



Fairfield
Medical Center

Surgical Treatment of Valvular Heart Disease

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Valvular Heart Disease

- Aortic Stenosis
- Aortic Regurgitation
- Aortic Valve Disease + Aortic Aneurysm
- Mitral Stenosis
- Mitral Regurgitation
- Tricuspid Regurgitation



Aortic Stenosis

- Acquired Aortic Stenosis
 - Age-related degenerative stenosis
- Congenital Aortic Stenosis
 - Calcified BICUSPID aortic valve
- Rheumatic Aortic Stenosis
 - Usually occurs in conjunction with mitral valve disease

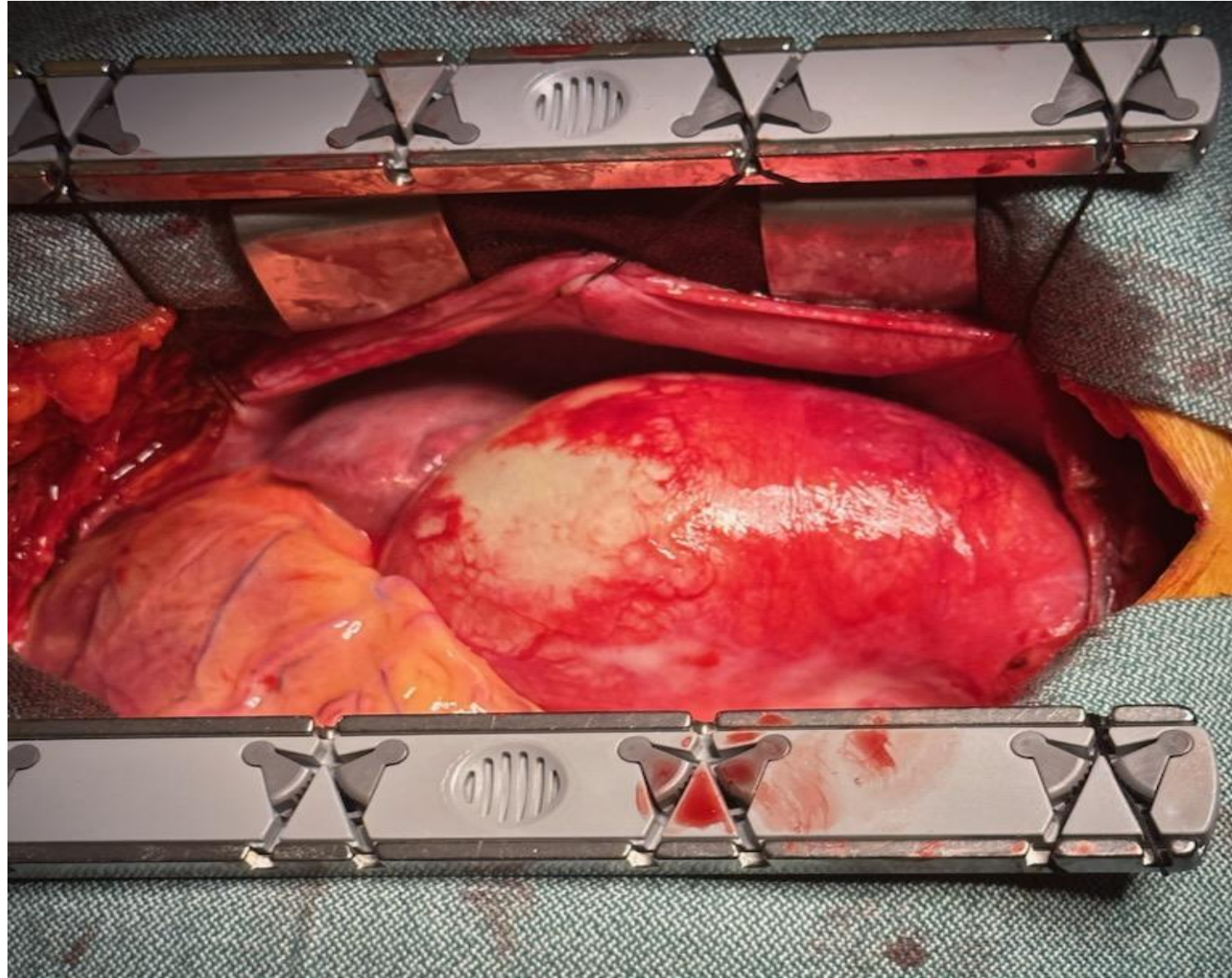


Aortic Regurgitation

- Results from improper/inadequate coaptation of the aortic valve leaflets during DIASTOLE
- Numerous causes:
 1. Distortion of valve leaflets
 - Calcific aortic disease
 - Idiopathic degenerative disease
 - Active or chronic aortic valve endocarditis
 - Rheumatic disease
 2. Anorectic medications (fenfluramine, phentermine)
 3. Aortic annular dilatation
 - Aortic dissection
 - Aneurysmal disease involving the aortic root
 - Connective tissue disorders (Marfan's, Ehlers-Danlos, Reiter's disease)



