



Mini-sternotomy Aortic Valve Replacement

*Anson Cheung
Professor of Surgery
Director of Cardiac Transplant of British
Columbia
University of British Columbia
St. Paul's Hospital
Vancouver, Canada*



Disclosure of Relevant Financial Relationships

WITHIN THE PRIOR 24 MONTHS, I HAVE HAD A RELEVANT FINANCIAL RELATIONSHIP(S) WITH AN INELIGIBLE COMPANY(IES) LISTED BELOW.

Nature of Financial Relationship

Grant/Research Support

Consultant Fees/Honoraria

Individual Stock(s)/Stock Options

Other

Ineligible Company

Edwards Lifesciences, Medtronic, Neovasc, Abbott Vascular

Medtronic, Edwards Lifesciences, Abbott Vascular, Boston Scientific, Jensecare

Total Flow Medical
Neovasc Inc

Eligibility Committee Board Member
(TRINITY Trial)

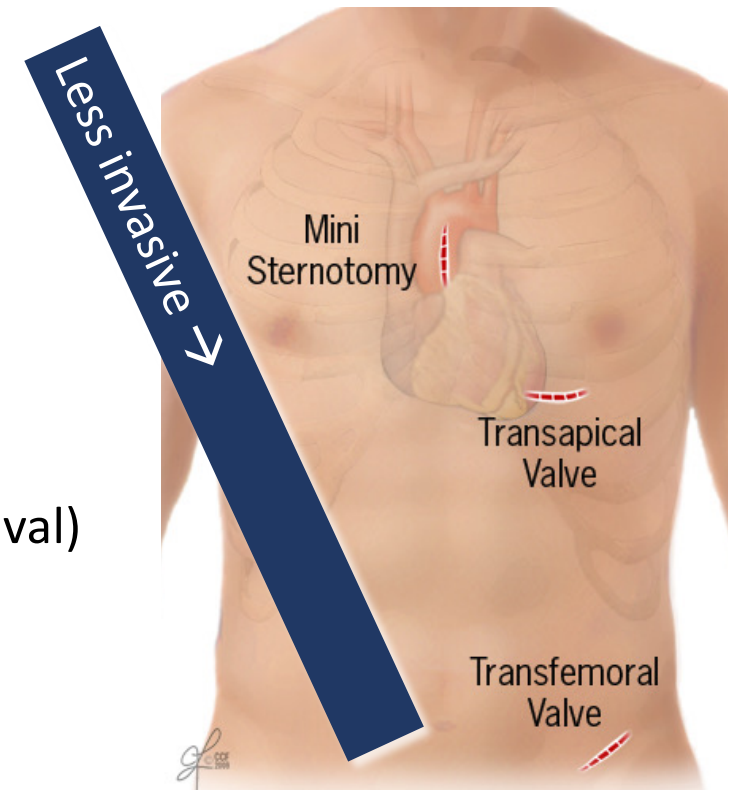


All relevant financial relationships have been mitigated.
Faculty disclosure information can be found on the app



