

306 CONSERVATIVE APPROACH TO AORTIC PSEUDOANEURYSMS POST TYPE A DISSECTION REPAIR: SAFE ALTERNATIVE?

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BACKGROUND: Acute type A aortic dissection (ATAAD) is a life-threatening condition necessitating urgent surgical intervention. Despite success of first repair, patients may need reoperation for pseudoaneurysm (PsA) at the site of repair. We sought to evaluate the safety and long-term follow-up of a conservative approach to PsA after prior type A dissection repair.

METHODS AND RESULTS: Patients who were followed for PsA after ATAAD in our institution, from 2004 to 2017, were included. Regular consultations with computed-tomography were analyzed for follow-up. Conservative approach was indicated only if PsA was asymptomatic and did not increase rapidly. Seventeen patients with PsA were managed conservatively with regular follow-up: 16 (94%) of them were located on proximal anastomosis and 1 (6%) of them on distal anastomosis. In the same period, 194 ATAAD were operated for an incidence of 1.0 [0.7-1.4] PsA per 10 repaired ATAAD per year. Mean follow-up was 4.6 [1.1-10.2] years. PsA appeared on average at 47 [6-196] days after the repair, the initial diameter average measured 22 [16-24] mm and increased to 26 [22-32] mm at late follow-up. No patient necessitated urgent surgery for rupture nor died from rupture during follow-up.

CONCLUSION: PsA is a rare but early complication following ATAAD. High-risk reoperation, mainly on aortic root, may not always be necessary for asymptomatic lesions. Conservative approach to PsA is a safe alternative in our experience and should be considered in high risk patients.

307 RE-EXPLORATION AND ECONOMIC JUSTIFICATION OF A CHEST DRAINAGE PROTOCOL IMPLEMENTING ACTIVE TUBE CLEARANCE AFTER CARDIAC SURGERY

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BACKGROUND: Appropriate evacuation of shed blood with chest tubes is a critical component of patient care after cardiac surgery as re-exploration for bleeding or tamponade is a morbid, lethal and costly complication. Drainage protocols involving extended drainage duration, specific placement of silastic drains or prevention of intraluminal clogging have all exhibited the potential to reduce the need for re-exploration. This sub-study from a larger randomized investigation is aimed towards exploring the risk factors and impacts of re-exploration, while also determining whether the implementation of active chest tube clearing devices is economically justified.

METHODS AND RESULTS: Data from the 490 patients included in the analysis by intention-to-treat of our pragmatic, single-blinded, parallel randomized control trial comparing a chest drainage strategy using active tube clearance (ATC) at the bedside to standard management after cardiac surgery in two centers affiliated to the Université de Montréal School of Medicine, were used. The 18 patients who required re-exploration for bleeding or tamponade were compared with the ones who did not experience such complication through univariate analysis (chi-square, Fischer exact, t-test and Mann-Whitney U tests were used appropriately). A cost-benefit analysis was also conducted. Patients who required re-exploration presented more preoperative pulmonary hypertension (33% vs 9%, $P = 0.01$) and higher EuroScore II ($3.54 \pm 3.55\%$ vs $2.30 \pm 2.28\%$, $P = 0.03$). Mitral valve replacements or repairs (11% vs 2%, $P = 0.02$) and aortic surgeries (11% vs 1%, $P = 0.02$) were more frequent in the re-exploration group. The incidence of POAF (83% vs 34%, $P < 0.001$) and allogenic blood products transfusion (89% vs 32%, $P < 0.001$) were higher in the re-exploration group. Re-exploration was associated with significantly greater in-hospital mortality (22% vs 1%, $P < 0.001$), increased rate of acute renal failure and cardiac arrest, and longer ventilation time, intensive care unit time and hospital length of stay. In our randomized controlled trial, ATC was associated with a significant reduction in re-exploration, with a Number Needed to Treat of 25. The cost-benefit analysis, based on mean local incremental costs per major complication, which includes re-exploration, revealed savings of $\sim 240\$$ per patients by systematically using ATC.

CONCLUSION: Re-exploration after cardiac surgery is associated with significantly worse outcomes and potentially lethal

complications. While determining which patient will require re-exploration after cardiac surgery may be delicate, the implementation of a drainage strategy using ATC could represent an efficient and cost-effective preventative strategy.

308 MINISTERNOTOMY AORTIC VALVE REPLACEMENT PROVIDES EQUIVALENT SHORT- AND LONG-TERM SURVIVAL RATES IN BC PATIENTS IN COMPARISON WITH THE STANDARD APPROACH

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BACKGROUND: Advantages of mini-sternotomy aortic valve replacement (MSAVR) include improved cosmetic, reduction in postoperative pain, blood loss, length of stay (LOS) and better wound healing. However, MSAVR is not widely adopted by surgeons and the clinical outcomes of MSAVR have not been reported in Canada. We study the outcomes of MSAVR in our institution in British Columbia comparing to the full sternotomy aortic valve replacement (FSAVR).