Aortic Valve + Aneurysm



Surgical Valve Replacement – Choice of Prosthesis

- Tissue Valves
- Mechanical Valves
- Autologous tissue
- Cadaveric tissue



Mechanical Heart Valves

- Several companies produce surgically implanted mechanical valves
 1. Starr-Edwards ball-in-cage
 2. St. Jude Medical
 3. Carbomedics
 4. On-X (Artivion)
- Over the past 50 years, there has been a significant evolution of mechanical heart valves:
 - Ball-in-cage
 - Non-tilting disc
 - Tilting disc (Bjork-Shiley)
 - Bileaflet valves
- Pyrolytic carbon
- Disadvantage: Need for life-long anticoagulation



On-X Mechanical Heart Valves

Product Highlights

- The only aortic mechanical valve with FDA, Health Canada, and CE Mark approval for Low INR of 1.5 – 2.0.^{1*}
- Clinically proven to be safer with less anticoagulation resulting in 87% reduction in bleeding, with no increase in thromboembolism and no valve thrombosis.^{2*}
- Unique material and design provide optimal hemodynamics compared with other mechanical and bioprosthetic aortic valves at ≥ 1 year. ^{1,3-7}
- *Reduce INR after 3 months of standard therapy.¹



On-X Mechanical Heart Valve



90-degree leaflet opening:
organizes blood flow, reduces turbulence and thrombogenicity

Pure pyrolytic carbon



Complete annular support: flared
annulus prevents pannus ingrowth



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On-X
STEP AHEAD

Aortic
Heart Valve

ON-X Mechanical Valved Conduit (the most advanced aortic valved conduit)



Vascutek Gelweave Valsalva graft

Mimics the natural sinus of Valsalva making coronary artery re-implantation easier and helps prevent kinking or tension.