Evolution of Surgical Technique

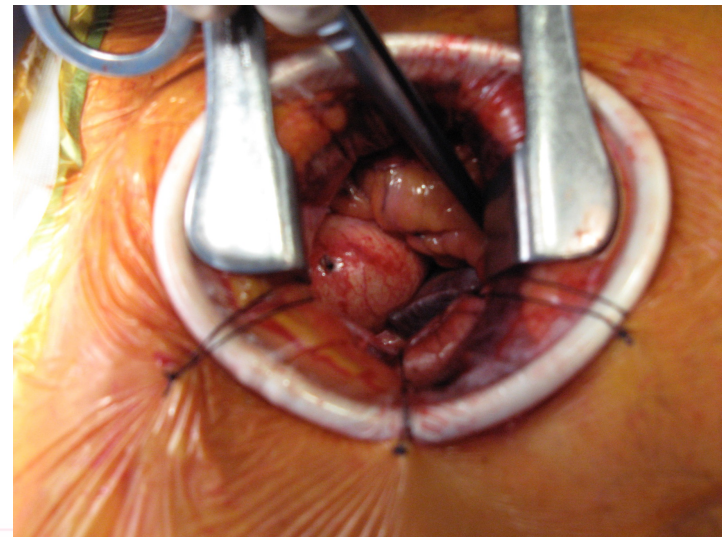
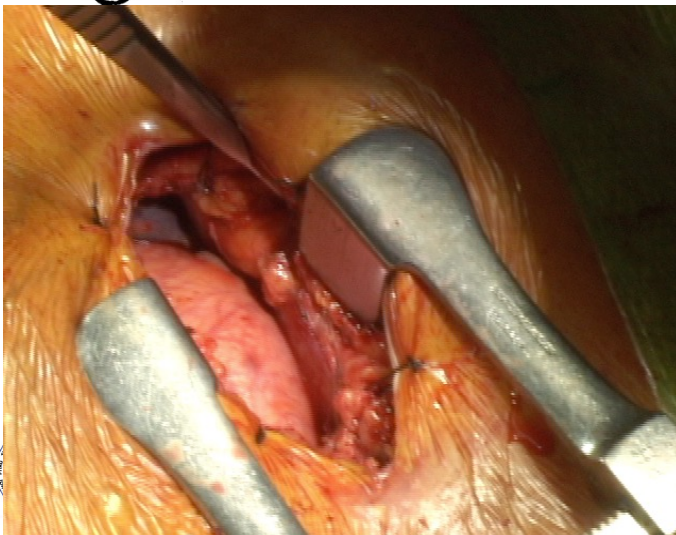
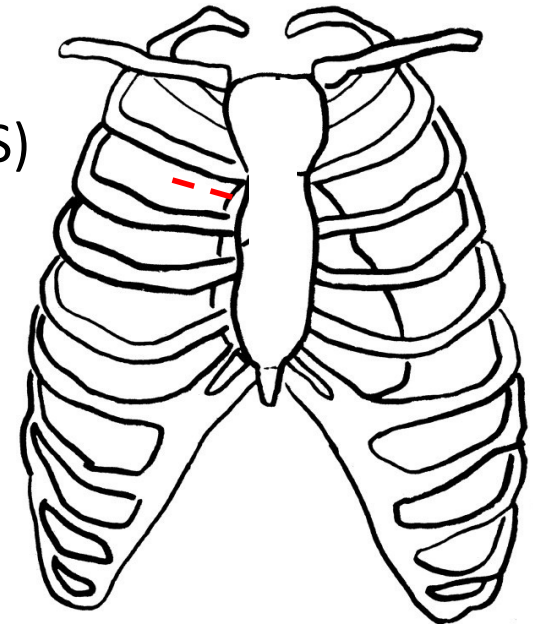
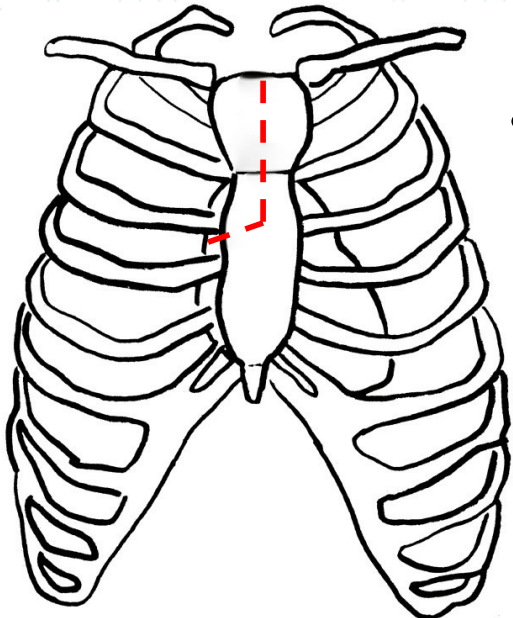
- Full median sternotomy
- Upper hemi-sternotomy
- Mini right anterior thoracotomy
- Alternative access TAVI (TA, TAo, carotid, axillary, transcaaval)
- Transfemoral TAVI



