic arch aneurysms present a surgical challenge. Unilateral ACP results in excellent neurological outcomes. In this case, debranching technique was not feasible due to the insufficient length of the proximal aorta. Consequently, extended hemiarch was preferred over total arch with or without frozen elephant trunk, for a shorter ACP and lower body ischemia time. Conventional surgery remains the gold standard for arch aneurysms, even in elderly patients with comorbidities.

Keywords: Aneurysm, aorta, aortic arch, aortic surgery, hemiarch replacement.

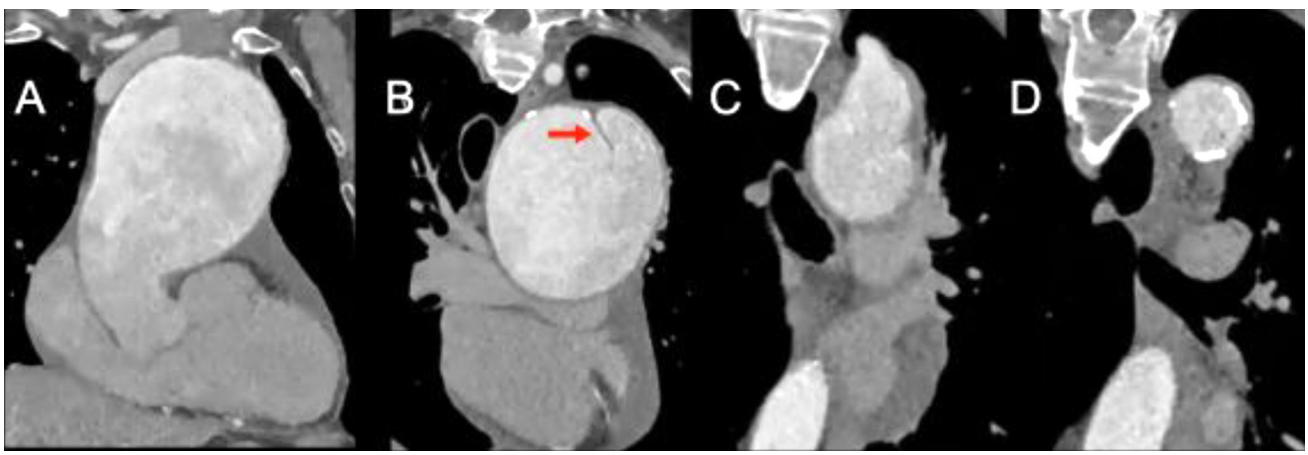

Figure 1. Computed tomography showing the ascending aneurysm (A) starting from the sinotubular junction, extending to the proximal descending aorta (B-D), with a localized dissection near the subclavian artery origin (arrow).

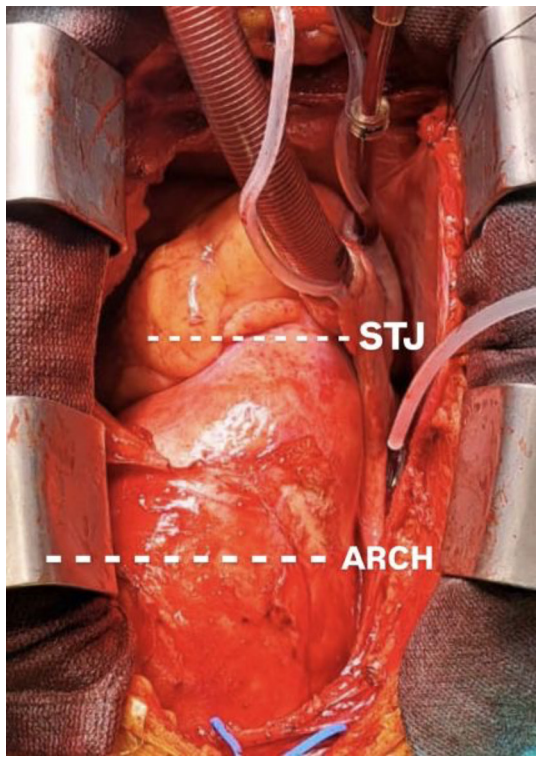

Figure 2. Significantly dilated ascending aorta starting from the sinotubular junction.

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Physician - Pediatric Cardiac and Vascular Surgery/Adult Congenital Heart Diseases

[MEP-18]

Removal of Huge Cardiac Fibroma from the Right Ventricle in an Infant: Video Presentation

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Cardiac fibromas are rare primary benign tumors. They may cause symptoms such as intracavitary obstruction, coronary artery compression, thromboembolic events, conduction defects, and sudden death. They are typically intramural and are often found in the ventricles. In this video article, the surgical excision of a cardiac fibroma measuring 6.2×5×4.3 cm originating from the anterior wall of the right ventricle in an 11-month-old infant was presented. The tumor was located in the anterior wall of the right ventricle. Since exposure was insufficient from the right atrium, intervention could not be performed from within the tricuspid valve. The right ventricle infundibulum was opened from a position away from the mass. The mass, which was seen to be unencapsulated and elastic in consistency, was dissected and stripped from the myocardial tissue. A second incision was made in the right ventricular free wall for the mass that was highly adherent to the anterior wall of the right ventricle and was seen to have thinned the ventricular wall to a great extent. The tumor was completely excised together with the thinned ventricular tissue in the anterior wall. The defect formed by the excision of the highly thinned right ventricular myocardium was closed with 5-0 Prolene sutures, supported by an autogenous pericardial patch. Transesophageal echocardiography revealed that the tumor was completely removed, and the right ventricular and tricuspid valve functions were good. While surgical treatment is curative, total excision may sometimes be difficult or impossible. Nonetheless, partial resections also have a favorable prognosis. Since the involvement of the ventricular septum causes conduction defects and arrhythmias, it is associated with a poor prognosis. For surgical planning, the proximity to critical structures such as the septum, valves, conduction system, and coronary arteries should be rigorously evaluated.

Keywords: Cardiac fibroma, cardiac tumors, congenital heart disease.

Figure 1. Image of the cardiac fibroma.

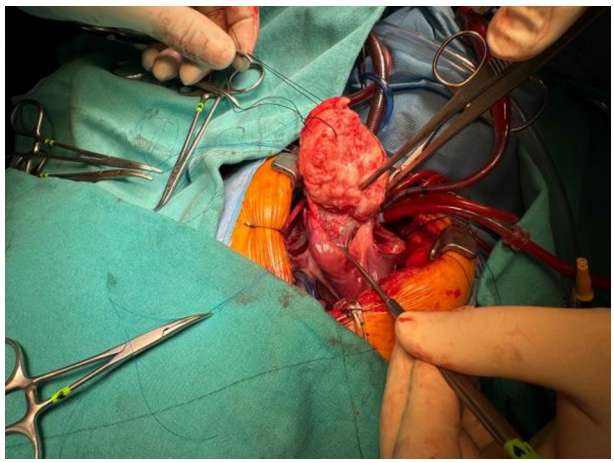

Figure 2. Tumor excision during operation.

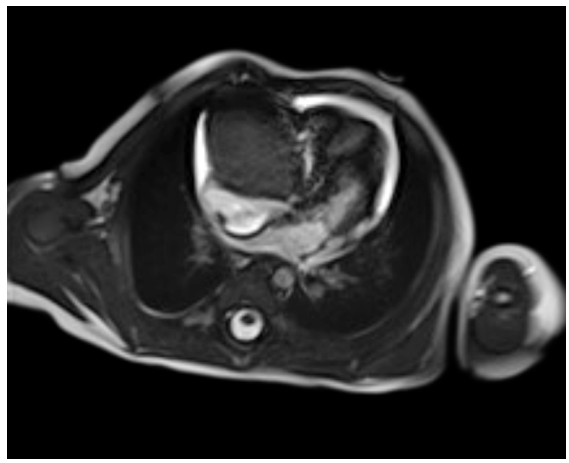

Figure 3. Preoperative magnetic resonance imaging sequence.

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Physician - Coronary Artery Diseases and Surgery

[MEP-19]

Surgery for A Giant Atherosclerotic Left Main Trifurcation Saccular Coronary Artery Aneurysm

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A dilated coronary artery segment larger than 1.5 times the diameter of the reference vessel defines coronary artery aneurysm. Herein, we reported a case of left main trifurcation aneurysm, a challenging anatomy. A 57-year-old female was referred to our department with an exertional angina. The patient had no significant medical history, except for hyperlipidemia and previous history of smoking. All diagnostic tests were standard. However, an electrocardiogram showed anterior T-wave inversion. Computed tomography angiography revealed a saccular left main coronary artery (LMCA) aneurysm at the trifurcation level. Coronary angiography demonstrated a giant saccular aneurysm at the trifurcation of LMCA, measuring 32×21 mm with tight postaneurysmal stenosis in the intermediate artery. The patient underwent surgery under general anesthesia. A median sternotomy was performed. After cannulation and aortic cross-clamping, an LMCA trifurcation giant aneurysm was exposed on the posterolateral aspect of the heart by the help of stay thick nylon tapes, which were passed through oblique and transverse sinuses. The giant saccular aneurysm was carefully dissected. The branches of trifurcation were visualized, and the aneurysm sac was resected. A meticulous endarterectomy was performed at the trifurcation level and reconstructed with saphenous vein roof plasty. Then, the intermediate artery was revascularized with a saphenous graft from ascending aorta. The aortic cross-clamp time was 52 min, and the cardiopulmonary bypass time was 75 min. The patient had an uneventful hospitalization and was discharged on aspirin and warfarin therapy. This case demonstrates that the surgical reconstruction of giant saccular LMCA aneurysms using a saphenous graft patch is safe and allows for percutaneous interventions when necessary.

Keywords: Angiography, coronary artery aneurysm myxoid degeneration, coronary artery aneurysm, coronary disease.

