Early Experience with a Prefabricated Bioprosthetic Aortic Valved Conduit

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No disclosures

Objective

- Evaluate the early postoperative morbidity, mortality, and prosthetic valve function of patients who underwent aortic root replacement using a prefabricated bioprosthetic aortic valved conduit.

Methods

- Single-center retrospective review of 89 consecutive adult patients who underwent aortic root replacement with a certified prefabricated bioprosthetic aortic valved conduit from 2021 to August of 2023, this included patients with urgent operative status (19), re-do cardiac operations (25), and endocarditis (12).
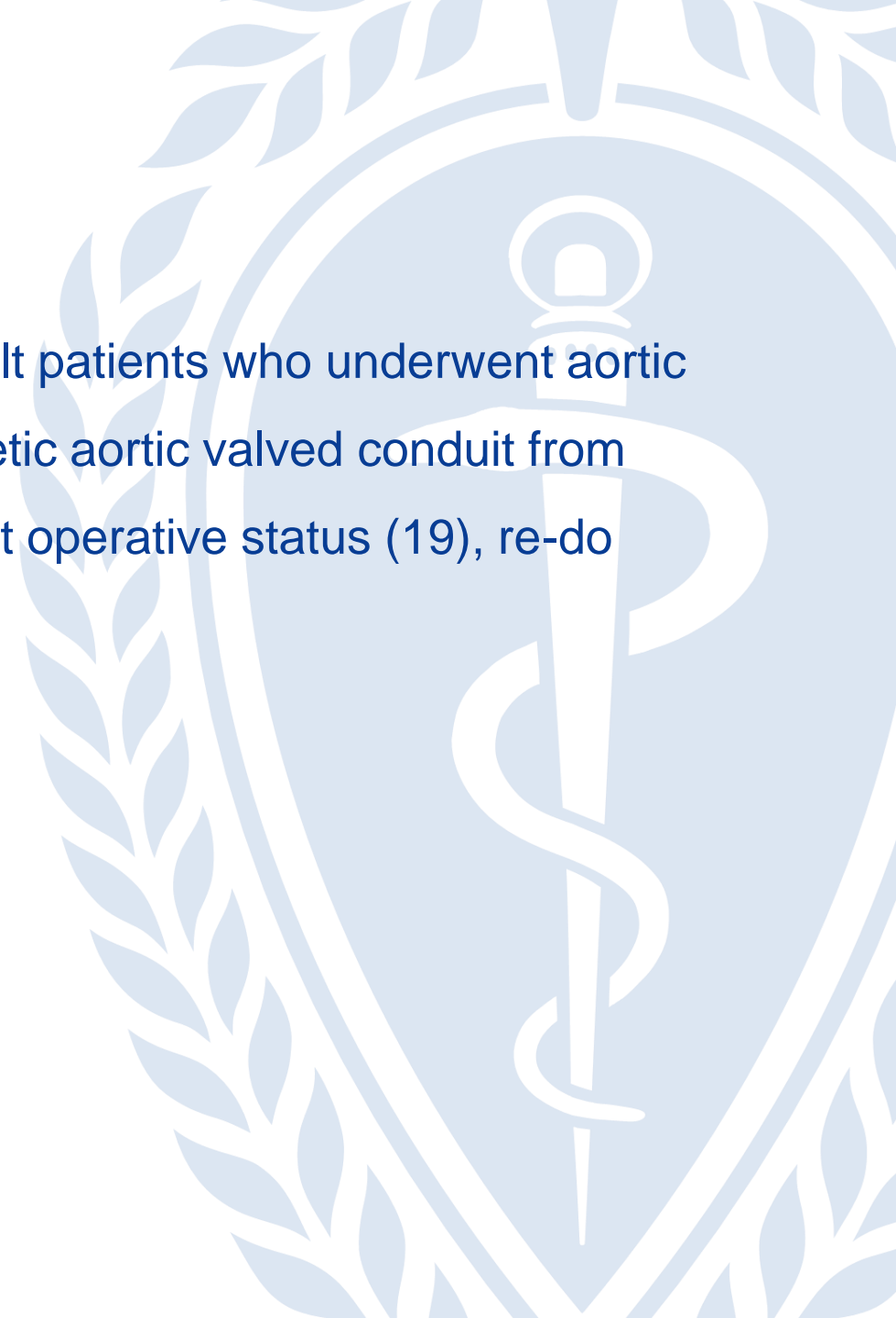
Results

- Majority of patients were male (71%), mean age was 69.1 ($\pm$7.7) years.

- Mean cardiopulmonary bypass time 256 ($\pm$135.2) minutes

- Mean cross clamp time 195 ($\pm$83.2) minutes

- Circulatory arrest for 58 patients, mean duration of 20 ($\pm$8.3) minutes

Variable	Number (%)
Indications for operation:	
• Thoracic aortic aneurysm	51 (57.3)
• Endocarditis	12 (13.5)
• Re-do valve replacement due to structural valve deterioration	8 (9)
• Aortic dissection	6 (6.7)
Types of operation:	
• Isolated aortic root replacement	57 (64)
• Concomitant coronary bypass	11 (12.4)
• Concomitant valve operations	11 (12.4)
• Other combinations	10 (11.2)

Results

- Discharge echocardiogram available in 85 patients

- Follow-up echocardiogram available in 35 patients

  – Median follow-up time 4.1 months.

Variable	Number (%)
Implanted valve sizes:	
• 29 mm	9 (32.6)
• 27 mm	26 (29.2)
• 25 mm	24 (27)
• 23 mm	9 (10.1)
Extent of repair:	
• Aortic root and ascending aorta	28 (31.5)
• Hemi-arch	58 (65.2)
• Total arch with elephant trunk	3 (3.4)

Results

	Discharge Echocardiogram (85/89)	Follow-up Echocardiogram (35/89)	Difference
Ejection fraction (%), mean (SD)	54.3 (9.6)	53.5 (9.7)	-0.2 (6.2)
Prosthetic valve mean gradient mmHg, mean (SD)	8.8 (3.2)	8.3 (3.2)	-1 (3.4)
Effective orifice area cm^2, mean (SD)	3 (0.7)	2.6 (0.7)	-0.3 (1)
Indexed effective orifice area cm^2/m^2, mean (SD)	1.4 (0.4)	1.2 (0.3)	-0.2 (0.5)
Doppler velocity index, mean (SD)	0.6 (0.1)	0.7 (0.6)	0.1 (0.6)

Results

Prosthetic aortic valve regurgitation grade, n (%)	Discharge echocardiogram (84/89)	Follow-up echocardiogram (30/89)
- **None**	44 (52)	None = 13 (43) Trivial = 2 (7) Mild = 1 (3)
- **Trivial**	40 (48)	None = 7 (23) Trivial = 7 (23)
- **Mild**	0	1 (3)

Results: Complications

- 30-day mortality: 4 patients

  - 4 due to re-do operations, and 1 was due to endocarditis

- Postoperative ECMO support: 8 patients

- Intra-aortic balloon pump: 3 patients

- Re-operation for bleeding: 3 patients

  - 2 in complex re-operative cases.

- Postoperative renal failure requiring dialysis: 13 patients

- No postoperative strokes

Conclusions

- The prefabricated bioprosthetic aortic valved conduit has been used successfully in multiple settings including complex re-operative scenarios and endocarditis with acceptable short-term morbidity and mortality.

- The hemodynamic performance of the valve within the studied period was normal, the long-term durability and hemodynamic performance are yet to be proven.