Safety must be maintained

Most common MICS AVR

- Upper partial “J” sternotomy (3rd ICS)
- Mini right thoracotomy (2nd ICS)
 - Personal preference



Comparison of Approaches

Upper hemisternotomy

- Central cannulation
- Short working distance
- Injury to RITA (+)
- Pain (+)
- Learning curve/Teaching (+)
- Ease of concomitant procedures
- Ease of conversion

Right thoracotomy

- Peripheral cannulation
- Longer working distance
- Injury to RITA (+++)
- Pain (++)
- Learning curve/Teaching (++)



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My Minimally Invasive AVR Journey



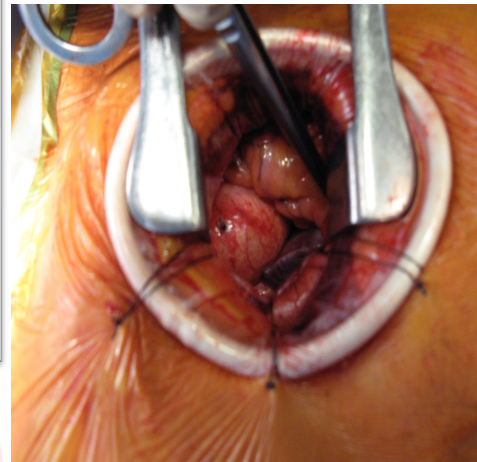
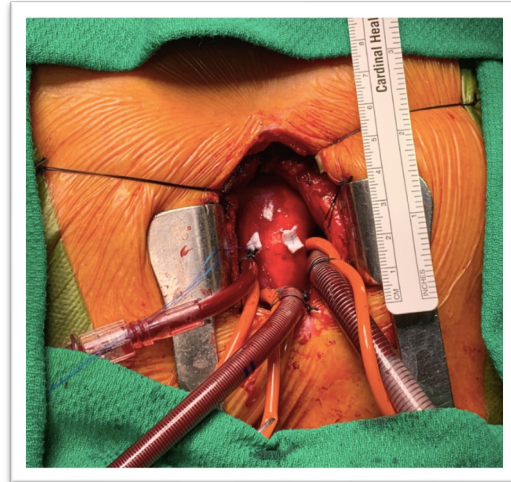
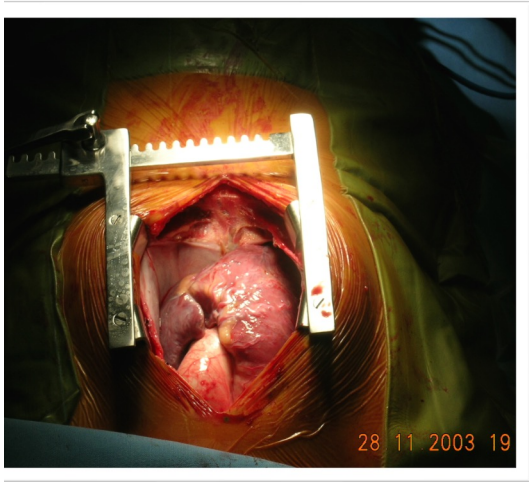
**Sternotomy AVR
(2000-02)**