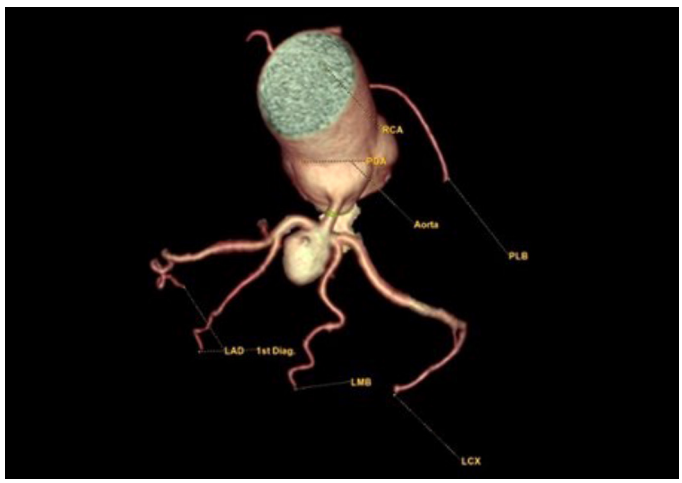

Figure 1. Illustration with three-dimensional reconstructed coronary computed tomography angiography images of the coronary artery aneurysm.

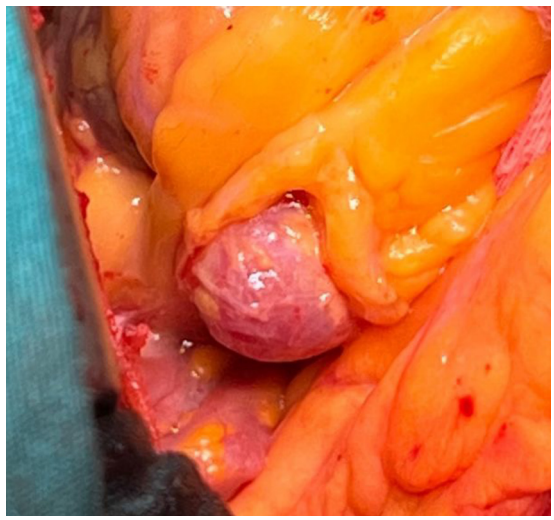

Figure 2. A giant saccular aneurysm at the trifurcation of the left main coronary artery measuring 32x21 mm. Posterior aspect of the pulmonary artery (not transected).

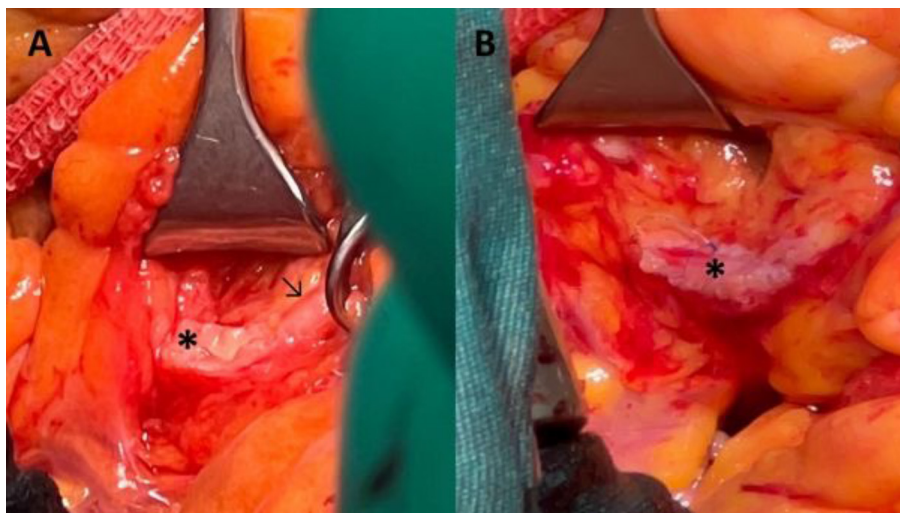

Figure 3. (A) The aneurysm sac was carefully resected. The left main coronary artery, proximally (arrow) and the trifurcation level (asterix). (B) Reconstruction with saphenous vein roofplasty with a continuous 7-0 polypropylene suture ensured the preservation of the native coronary vasculature (asterix).

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Others - Other Abstract

[MEP-21]

Management of Cardiac Bullet Embolism Originating From the Popliteal Vein

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Intravascular missile embolism is comparatively uncommon; however, vascular injury is a frequent consequence of firearm-related accidents. To date, there have been 38 documented cases of intravascular missile embolization to the heart. This case report described the successful surgical management of a patient with a bullet embolism in the right ventricle after a gunshot injury to the left popliteal vein. A 54-year-old male presented with a gunshot wound to the left popliteal fossa. The popliteal vein, which was partially damaged, was primarily repaired. Radiological imaging, including radiographs and computed tomography, revealed the bullet's unexpected location in the apex of the right ventricle. An echocardiogram confirmed the bullet's position and showed minimal pericardial effusion. On arrival, the patient was hemodynamically stable, and lower extremity pulses were palpable, with no evidence of deep vein thrombosis or neurological deficits. Hematological studies were within normal limits. The patient underwent a left anterior minithoracotomy. Cardiopulmonary bypass was established via cannulation of the right femoral artery and vein. With the heart beating, a right ventriculotomy was performed, and the bullet was successfully removed. The ventriculotomy was closed primarily using felt patches. The postoperative course was uneventful, and the patient was stable with no signs of neurological or vascular complications and no significant pericardial effusion on follow-up echocardiography. This case highlights the importance of thorough radiological evaluation in gunshot injuries, even when the entry wound is distant from the final location of the projectile. The use of cardiopulmonary bypass can be effective in managing intracardiac bullet embolism, which is very rare. Prompt diagnosis and careful surgical planning are essential for favorable outcomes in such complex cases.

Keywords: Bullet wound, embolism, vascular injury.

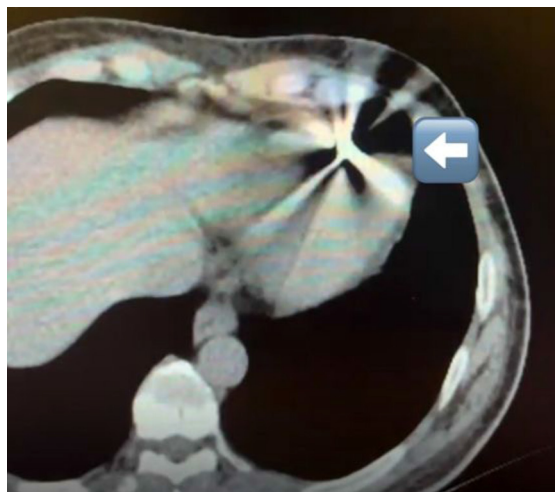

Figure 1. Computed tomography shows foreign body in cardiac apical (white arrow).

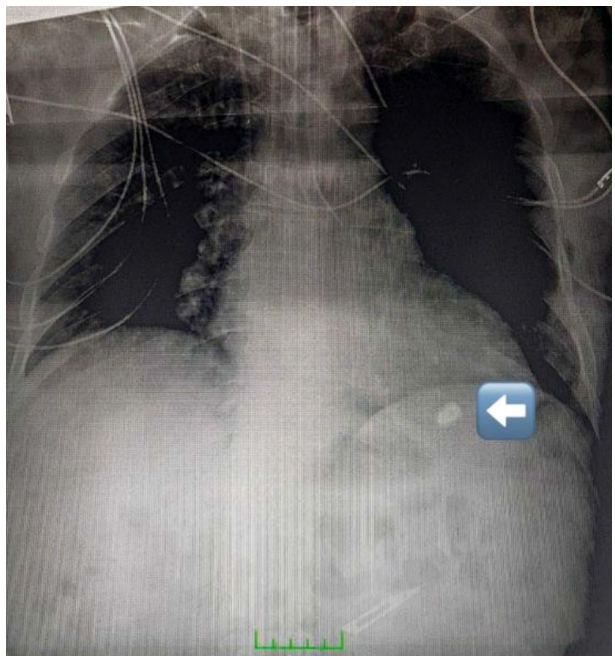

Figure 2. Chest radiograph of bullet in apex of right ventricle (white arrow).

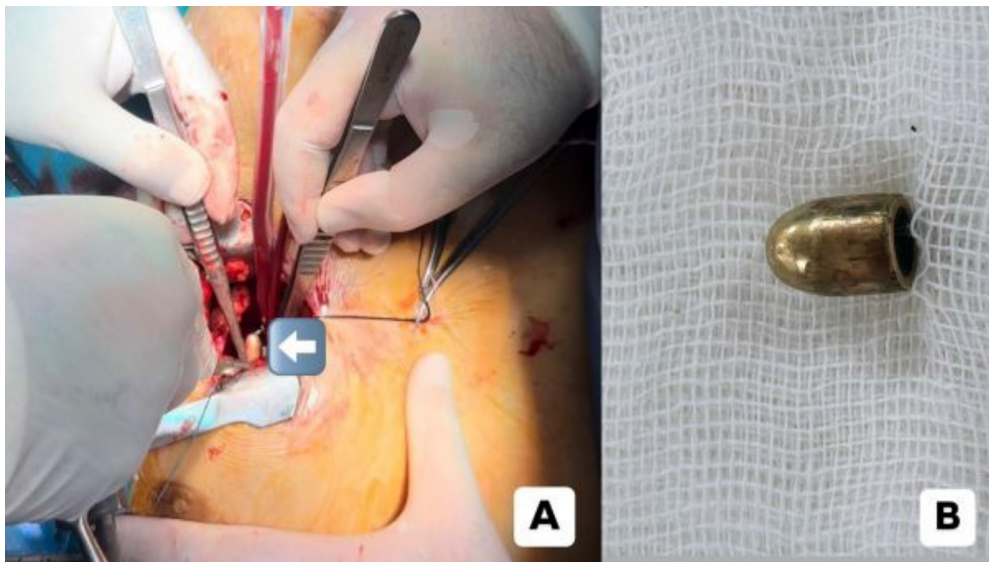

Figure 3. (A) Extracting the bullet from right ventricle (arrow). (B) The extracted bullet.