METHODS AND RESULTS: We performed a retrospective analysis of the Cardiac Service BC database to evaluate all isolated aortic valve replacement (AVR) performed in our institution from January 2007 to December 2016. Nine hundred and ten patients were identified (776 conventional AVR and 134 MSAVR) with a median follow-up period of 6.2 yrs (95% CL: 3.8 to 8.5). Standard statistical analysis was conducted. Baseline variables between the two surgery groups are similar with a mean age of 70.7 ± 11.8 yrs in MSAVR vs 69.7 ± 12.2 in the standard group ($p=0.38$), and 40% were females. Those who had MSAVR group had higher NYHA III/IV 76.8% vs 49.3% ($p=0.001$) and had a greater incidence of renal failure (12.7% vs 8.8%, $p=0.15$). Bioprosthetic valves were implanted in 93.3% (MSAVR) and 93.8% (FSAVR). The mean cardiopulmonary bypass (CPB) and aortic cross-clamp (XC) times were shorter in MSAVR group with 74 vs 80min ($p=0.014$) and 56 vs 62min ($p=0.08$), respectively. There were no significant differences in the incidence of atrial fibrillation and renal dysfunction. There was no significant difference in 30-day mortality ($p=0.79$) and long-term mortality between groups ($p=0.70$). LOS was shorter in the MSAVR group (mean 7.8 ± 6.3 vs 8.6 ± 7.2 days, $p=0.006$).

CONCLUSION: MSAVR can be performed safely with similar short- and long-term survival rates. Shorter CPB and XC times and LOS were shorter in MSAVR. MSAVR should be performed when feasible.

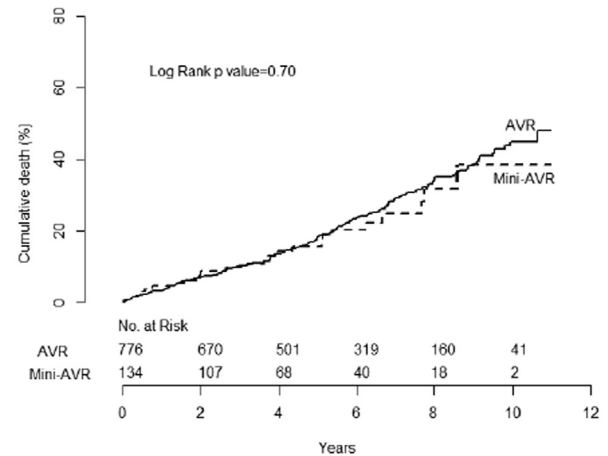


Figure 1. Kaplan-Meier curve of long-term survival following mini-sternotomy replacement (mini) and Full sternotomy aortic valve replacement (full) group

Table. Cox PH regression analysis for long term survival

Parameter	Hazard ratio (95% CI)	P value	Hazard ratio (95% CI)	P value
Incision type	0.921 (0.607, 1.398)	0.70	1.005 (0.656, 1.540)	0.98
Age (year)	1.058 (1.043, 1.074)	<0.001	1.051 (1.034, 1.068)	<0.001
Sex (female)	1.176 (0.904, 1.531)	0.23	0.717 (0.538, 0.957)	0.024
BMI	0.998 (0.975, 1.022)	0.87	0.813 (0.724, 0.914)	<0.001
BMI ²	--	--	1.003 (1.002, 1.005)	<0.001
Preop hemoglobin (g/L)	0.972 (0.966, 0.979)	<0.001	0.980 (0.972, 0.987)	<0.001
Liver disease	1.692 (1.216, 2.354)	0.002	1.500 (1.061, 2.119)	0.022
Renal Failure	2.862 (1.978, 4.140)	<0.001	1.742 (1.168, 2.598)	0.007
COPD	1.972 (1.493, 2.606)	<0.001	1.407 (1.051, 1.883)	0.022
Pulmonary hypertension	2.205 (1.646, 2.954)	<0.001	1.788 (1.325, 2.412)	<0.001
NYHA (III-IV)	1.680 (1.277, 2.210)	<0.001		
EF \geq 50%	0.927 (0.699, 1.230)	0.60		
Hypertension	1.576 (1.122, 2.213)	0.009		

309 THE AVALUS MEDTRONIC BOVINE PERICARDIAL VALVE SHOWS SIGNIFICANT OPENING RESERVE AT EXERCISE SUPPORTING GOOD CLINICAL OUTCOMES

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BACKGROUND: The Avalus Medtronic valve is a novel low profile stented bovine pericardial valve. The FDA investigational PERIGON trial reported good clinical outcomes although a significant proportion of patients presented moderate to severe PPM at rest. To study this 'conundrum', an exercise-based protocol was designed to evaluate the Avalus valve performance

METHODS AND RESULTS: An ergocycle based exercise testing (25W to 200W with 25W increments) was conducted in 22 patients at an average of 23.7 ± 9.5 months post Avalus valve implant. Throughout exercise, mean pressure gradient, indexed effective valve area (IEOA) and valve opening reserve were calculated. At rest, 8 pts had no PPM (IEOA $0.9 \pm 0.1 \text{ cm}^2/\text{m}^2$), 11 pts moderate PPM (IEOA