**Ministerntomy and
RAT (2002-05)**
Selected isolated AVR and
redo



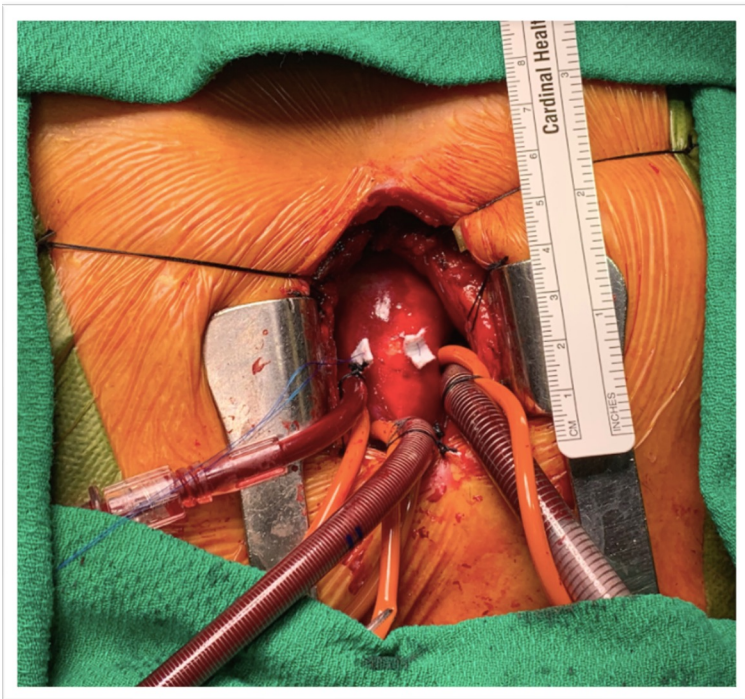
**Ministerntomy
(2005-present)**
All isolated AVR, redo,
combined ascending, Bentall,
MVR/MVr)