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Physician - Pediatric Cardiac and Vascular Surgery/Adult Congenital Heart Diseases

[MEP-22]

Acute Cardiac Tamponade Secondary to Pericardial Cyst

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Pericardial cysts are rare, with an estimated incidence of approximately 1 in 100,000, and are typically benign and incidentally discovered. However, pericardial cysts leading to cardiac tamponade are exceptionally rare. Herein, we presented the case of a five-year-old male patient who was admitted to the emergency department with symptoms of acute shortness of breath. Initial echocardiography revealed signs of cardiac tamponade, along with the presence of a cystic lesion within the pericardial cavity. Subsequent computed tomography and magnetic resonance imaging confirmed the presence of the cyst, leading to an emergency surgical intervention. A median sternotomy was performed, revealing a significant accumulation of hemorrhagic liquid, which was aspirated and sent to the pathological examination. A large cyst was identified situated between the aorta, superior vena cava, and right pulmonary artery. The cyst was excised and sent for pathological examination. The procedure was completed without complications. Histopathological analysis of the cyst revealed no evidence of malignancy. The patient had an uneventful recovery and was discharged on the sixth postoperative day in good condition. The patient continued to do well at the 10-month follow-up. This case underscores the importance of considering pericardial cysts in the differential diagnosis of cardiac tamponade, despite their rarity. Early imaging and surgical intervention are critical to preventing fatal outcomes in such cases.

Keywords: Pericardial cyst, pericardial tamponade.

Figure 1. Intraoperative image of the pericardial cyst.

Figure 2. Completely removed pericardial cyst.

Figure 3. Computed tomography image of the pericardial cyst and pericardial tamponade.

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Physician - Pediatric Cardiac and Vascular Surgery/Adult Congenital Heart Diseases

[MEP-23]

Managing Recurrent Chylothorax Post Pediatric Cardiac Surgery

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Recurrent chylothorax following pediatric cardiac surgery poses significant management challenges. Chylothorax may result from direct trauma to lymphatic vessels, or as a complication of central venous hypertension post cardiac surgery, leading to severe complications such as malnutrition, delayed wound healing, infections, and prolonged hospital stays. Initial management includes pleural fluid drainage, dietary modifications or total parenteral nutrition, and pharmacotherapy with octreotide. Surgical options, such as thoracic duct ligation, are considered for refractory cases. Typically, thoracic duct ligation via the right chest is recommended regardless of the chylothorax side, though it may not always be effective. This case report demonstrated the complexities and tailored strategies required to optimize outcomes in such cases. A five-year-old female patient with tricuspid atresia and a large ventricular septal defect, previously treated with pulmonary artery banding, who developed recurrent chylothorax following a cavopulmonary anastomosis, was admitted. Despite initial interventions such as octreotide therapy and total parenteral nutrition, the chylothorax persisted, leading to escalated treatment. Initial right-sided thoracic duct ligation via thoracoscopy did not resolve the chylothorax. Two weeks later, left-sided duct ligation via thoracotomy was performed, which successfully treated the chylothorax. This case emphasizes that lateralization of thoracic duct ligation should be considered based on the side of the chylothorax, challenging the conventional approach of right-sided ligation. Managing recurrent chylothorax requires a systematic and sometimes unconventional approach. This case highlights the need for flexibility in surgical planning and suggests that lateralization of the duct ligation may be more effective in certain scenarios.

Keywords: Chylothorax, congenital heart disease, thoracic duct.

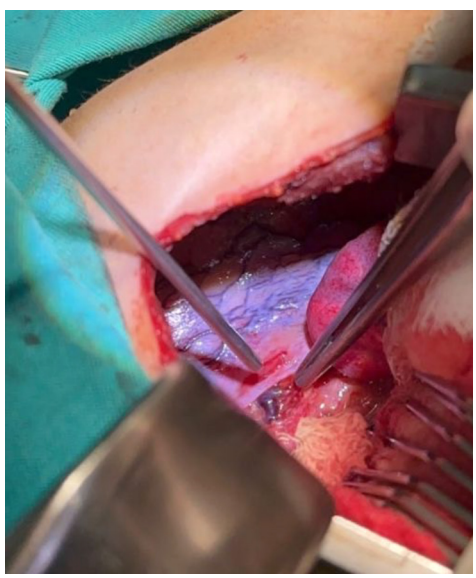

Figure 1. Intraoperative findings.

Figure 2. Chest drain reservoir containing the chyle.

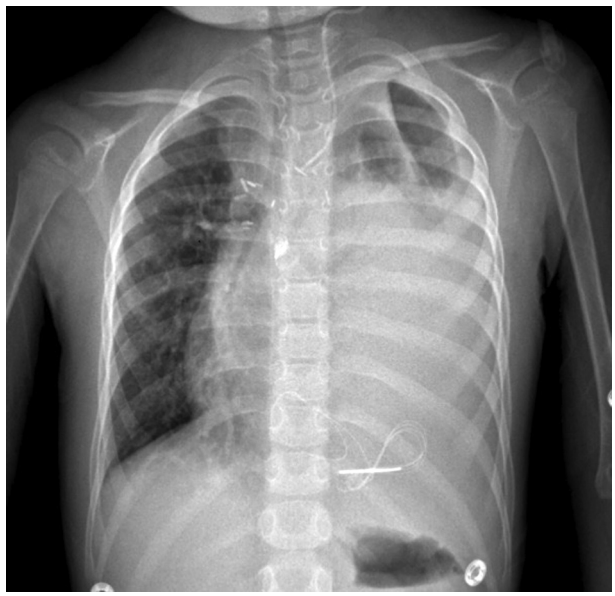

Figure 3. Chest radiograph demonstrating pleural effusion (chylothorax).

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Physician - Peripheral Artery Diseases and Surgery/Percutan Interventions

[MEP-24]

Middle Aortic Syndrome in An Adult Presenting with Limb Ischemia

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Middle aortic syndrome (MAS) is a segmental narrowing of the distal descending thoracic or abdominal aorta. This rare condition accounts for 0.5 to 2% of aortic coarctations. Middle aortic syndrome may be acquired, caused by Takayasu arteritis or giant cell arteritis, neurofibromatosis, fibromuscular dysplasia, retroperitoneal fibrosis, mucopolysaccharidosis, and the Williams syndrome, or it may be congenital. Stenosis is usually located at the suprarenal, interrenal, or infrarenal aorta. Concomitant stenoses in the renal (63%) and visceral (33%) arteries may be encountered. In this case report, we presented a 66-year-old male patient with MAS. The patient's primary complaint was claudication and rest pain in the last three months. The patient had hypertension for two years and a history of lumbar disc hernia operation. Thoracoabdominal computed tomography angiography revealed an enlarged ascending aorta, an aberrant right subclavian artery, and a narrowed segment with an hourglass appearance in the infrarenal aorta. The vessel diameter decreased to 9×10 mm at this level, and both iliac arteries were occluded distally. The patient underwent aortobifemoral bypass surgery with a 14/7 mm Dacron graft. In the postoperative period, all distal pulses were palpable, and leg pain resolved. The patient was discharged from the hospital on the sixth day without complications. This case report presented an adult MAS patient with rest pain in the legs related to occluded iliac arteries and aortic bifurcation. The coarctation in the infrarenal aorta was successfully treated by open surgery (aortobifemoral bypass). Children may benefit more from early diagnosis before the onset of severe hypertension. Open surgery is the primary treatment modality for tubular MAS. Usually bypass of the diseased segment or, less often, patch angioplasty is preferred. Bypass grafting of the stenosed renal and visceral arteries is performed when necessary. Endovascular therapy may provide less invasive treatment.

Keywords: Aortic coarctation, endovascular therapy, middle aortic syndrome, surgery.

Figure 1. Computed tomography angiography shows an enlargement in the ascending aorta and coarctation in the infrarenal aorta.

Figure 2. Computed tomography angiography shows a narrow segment with an hourglass appearance in the infrarenal aorta and occluded iliac arteries.

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Physician - Aortic (Thoracic) Pathologies and Surgery/Endovascular Interventions

[MEP-26]

Safety and Efficacy of Endovascular Repair Using Multilayer Flow Modulators for Thoracic Aortic Aneurysms After Type 1 Aortic Dissection

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Objective: This study aimed to explore the outcomes of thoracic endovascular aortic aneurysm repair (TEVAR) for thoracic aortic aneurysms (TAAs) with or without concurrent endovascular abdominal aneurysm repair (EVAR) using multilayer flow modulator stents.

Methods: This study included 23 patients (16 males, 7 females; mean age: 64 years) who underwent acute type 1 ascending aortic dissection repair. Symptoms varied from chest and abdominal pain, dyspnea, and fatigue to asymptomatic cases. Multislice computed tomography (CT) angiography assessed all segments of the aorta. We identified TAAs in all patients, with four also having abdominal aneurysms. All patients underwent TEVAR, and EVAR was added when necessary, using a multilayer flow modulator. Control CT angiography was conducted one month after discharge.

Results: There were no deaths or major complications. The median interval between primary surgery and CT angiography was 19 months (range, 6 to 60 months). The median hospital stay was 4.2 days. Control angiograms demonstrated 100% technical success with patent aortic lumens and branches. The only complication was a superficial infection in the femoral region. No cases of aortic rupture, stent migration, thrombosis, or stent fracture were observed. One patient had an endoleak at proximal and distal aortic ends, which was addressed with an additional multilayer flow modulator.

Conclusion: Thoracic aortic aneurysms with or without abdominal aneurysms should be considered after type I aortic dissection surgery. We recommend it as an effective treatment method because it does not obstruct blood flow in the visceral arteries in patients with complex aortic aneurysms. Further randomized clinical trials are necessary to validate the effectivity of multilayer flow modulator stent.

Keywords: Endovascular treatment, multilayer flow modulator, thoracic aortic aneurysm.