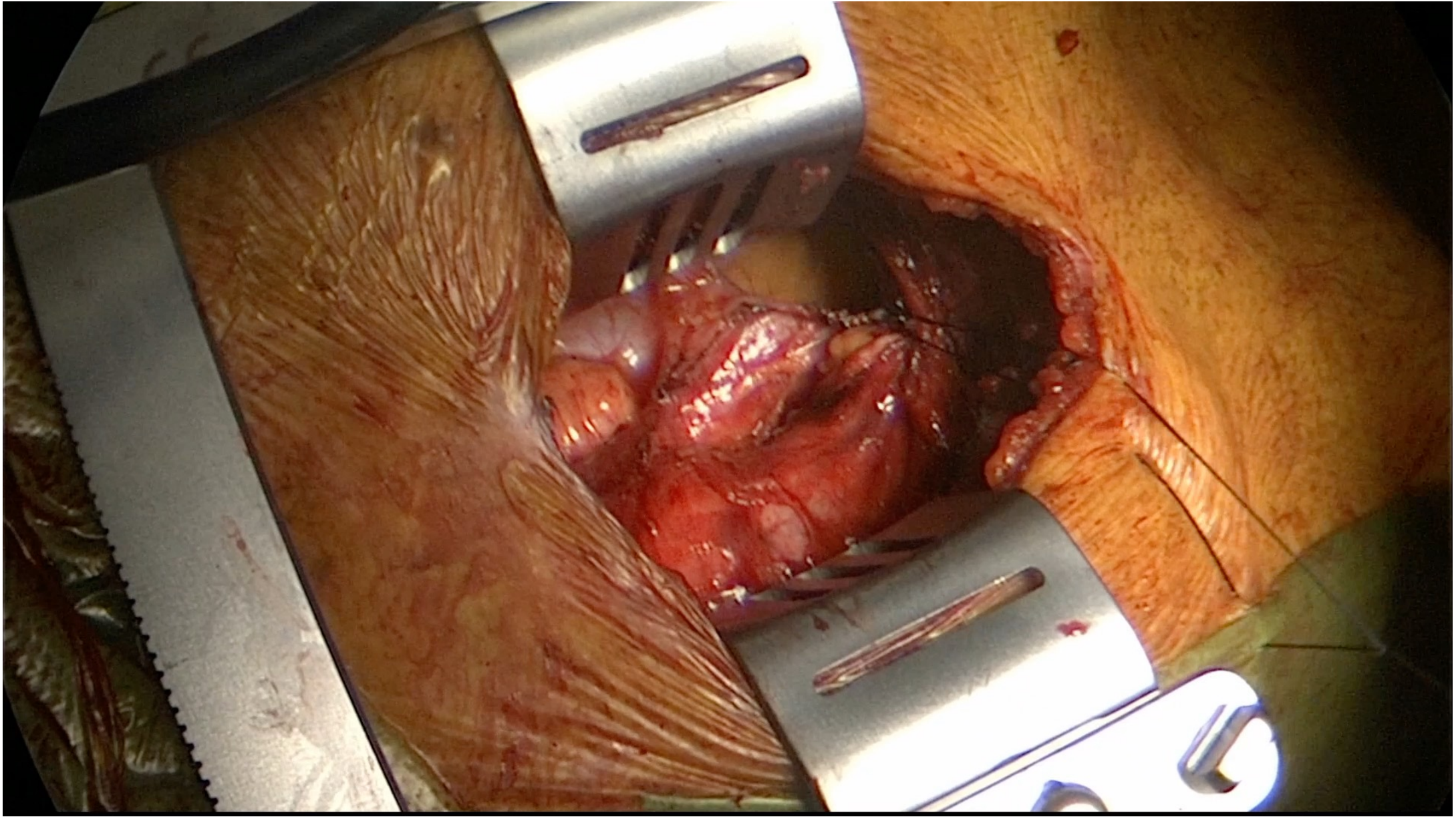
Evolution of Techniques



- Mini “L” sternotomy -> Mini “J” 3rd ICS
- Arterial: 18-22F EOPA
- Venous: MDT VC2 34/48 2-stage oval -> MC2X 29F 3-stage



- Venting: RSPV -> PA
- CO² via IV line -> mini Carbonator
- Cardioplegia: Warm blood (homemade) antegrade induction/intermittent retrograde -> Single dose antegrade KBC in 2020 (Modified micro cold blood Del Lido)
- Handtyping -> CorKnot (2018)



All isolated AVR (2007-17) at St. Paul's Hospital

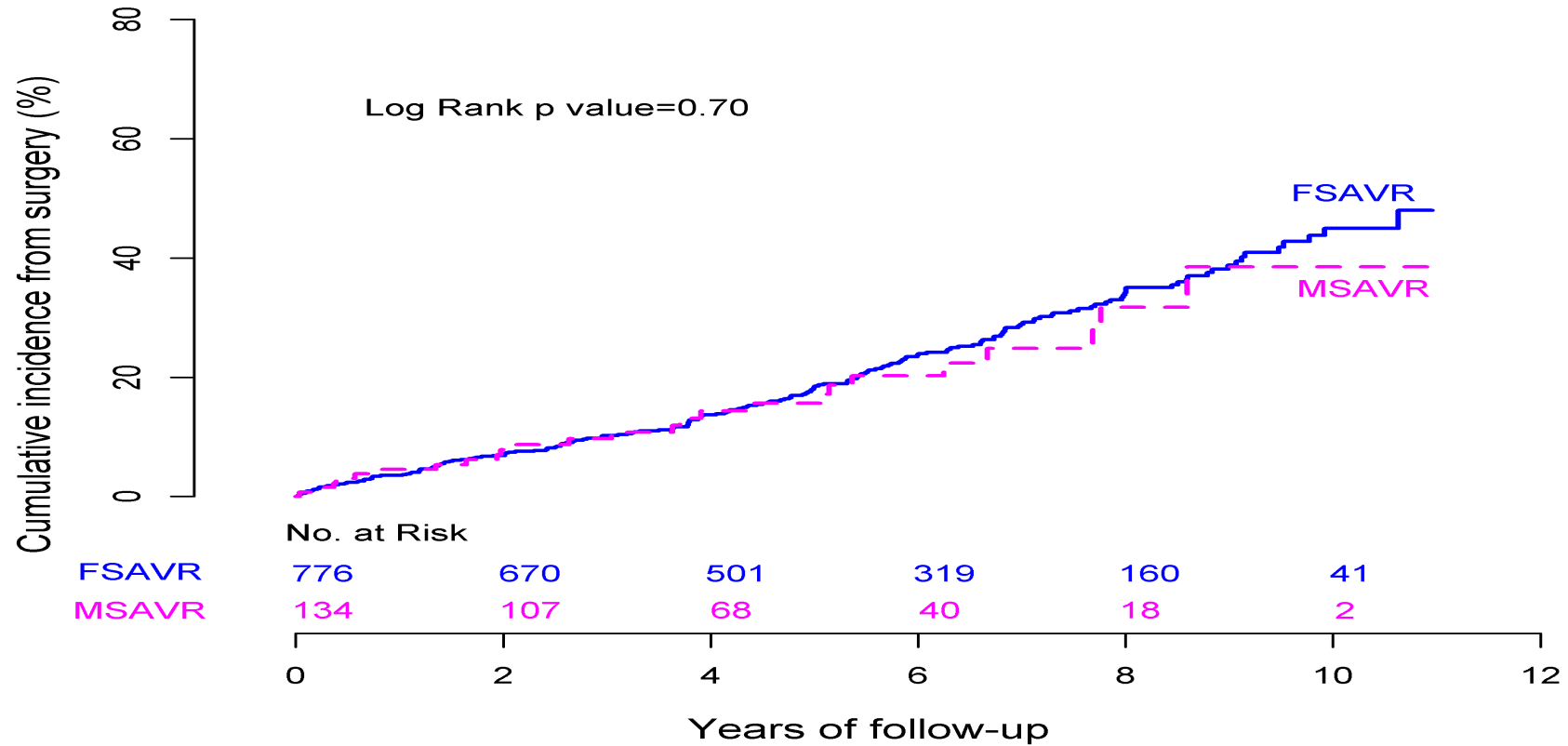
Data from provincial Cardiac Services BC