Physician - Aortic (Thoracic) Pathologies and Surgery/Endovascular Interventions

[MEP-28]

Optimal Management of Thoracic Aortic Mobile Thrombus: Lessons From Clinical Cases

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Thoracic aortic mobile thrombus (TAMT) is a rare and potentially life-threatening condition, often detected due to thromboembolic events. Early diagnosis has improved with advanced imaging modalities such as computed tomography and magnetic resonance imaging. However, no definitive treatment algorithm exists; options include medical management, hybrid approaches, endovascular therapy, and open surgery. This report discussed options in two TAMT patients at our center. In the first case, a 59-year-old female with diabetes and hypertension presented with back and flank pain. Computed tomography angiography revealed a 5.5-cm descending aortic thrombus, with additional splenic and renal infarcts. Emergency thoracic endovascular aortic repair was performed, successfully excluding the thrombus with no embolic events. The patient was discharged on anticoagulants and remained asymptomatic on follow-up. In the second case, a 44-year-old male without comorbidities presented with abdominal pain. Computed tomography angiography showed five descending aortic thrombi, with infarcts in the spleen and kidney. Catheter-directed thrombolysis was performed using alteplase. All thrombi lysed without complications, and the patient was discharged on anticoagulants. Follow-up imaging showed no residual thrombi. Thoracic aortic mobile thrombi can lead to severe complications, including systemic embolization and organ failure. Risk factors include hypercoagulability and conditions such as hypertension and diabetes. Treatment must be individualized based on thrombus location, patient condition, and center expertise. In our cases, thoracic endovascular aortic repair was chosen for a localized thrombus, while multilocation thrombi were managed with thrombolysis. Thrombolytic therapy requires careful monitoring of fibrinogen levels to minimize bleeding risk. With no current guideline directions, treatment should be tailored to the patient by weighing the risks and benefits of interventions based on individual patient factors and institutional resources.

Keywords: Acute aortic syndromes, endovascular procedure, thoracic aorta, thrombolytic therapies.

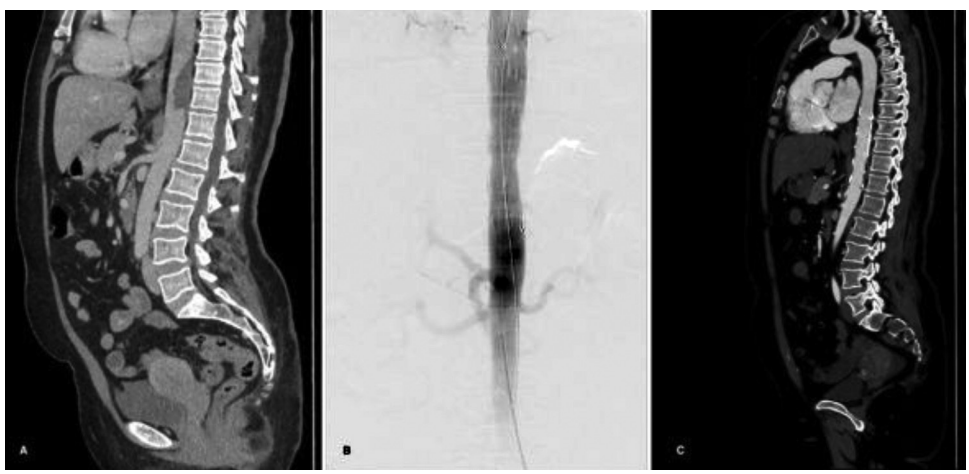

Figure 1. (A) Preoperative sagittal view of the computed tomography angiography demonstrating a large thrombus in zone 5 of the thoracic aorta. (B) Control angiogram of the thoracic aorta following the thoracic endovascular aortic repair. (C) Control computed tomography angiography of the patient at the two-month follow-up.

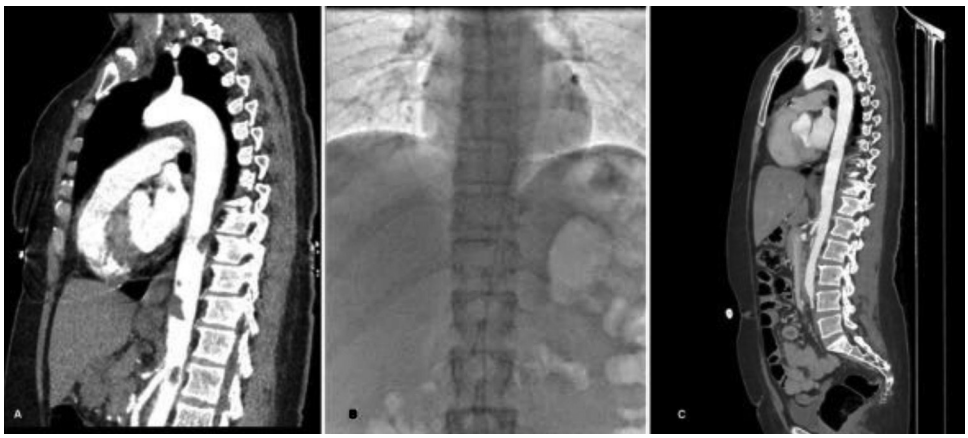

Figure 1. (A) Preoperative sagittal view of computed tomography angiography demonstrating multiple thrombi in the thoracic aorta. (B) Control angiogram of the thoracic aorta showing physician-modified catheter placement. (C) Control computed tomography angiography of the patient at the two-month follow-up.

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Physician - Aortic (Abdominal) Pathologies and Surgery/Endovascular Interventions

[MEP-29]

Could Hybrid Treatments Be A Solution for Traumatic Abdominal Aortic Pseudoaneurysms?

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Traumatic pseudoaneurysm of the abdominal aorta is a life-threatening pathology that often presents after trauma. In suprarenal location, the classical approach makes the operation more difficult due to the difficulty of accessing the abdominal aorta due to the complex anatomy and the high risk of bleeding. In this case report, we presented a hybrid surgery approach in a patient with abdominal aortic pseudoaneurysm. A 20-year-old male patient was urgently operated due to hemodynamic instability after a gunshot wound to the abdomen. The patient was evaluated with computed tomography angiography on the 14th postoperative day, which revealed a 77×51×64 mm pseudoaneurysm originating from the abdominal aorta at the level of the celiac trunk. Consequently, the patient was taken into reoperation. The visceral arteries and the right common iliac artery were explored and released. A bypass was performed from the right common iliac artery to the celiac trunk with a Dacron graft. Afterward, a bypass was performed from the celiac trunk graft to the superior mesenteric artery with a Dacron graft. Following the debranching procedure, the celiac trunk and superior mesenteric artery were ligated. Then, a 20×20×82 mm endovascular graft was applied to the suprarenal region, and the pseudoaneurysm sac was closed. No endoleak was detected. Bilateral renal arteries and debranching grafts were patent. After two days, the patient was taken to the ward. It was observed that the pseudoaneurysm sac was thrombosed, and the debranching grafts were patent. The patient was discharged on the 10th postoperative day. Abdominal aortic pseudoaneurysms are a vital pathology that can result in death even before symptoms appear. In case of doubt, the diagnosis should be made with advanced imaging methods and the optimal treatment protocol specific to the patient should be determined. It should be kept in mind that hybrid treatment, including endovascular aortic stenting and debranching, may be the solution in high-risk cases.

Keywords: Aortic pseudoaneurysm, debranching, endovascular, hybrid treatment, traumatic injury.

Figure 1. Preoperative computed tomography angiography images of traumatic abdominal aortic pseudoaneurysm at the level of celiac trunk. Tip of the white arrow shows aortic pseudoaneurysm.

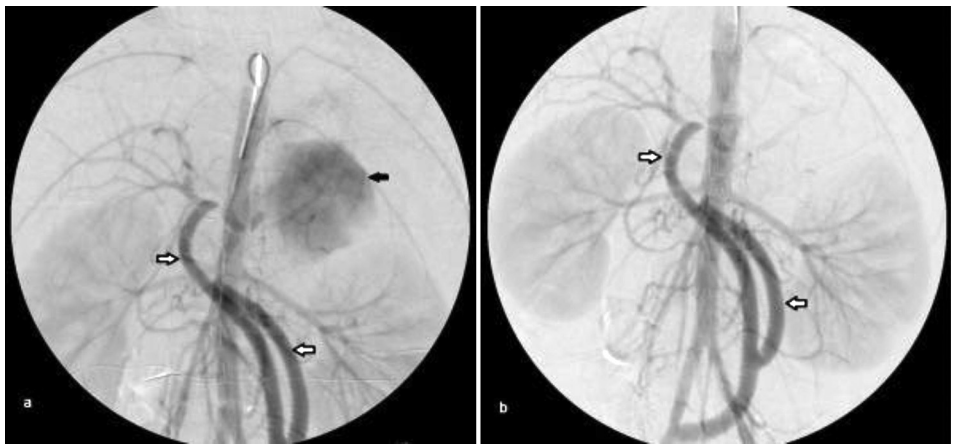

Figure 2. Intraoperative angiographic images of the hybrid procedure. (a) angiographic image of aortic pseudoaneurysm after visceral debranching; (b) angiographic image of successful hybrid procedure. Tip of the white arrow shows patent debranching grafts. Tip of the black arrow shows endovascular aortic stent graft with no endoleak.

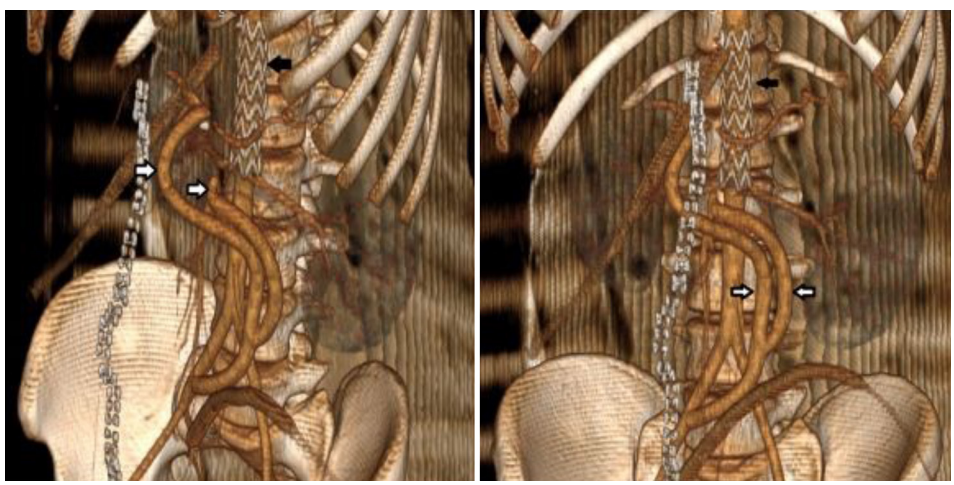

Figure 3. Postoperative computed tomography angiography images of the hybrid procedure. Tip of the white arrow shows patent debranching grafts. Tip of the black arrow shows endovascular aortic stent graft with no endoleak.

Physician - Aortic (Thoracic) Pathologies and Surgery/Endovascular Interventions

[MEP-30]

A Case Report of Newly Developed Paraplegia After Acute Type A Aortic Dissection Repair

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A Stanford type A aortic dissection is associated with elevated preoperative mortality and morbidity rates, as well as an increased likelihood of postoperative complications. Among these complications, paraplegia represents a serious but rare occurrence that can lead to significant morbidity in affected individuals. A 55-year-old male patient experienced acute paraplegia in the postoperative period after Stanford type A aortic dissection. Upon detection of paraplegia, medical therapy was promptly initiated. Despite maintenance of hemodynamic stability following surgery, the patient's neurological deficit persisted at 24 h postoperatively. In response, cerebrospinal fluid (CSF) drainage was performed. Notably, a full clinical recovery in neurological function was observed within 5 h of initiating CSF drainage. The pathophysiology underlying postoperative paraplegia in the context of aortic dissection remains unclear. However, with the maintenance of hemodynamic stability, appropriate medical management, and the persistence of neurological symptoms, the implementation of CSF drainage may be considered to facilitate resolution of symptoms. Emergent aortic surgeries can lead to devastating neurological complications. Among these complications, paraplegia can be managed successfully and considered a potentially reversible condition with these interventions.

Keywords: Aortic dissection, paraplegia.

Figure 1. Comparison of the dissection flap by using three-dimensional computed tomography. (a) Preoperative, (b) Postoperative.

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Physician - Pediatric Cardiac and Vascular Surgery/Adult Congenital Heart Diseases

[MEP-32]

Unusual Origin of Anomalous Left Main Coronary Artery From the Pulmonary Artery

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Herein, we presented a case of an anomaly in which the left main coronary artery (LMCA) originates from the right pulmonary artery (RPA). A six-year-old female patient presented for a cardiology follow-up due to the mother's history of sudden cardiac death. On transthoracic echocardiography, the right coronary artery (RCA) was dilated, and the LMCA was not identified. There was no LMCA ostium on the aorta. The computed tomography and the coronary angiography revealed the wide and tortuous RCA originating from the aorta. Following primary median sternotomy, proximal visualization of the coronary ostium was challenging. Cardioplegia was given via the aortic root, revealing leakage from the RPA. For better visualization of the RPA, the aorta was transected above the RCA ostium. Subsequently, the MPA incision was extended towards the RPA, facilitating the coronary ostium visualization. Afterward, the left coronary ostium was freed from the RPA and implanted at its anatomical location on the ascending aorta. Subsequently, the RPA and MPA incisions were reconstructed with 7-0 Prolene sutures. The aortotomy was closed with a bovine patch, and warming was recommenced. The postoperative course was uneventful, and the patient was discharged on the seventh postoperative day. Complex cases of anomalous left main coronary artery from the pulmonary artery are surgically challenging. In rare instances where the LMCA originates from the RPA, ostial identification can be difficult. Detailed imaging is crucial for surgical planning. Conventional translocation is the gold standard method for these cases. This rare anomaly, also scarcely reported in the literature, is a variation that should be carefully considered in congenital heart surgery and coronary artery disease diagnosis.

Keywords: Anomalous left main coronary artery from the pulmonary artery, Bland-White-Garland syndrome, left main coronary artery, right pulmonary artery.

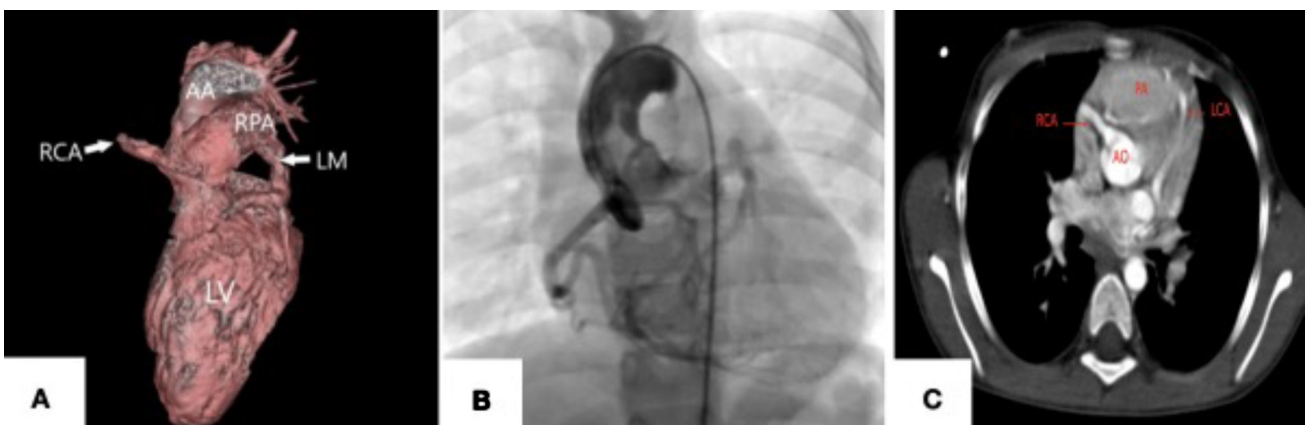

Figure 1. Computed tomography images (A, C) illustrating a dilated and tortuous right coronary artery arising from the aorta. The coronary angiography (B) confirms the anomalous right coronary artery, highlighting its enlarged and convoluted structure.

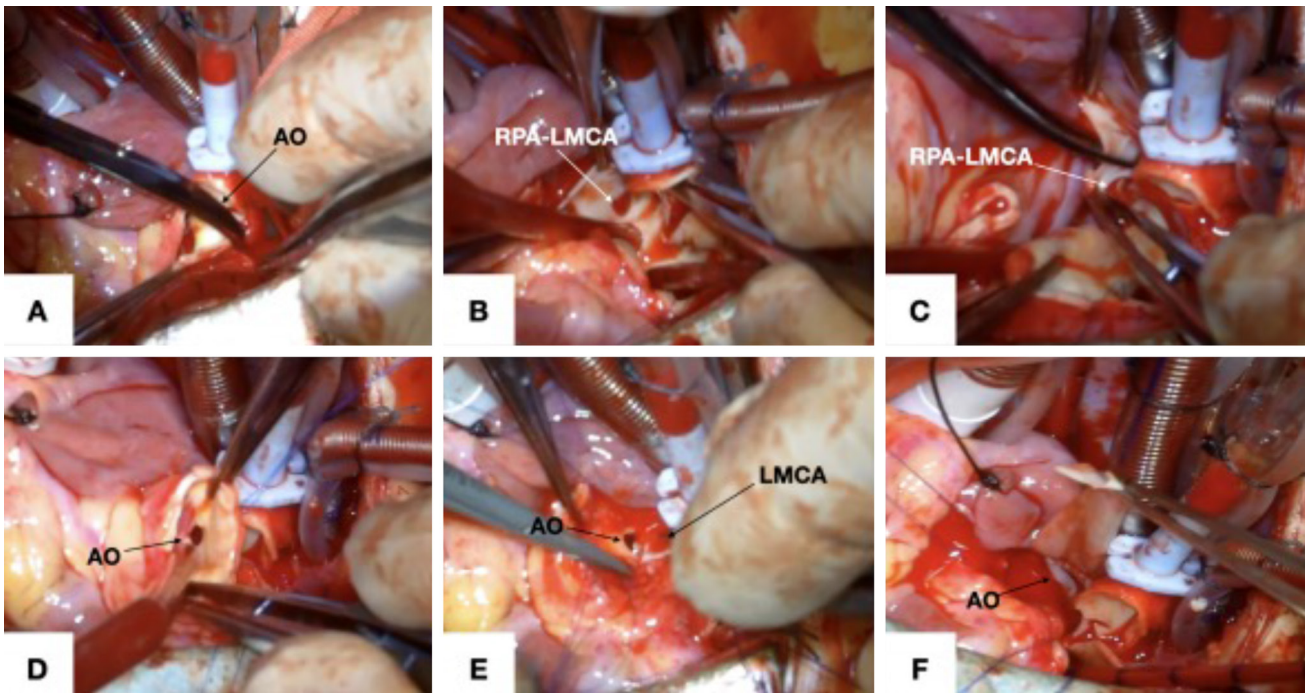

Figure 2. Step by step description of the operative procedure.

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Physician - Valvular Diseases and Surgery

[MEP-35]

Primary Cardiac Tumor: A Case Report of Right Atrial Angiosarcoma

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Cardiac tumors mainly present as metastases from tumors in other extracardiac organs. Primary cardiac tumors are relatively rare tumors, with a prevalence rate of 0.002 to 0.33%. Myxomas, which commonly occur in the left atrium, are the most frequent benign primary cardiac tumors. Angiosarcomas are the most common primary malignant cardiac tumors. A 63-year-old female patient who had exertional dyspnea presented to the clinic. After the detection of an invasive mass on the wall of the right atrium from the test results, the case was initiated following sternotomy, with aortic and peripheral venous cannulation. The right atrium was opened, and the tumor was dissected broadly from the normal tissue of the atrium wall. The right atrial defect was reconstructed with a pericardial patch. After extensive tumor resection and repair with a pericardial patch, the patient was transferred to the intensive care unit with inotropic support. The pathology result of the excised material was reported as angiosarcoma. The patient was discharged on the seventh postoperative day and continued with chemoradiotherapy. Cardiac tumors are rare, and angiosarcomas, which are more commonly observed on the right side of the heart, account for 25 to 30% of primary cardiac malignancies. Surgical resection of primary cardiac angiosarcoma is the primary treatment approach. Full resection of the tumor offers long-term survival for the patients. Reconstruction of cardiac structures may also be necessary after wide resections.

Keywords: Angiosarcoma, cardiac tumors, myxoma.

Figure 1. Preoperative computed tomography showed a right atrial mass.