Variable	FSAVR (n=776)	MSAVR (n=134)	p value
Mean Age (year)	69.7 ± 12.2	70.7 ± 11.8	0.38
BMI	28.6 ± 5.9	28.8 ± 6.0	0.69
Female gender	323 (41.6)	60 (44.8)	0.50
LV Ejection fraction<50%	226 (29.1)	22 (16.4)	0.002
NYHA III/IV	382 (49.3)	103 (77.5)	<.001
Renal dysfunction	138 (17.9)	21 (16)	0.60
Renal failure	68(8.8)	17 (12.7)	0.15
Dialysis	15 (1.9)	4 (3)	0.43
Pulmonary HTN	123 (15.9)	26 (19.4)	0.32

Short-term Clinical Outcomes

Clinical outcomes	FSAVR (n=776)	MSAVR (n=134)	p Value
Pump time (min)	84.3 ± 30.0	75.4 ± 14.7	0.014
Clamp time (min)	64.7 ± 24.7	58.5 ± 12.2	0.08
Prosthesis Bioprosthesis	556 (93.8)	111 (93.3)	0.84
New onset of atrial arrhythmia	277 (45)	46 (43)	0.69
Sternum wound infection	7 (1.1)	0 (0.0)	0.27
Postop bleed/tamponade	20 (2.6)	2 (1.5)	0.45
CVA	8 (1.3)	2 (1.9)	0.64
Prolonged ventilation >24h	63 (10.2)	9 (8.4)	0.56
New hemodialysis	15 (2.4)	3 (2.8)	0.82
LOS in hospital (days)	8.6 ± 7.2	7.8 ± 6.3	0.006
30 day mortality	4 (0.5)	1 (0.7)	0.79

KAPLAN-MEIER CURVE OF LONG-TERM SURVIVAL



Increased risk: Age, female gender, low BMI, renal failure, COPD, pulm HTN, liver disease