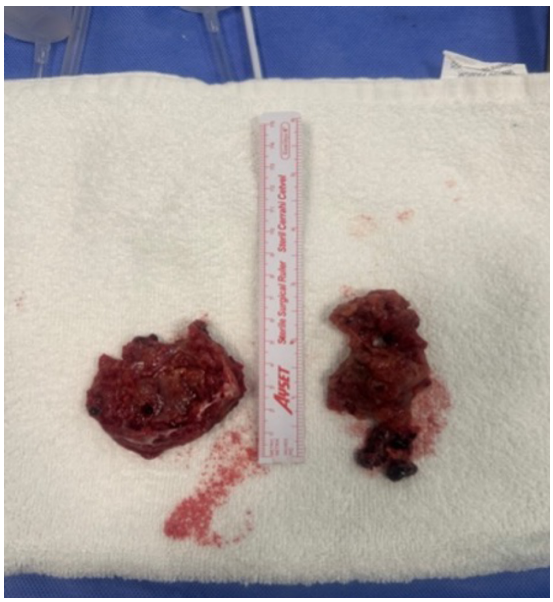

Figure 2. Macroscopic photograph of the resected tumor.

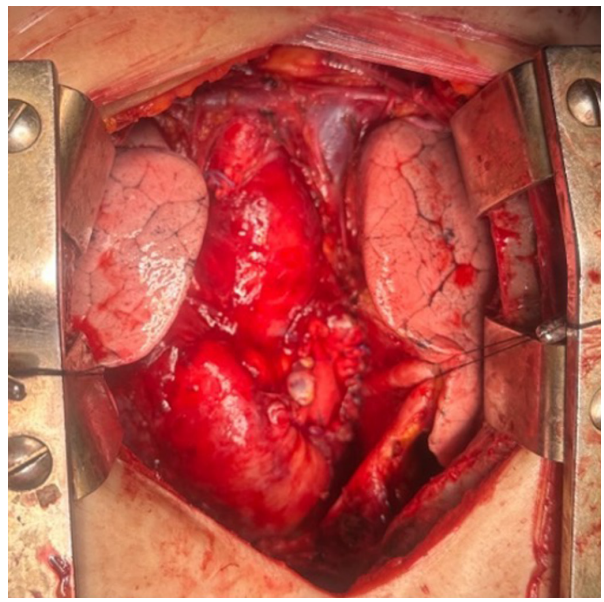

Figure 3. The right atrial wall was repaired with a pericardial patch.

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Physician - Aortic (Abdominal) Pathologies and Surgery/Endovascular Interventions

[MEP-37]

Thoracofemoral Bypass and Long-Term Success in Juxtarenal Aortic Occlusion

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Objective: This study aimed to share 16 years of experience and long-term outcomes in patients who underwent thoracofemoral bypass as the initial treatment.

Methods: Thirty-two patients (28 males, 4 females; mean age: 62; range, 56 to 67.5 years) who underwent thoracofemoral bypass for severe aortoiliac occlusive disease between 2005 and 2022 were retrospectively analyzed. The occlusion and calcified plaques of the abdominal aorta at the renal level were common characteristics of all patients. The patients were divided into two groups: the severe claudication group (Rutherford III) and the chronic limb-threatening ischemia group (Rutherford IV and V).

Results: The mean follow-up duration was 79±32 months. The 30-day mortality rate was 3.2% (n=1). Major complications were observed in 9.6% (n=3) of patients (respiratory in 6.4%, retroperitoneal hematoma in 3.2%). Minor complications occurred in 41.9% of patients, including pleural effusion in 9.6% (n=3), acute kidney injury in 9.6% (n=3), gastrointestinal bleeding in 3.2% (n=1), paralytic ileus in 6.4% (n=2), and superficial skin infection in 12.9% (n=4). The rate of postoperative superficial skin infection was higher in the chronic limb-threatening ischemia group compared to the claudication group (n=4 [40%] vs. n=0, p=0.007). The five-year Kaplan-Meier analysis estimated that the primary patency for the entire study was 96±7% (95% confidence interval [CI] 88.6-100), and the secondary patency was 96.3±6% (95% CI 89.4-100). The five-year Kaplan-Meier analysis estimated that survival rate after thoracofemoral bypass was 93.4±3% (95% CI 91-100).

Conclusion: This study shows that thoracofemoral bypass, although complex, is a safe and effective initial treatment for juxtarenal total aortic occlusion, with low mortality and morbidity rates and excellent long-term outcomes in selected patients.

Keywords: Long-term, occlusion, thoracofemoral bypass.

Others - Other Abstract

[MEP-40]

Right Ventricular Myxoma: A Rare Case

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Primary cardiac tumors are rare tumors that are mostly benign. Myxomas are the most common primary cardiac neoplasm. Symptoms depend on its size, mobility, and location. Approximately 75% of myxomas are located in the left atrium, usually originating from the fossa ovalis, 23% in the right atrium, and 2% in the ventricles. Myxomas originating from the right ventricle are even less common. Herein, we presented a 49-year-old male patient who was referred to the hospital with dyspnea for three months. The patient had no history of embolic events. Transthoracic echocardiography showed a 13×14 mm mass in the right ventricular cavity. Median sternotomy and cardiopulmonary bypass were the preferred surgical approach. Surgical resection was performed by a right atrial incision, through the tricuspid valve. The stalk of the myxoma was gently detached from the ventricular septum. Pathological examination of the soft mass confirmed that the tumor was myxoma. The patient was discharged from the hospital on the fifth postoperative day, and the dyspnea symptoms dramatically regressed. Right ventricular myxomas are rare benign tumors. The soft and lobulated structure of the tumor can result in fatal complications and may easily lead to embolic events; thus, they should be carefully resected as soon as possible after diagnosis.

Keywords: Echocardiography, myxoma, right ventricle, surgery.

Figure 1. Echocardiographic view of right ventricular myxoma in short axis.

Figure 2. Echocardiographic view of right ventricular myxoma in apical four-chamber view.

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Physician - Aortic (Thoracic) Pathologies and Surgery/Endovascular Interventions

[MEP-41]

Management of Diaphgramatic Dehiscence and Wound Infection After Open Repair of Thoracoabdominal Aortic Aneurysm

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Herein, we presented a case of thoracoabdominal aneurysm that was surgically treated and was complicated with diaphragmatic dehiscence and wound infection. Management and treatment methods of this challenging complication were discussed. A 59-year-old male patient with a history of renal operation underwent an open surgical treatment for thoracoabdominal aortic aneurysm. After extubation, the chest radiograph revealed left pneumothorax, and diaphragmatic dehiscence was detected on computed tomography. In the reoperation, steel wires attaching to the arcus costarum were broken off, and the diaphragmatic dehiscence and eventration of organs were observed. Diaphragmatic defect was closed with a Dacron patch, as it was very large for primary closure. Chylothorax was noticed and treated by somatostatin infusion. Vacuum therapy was applied as a purulent discharge started, and necrotic tissue was observed with evidence of infection when debridement was performed. Antibiotic therapy was started according to antibiogram. Vacuum therapy of thoracal incision was stopped as granulation tissue was observed, and the wound was closed by retention sutures. The wound in the abdominal region was closed with an advancement flap by subcutaneous detachment by plastic surgery, and a hemovac drain was placed. Since purulent discharge persisted, the Dacron graft was replaced by bovine pericardium for the diaphragmatic defect. The wound in the abdominal region was closed with retention sutures. The skin was closed primarily. When the infection resolved, the patient was discharged with peroral antibiotics. In open surgical repair of thoracoabdominal aortic aneurysm, rapid diagnosis and surgical intervention in case of diaphragm dehiscence, closure of the wound with appropriate treatment methods, reduction of the wound size with vacuum assisted closure, and initiation of effective antibiotic therapy by taking serial cultures are important in the treatment process.

Keywords: Diaphragmatic dehiscence, thoracoabdominal aortic aneurysm, vacuum therapy, wound infection.

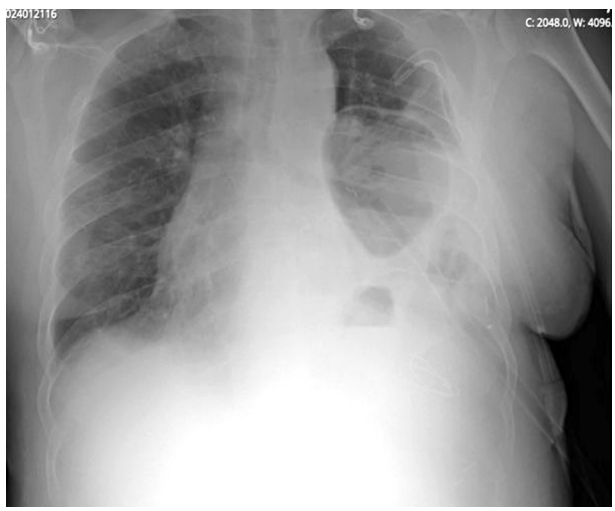

Figure 1. Chest radiograph on the second postoperative day.

Figure 2. Chest radiograph on the second postoperative day.

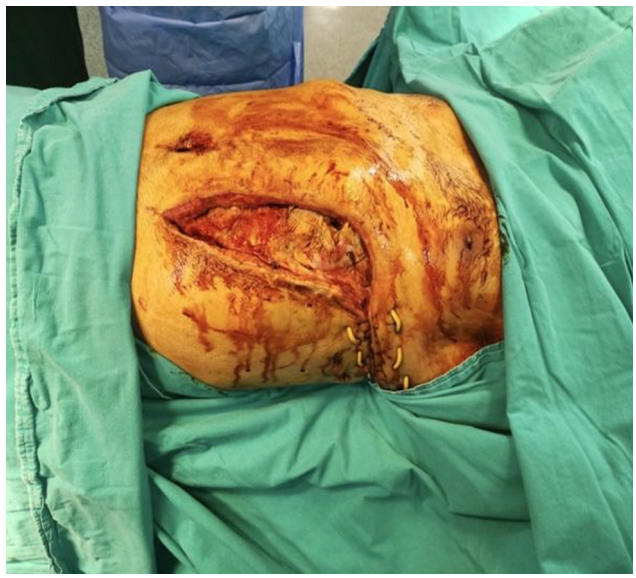

Figure 3. Chest radiograph on the second postoperative day.

Physician - Vascular Acccess

[MEP-43]

Methemoglobinemia After Central Venous Catheterization Due to Local Anesthesia with Prilocaine: A Case Report

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Local anesthetics such as prilocaine, bupivacaine, and lidocaine can rarely cause methemoglobinemia. Methemoglobinemia should be considered in patients presenting with hypoxia and cyanosis after taking local anesthesia for interventions. The severity of symptoms correlates with the existing methemoglobin level. Herein, we presented a patient who developed methemoglobinemia after local anesthesia with prilocaine use for dialysis catheter insertion. A 78-year-old male patient with prostatic adenocarcinoma and chronic renal failure developed methemoglobinemia after 20 min of temporary hemodialysis catheter insertion due to prilocaine use. The patient had dyspnea and respiratory distress, and his saturation dropped under 90% while the arterial oxygen partial pressure was above 80 mmHg. After intravenous methylene blue administration, the patient's symptoms resolved, and the need for intubation was eliminated. The prilocaine dose recommended for adults is lower than 5.0 mg/kg, which is reduced to 3.2 mg/kg in the presence of renal insufficiency and to 1.3 mg/kg if other oxidizing drugs are used concurrently. An alternative to methylene blue would a 20% lipid emulsion infusion with a bolus injection of 1.5 mL/kg, followed by an infusion dose of 0.25 mL/kg/min. The ability to recognize and treat local anesthetic systemic toxicity is critical for clinicians and vascular surgeons who frequently perform local anesthetic interventions. Several measures may reduce the risk of toxicity: limiting the cumulative dose, using ultrasound or direct visualization for catheter placement, test dosing, incremental injections, negative catheter aspiration, and adherence to guidelines. Treatment with methylene blue should be kept in mind along with supplemental oxygen therapy for patients with methemoglobinemia

Keywords: Local anesthetic, methemoglobinemia, peripheral venous catheterizati, priloacine.

Physician - Vascular Acccess

[MEP-44]

Abdominal Aortic Coarctation in an Adolescent Patient

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Herein, we presented a case of abdominal aortic coarctation in a patient with a rare atypical location. A 17-year-old female patient was referred to the clinic due to neurofibromatosis type 1, hypertension, optic glioma (she received 10 kt 12 years ago), significant lymphedema in both legs, and atypically located long segment abdominal coarctation due to right renal artery stenosis. A stent balloon procedure was performed five times for right renal artery stenosis, and right nephrectomy was done due to obstruction and kidney atrophy. The patient presented with complaints of dysphagia and postprandial pain for four years. In the radiological examination, coarctation was observed from the distal celiac artery to the iliac bifurcation including the SMA left renal artery. Abdominal aortic coarctation-SMA – l-renal artery coarctation repair (patchplasty with Dacron graft) was performed in the patient. The preoperative quadruple antihypertensive hypertensive patient became normotensive on the seventh postoperative day, and the patient's lymphedema regressed after the operation.

Keywords: Coarctation-graft, patchplasty.

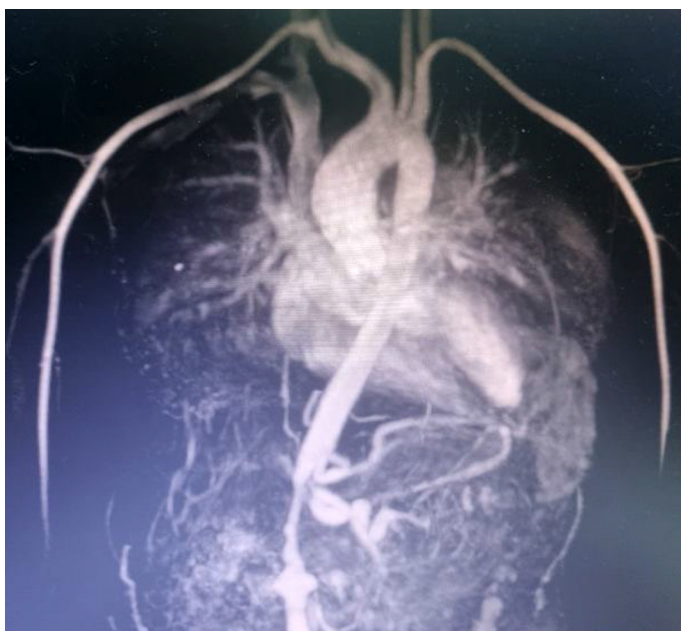

Figure 1. Preoperative magnetic resonance imaging.

Figure 2. Preoperative magnetic resonance imaging.

Others

[MEP-45]

Traumatic Blowout Injury-Related Gerbode Defect and Aortic Dissection

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The Gerbode defect is a defect between the left ventricle and the right atrium and can be congenital or acquired. It is known that structural heart diseases may occur secondary to mechanical damage/trauma. The Gerbode defect, sinus Valsalva injuries, and tricuspid valve damage are the most frequently reported acquired heart diseases due to vehicle accidents or mechanical traumas. Herein, we shared the first case of ventricular septal defect (VSD), aortic dissection, Gerbode defect, and severe tricuspid valve damage secondary to trauma caused by a truck tire explosion and its transcatheter/surgical management. A 13-year-old male patient, who was standing next to a truck when he suddenly fell to the ground after feeling severe chest pain due to the pressure effect of a high-pressure truck tire explosion, was referred to our hospital. The patient had a history of thoracic endovascular aortic repair due to VSD and aortic dissection in the descending thoracic aorta. The echocardiographic evaluation revealed right atrium enlargement, perimembranous VSD extending to the inlet region, 8-mm direct Gerbode defect causing a shunt between the left ventricle and the right atrium, and defects of up to 5 mm in size on the tricuspid valve septal leaflet causing severe tricuspid insufficiency. The patient underwent surgery for VSD closure. Two separate patches were used for VSD closure (one for the Gerbode-type defect and the second one for the perimembranous-type defect). There were no defects on the tricuspid valve; therefore, two separate patches were used for closure. Cardiac traumas may be examined under two groups: penetrating cardiac traumas and blunt cardiac traumas. The most common abnormality following a blunt cardiac trauma is asymptomatic myocardial contusion.

Keywords: Blunt chest trauma, gerbode defect, truck tire explosion, ventricular septal defect.

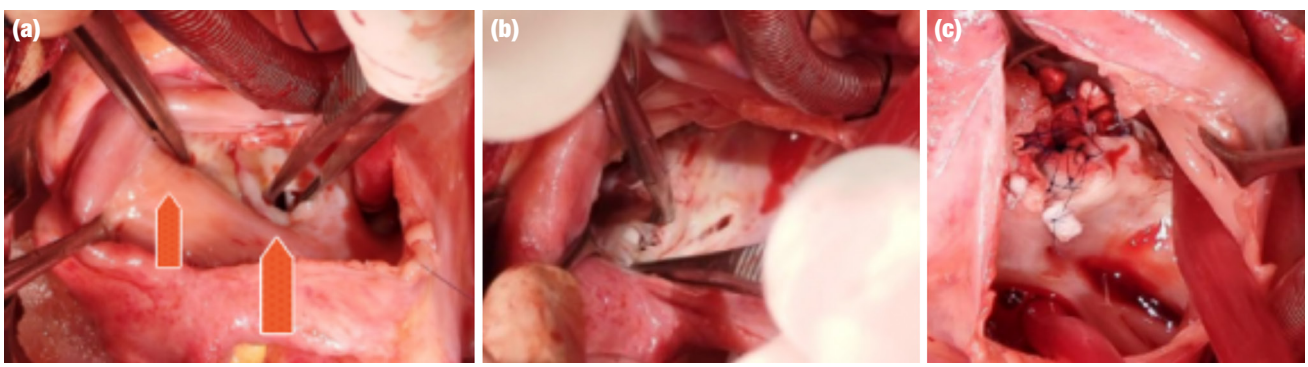

Figure 1. (a) Two separate VSDs, (b) Gerbose-type VSD closure, (c) Perimembranous VSD closure.

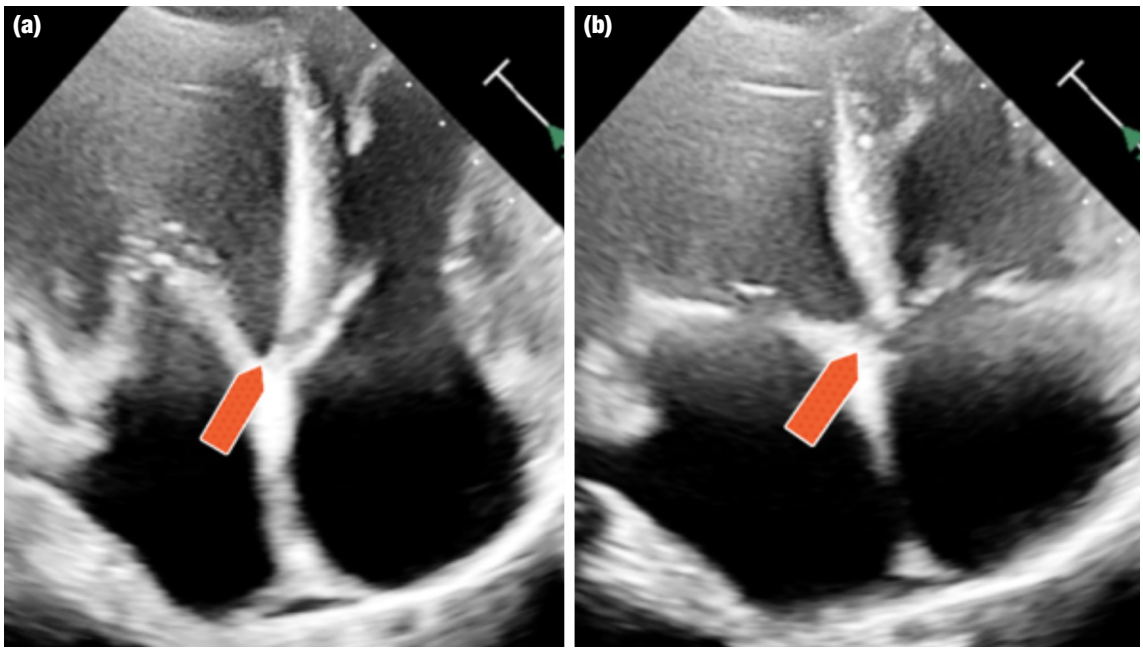

Figure 2. (a) Perimembranous VSD, (b) Gerbode-type defect.