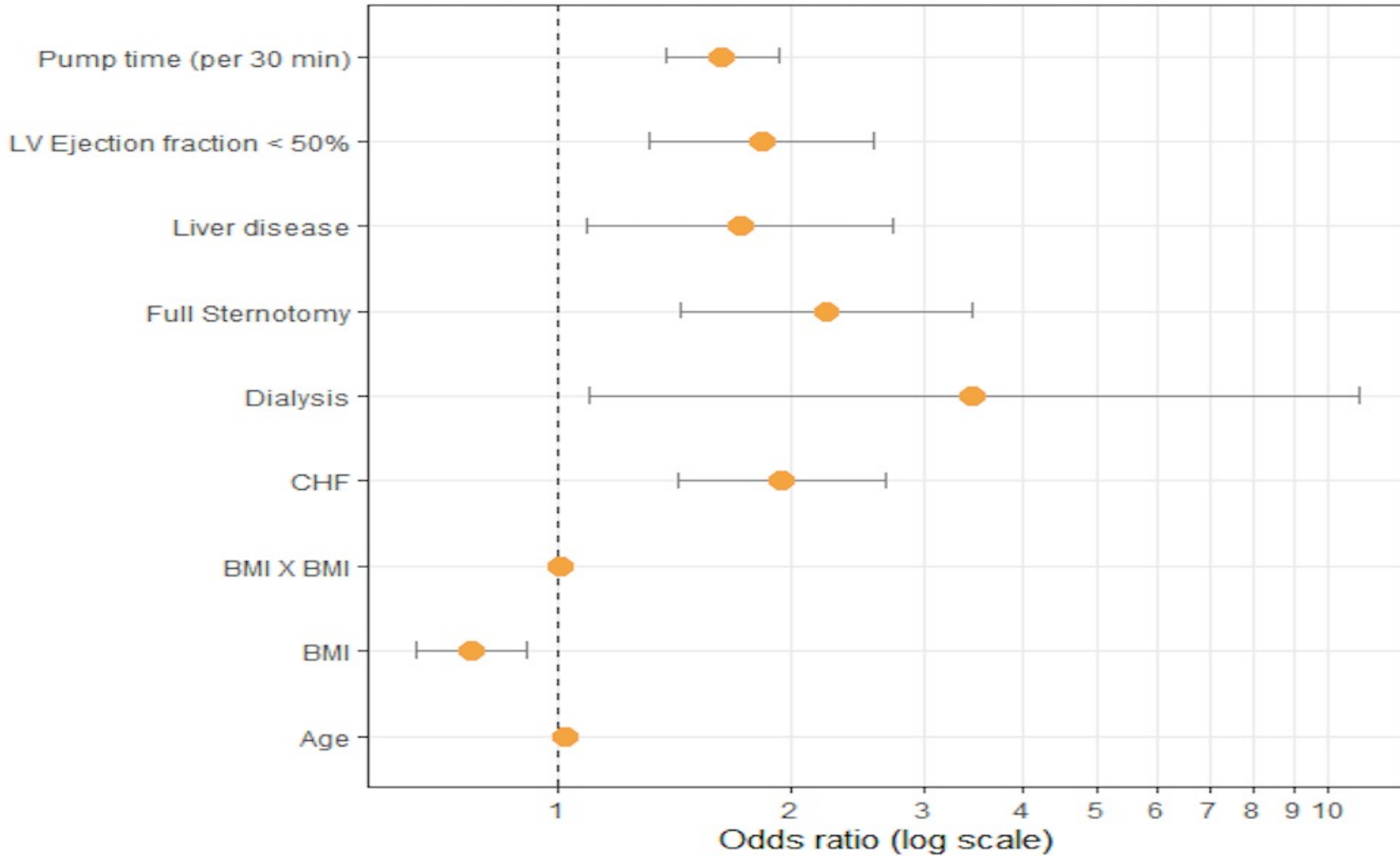


The Need For Blood Products Transfusion (Upto 7 days postop)

	All (n=910)	FSAVR (n=776)	MSAVR (n=134)	<i>p</i> value
Any blood products transfusion	48.3%	50.4%	34.3%	<0.001
PRBC	20.8	21.4	16.6	0.22
Plasma	31.4	33.0	21.4	0.007
Platelets	12.8	13.7	6.9	0.032

Predictors Of Blood Product Transfusion Post AVR

Risk factors affecting blood product transfusion





Conclusions

- Mini sternotomy can be done safely with reproducible results
- Short learning curve
- A good option in the treatment toolbox for AV disease





Thank You



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