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Physician - Heart Failure, Transplantation and Mechanical Support Systems

[MEP-46]

A Case of Cyclosporine-Associated Early Hyperpigmentation

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Cyclosporine is an immunosuppressive agent used to prevent rejection in organ transplants, as well as for the treatment of various immune diseases involving dermatological, hematological, renal, gastroenterological, neurological, and musculoskeletal systems. Cyclosporine has side effects such as blurred vision, fatigue, stomach discomfort, nephrotoxicity, hepatotoxicity, infections, lymphoma, hypertrichosis, gingivitis, and central nervous system toxicity. Herein, we presented a case of heart transplantation where a rare side effect of cyclosporine, hyperpigmentation, was observed. A 46-year-old female patient underwent heart transplantation surgery. Prednisone, mycophenolate mofetil, and tacrolimus were initiated as immunosuppressive therapy. Due to the involvement of tacrolimus in the etiology of posterior reversible encephalopathy syndrome, cyclosporine was chosen as the immunosuppressant. The patient was started on 300 mg of cyclosporine once daily (5 mg/kg/day), and the dosage was adjusted based on daily blood levels. Six days after starting cyclosporine therapy, widespread hyperpigmentation and hirsutism were noticed on the patient's body. Etiological factors such as adrenal insufficiency, drug therapy, and hemochromatosis, which could cause generalized hyperpigmentation, were ruled out. The existing hyperpigmentation was associated with cyclosporine therapy. Cyclosporine is a calcineurin inhibitor. According to the literature, cyclosporine-associated hyperpigmentation, hirsutism, hypertrichosis, and darkening of hair color are rare side effects. These have been observed with both oral and topical use. However, the literature shows that the onset of these side effects typically occurs between 45 days and four months after the initiation of the drug. In our experience, despite the patient not receiving a high dose of cyclosporine, the side effects emerged within six days, and no cases of such early occurrence have been reported in the literature.

Keywords: Cyclosporine, heart transplant, hyperpigmentation, immunosupression, posterior reversible encephalopathy syndrome.

Figure 1. Hacettepe heart transplant hyperpigmentation case.

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Physician - Peripheral Artery Diseases and Surgery/Percutan Interventions

[MEP-47]

Anterior Prosthetic Knee Dislocation with Popliteal Artery Injury: A Case Report

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Anterior dislocation is very rare in patients with a knee prosthesis. Few cases of acute vascular injury after anterior prosthesis dislocation have been reported in the literature with extremely poor outcomes. Herein, we reported the case of a 69-year-old female who developed an anterior knee prosthesis dislocation after a slip and fall at home, injuring the popliteal artery, which was spontaneously reduced. Following orthopedic controls, the patient was taken to the hybrid operating room, and digital subtraction angiography showed a transection of the right popliteal artery with no distal flow. Emergency fasciotomy and popliteal bypass were performed with simultaneous external fixation of the joint. Distal flow was restored and the limb was saved. External fixation of the knee allowed better stabilization of the joint, and preservation of the repaired vascular injury. Although there are no clear guidelines for management, we emphasize the importance of the hybrid operating room for rapid diagnosis of vascular trauma and rapid transition to open surgery to repair the injury.

Keywords: Injury, knee prosthesis, popliteal artery, trauma.

Figure 1. Digital subtraction angiography.

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Others - Other Abstract

[MEP-48]

Perioperative Management Strategies in Cardiac Surgery for Patients with Ankylosing Spondylitis

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Objective: This study aimed to discuss preoperative, intraoperative, and postoperative management strategies in patients with ankylosing spondylitis undergoing cardiac surgery.

Methods: A retrospective analysis was performed with patients who underwent cardiac surgery between 2009 and 2024. Fourteen patients diagnosed with ankylosing spondylitis and followed by relevant clinics were identified. These patients were compared with 15 randomly selected patients who had similar profiles in terms of age, sex, and type of cardiac surgery. Age, sex, mode of intubation, length of hospital stay, duration of intubation, postoperative pulmonary complications, transfusion requirements, mobilization time, and the incidence of postoperative venous thromboembolism were evaluated.

Results: Of the patients, 78.6% were male, with a mean age of 55±8 years. The postoperative intubation duration was significantly longer in the ankylosing spondylitis group (14±8 h vs. 6±5 h). Due to intubation difficulty, the need for fiberoptic intubation was higher in the ankylosing spondylitis group (16.6% vs. 0%). There were no significant differences between the groups in terms of hospital stay, postoperative exploration rates, transfusion requirements, or venous thromboembolism incidence. No postoperative sternal dehiscence was observed in either group. The need for rehabilitation due to postoperative pulmonary complications was higher in the ankylosing spondylitis group (33.3% vs. 13.3%). Cardiovascular mortality rates were similar in both groups.

Conclusion: The management of cardiac surgery in patients with ankylosing spondylitis requires a multidisciplinary approach. Appropriate perioperative management, including preoperative patient planning as well as intraoperative and postoperative follow-up and care, is essential.

Keywords: Ankylosing spondylitis,cardiac surgical procedures, postoperative complications.

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Physician - Vascular Acccess

[MEP-49]

Carotid Arterial Revascularization in Patients with Contralateral Carotid Arterial Diseases

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Objective: This study aimed to report our early-term results in the treatment of bilateral carotid arterial diseases.

Methods: The study analyzed 244 patients who underwent isolated carotid endarterectomy between April 1, 2019, and June 30, 2024. Four groups were created according to the degree of carotid artery stenosis (CAS): Group 1, 141 patients with <50% contralateral CAS; Group 2, 44 patients with contralateral CAS ≥50% and <70%; Group 3, 45 patients with contralateral CAS ≥70% and ≤99%; Group 4, 14 patients with total occlusion of the contralateral carotid artery. In our clinic, a reason to change the routine procedure was not accepted. We performed carotid endarterectomy as the first option in all patients. Patients' postoperative early-term outcomes, including the neurological findings, were compared between the groups.

Results: Demographics and preoperative findings were similar between the groups. The early-term rates of minor and major neurological events were 2.45% and 2.04%, respectively. Postoperative neurological complications were similar between the groups. There were two mortalities, one of them was in Group 1, and the other was in Group 3. During follow-up, there were no neurological events or mortality. There were two cases of restenosis in Group 1 and in Group 2.

Conclusion: In the surgical treatment of bilateral CAS, performing the operation with the standard approach without changing the surgeon's routine practice has similar results to the surgical approach applied to unilateral stenosis. It is important to evaluate the circle of Willis and cerebral blood supply in the preoperative period and to decide the usage of shunting.

Keywords: Carotid arterial disease, endarterectomy, regional anesthesia, shunting, stenting.

Table 1. Comparison of demographics and preoperative variables

	Group 1	Group 2	Group 3	Group 4
Age (years)	69,21 ± 9,7	69,38 ± 8,3	69,48 ± 8,69	65,85 ± 12,3
Gender				
Male, no. (%)	91 (64,5 %)	27 (61,3 %)	29 (64,4 %)	12 (85,7 %)
Female, no. (%)	50 (35,4 %)	17 (38,6 %)	16 (35,5 %)	2 (14,2 %)
Smoking, no. (%)	41 (29,07 %)	11 (25 %)	18 (40 %)	8 (57,1 %)
Hypertension, no. (%)	110 (78,01 %)	41 (93,1 %)	40 (88,8 %)	12 (85,7 %)
Diabetes, no. (%)	70 (49,6 %)	40 (90,9 %)	31 (68,8 %)	7 (50 %)
Hypercholesterolemia, no. (%)	108 (76,5 %)	40 (90,9 %)	38 (84,8 %)	11 (78,5 %)
Coronary arterial disease, no. (%)	77 (54,6 %)	27 (61,3 %)	31 (68,8 %)	11 (78,5 %)
Symptoms				
Transient ischemic attack, no. (%)	12 (8,5 %)	6 (13,6 %)	4 (8,8 %)	2 (14,2 %)
Stroke, no. (%)	86 (60,9 %)	31 (70,4 %)	28 (62,2 %)	9 (64,2 %)
Amaurosis fugax, no. (%)	1 (0,7 %)		1 (2,2 %)	1 (7,1 %)
Vertigo and gait imbalance, no. (%)	29 (20,5 %)	7 (15,9 %)	8 (17,7 %)	

Table 2. Comparison of operative findings

Treatment Procedure	Group 1 (n=141)	Group 2 (n=44)	Group 3 (n=45)	Group 4 (n=14)
CEA under GA (%)				
Primary repair (%)	129 (91,4 %)	40 (90,9 %)	42 (93,3 %)	10 (71,4 %)
Patch repair (%)	10 (7,09 %)	3 (6,81 %)	2 (4,4%)	2 (14,2 %)
CEA under LA				
Primary repair (%)	2 (1,41 %)	1 (2,27 %)	1 (2,2 %)	2 (14,2 %)
Patch repair (%)				
Shunting (%)	3 (2,12 %)		1 (2,2 %)	2 (14,2 %)
Duration of cross clamping (min.)	15,96	14.9	15,4	14,64

Table 3. Comprasion of early-term neurological findings

	Group 1 (n=141)	Group 2 (n=44)	Group 3 (n=45)	Group 4 (n=14)	
Temporarily neurological event (%)					
Partially monoplegia (%)	1(0,7 %)				
Hemiparesis (%)		1(2,2 %)	1(2,2 %)		
Vocal cord paralysis (%)	1(0,7 %)		1(2,2 %)	1(7,1 %)	
Stroke (%)	1(0,7 %)		1(2,2 %)		
Revision (%)	3(2,12 %)	2 (4,5 %)			
Restenosis (%)	1(0,7 %)	1(2,2 %)			
Intra-cranial bleeding				1(7,1 %)	
Mortality (%)	1(0,7 %)		1(2,2 %)		

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