Conformn-X sewing ring: provides optimal hemodynamics and ease of suturing

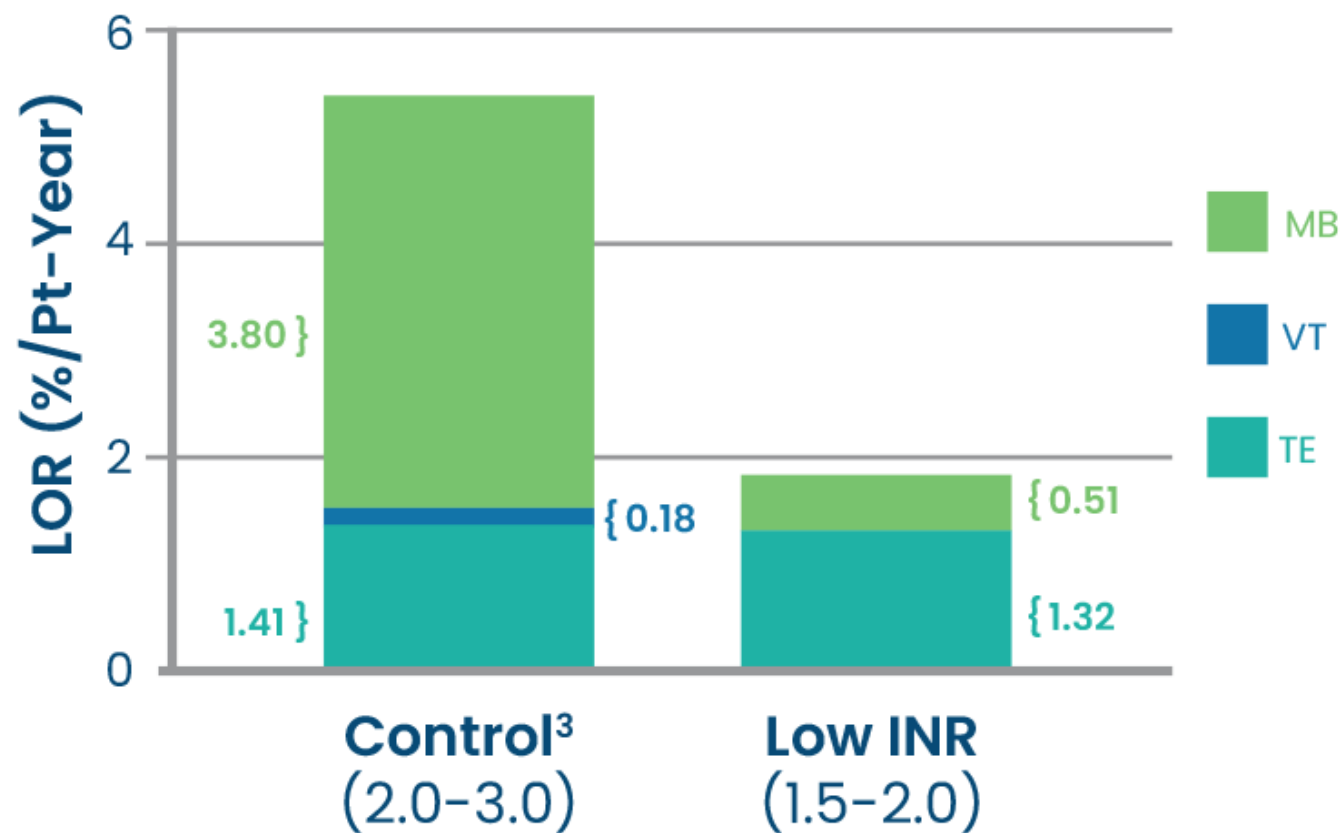


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On-X Post Approval Study 5-Year Outcomes

Primary Composite Endpoint

5.39% vs. 1.83% ($P < 0.0001$)



Tissue Valves

- A large variety of tissue valves exist on the market.
- Similar to mechanical valves, tissue valves have undergone an extensive evolution over the past 50 years, essentially aimed at increasing long-term durability.
- Current valves are all treated with some process to increase their long-term durability and eliminate the need for anticoagulation.
- Disadvantage: STRUCTURAL DEGENERATION



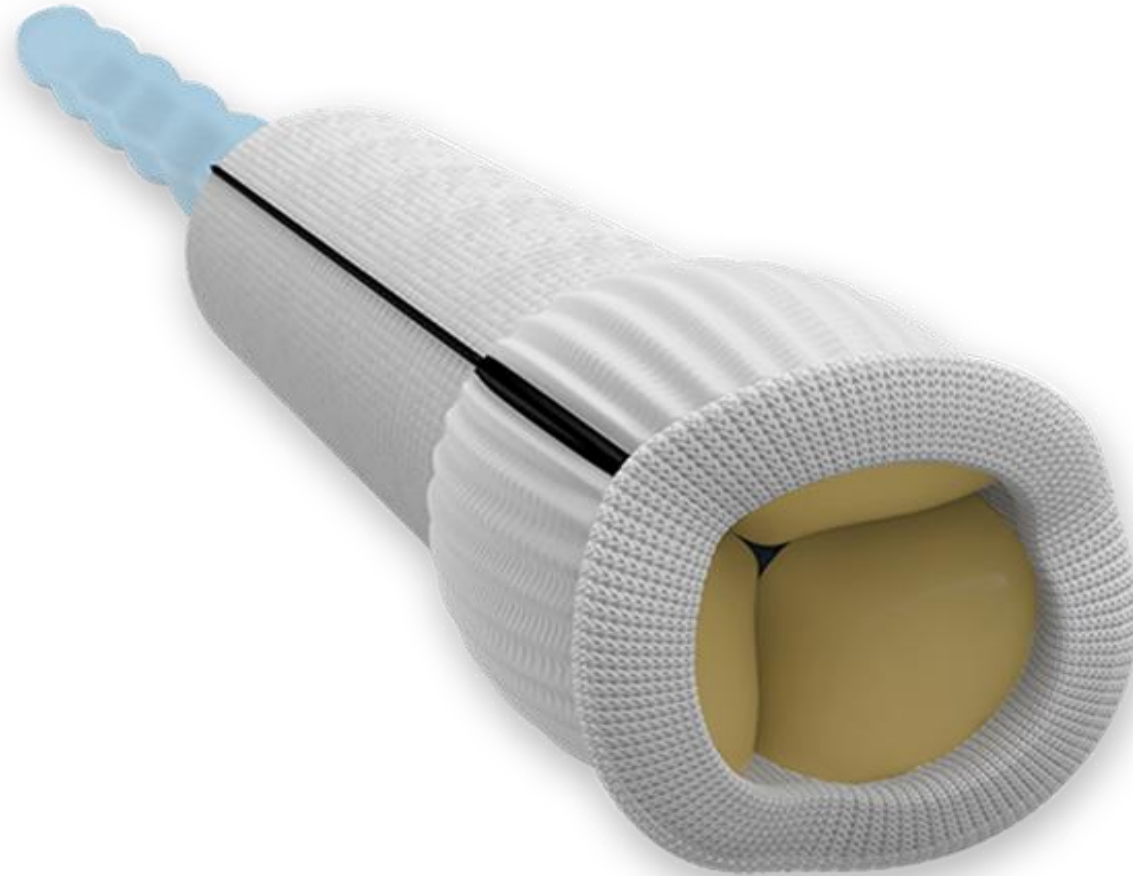
Edwards Inspiris Resilia aortic valve



Edwards Mitris Resilia mitral valve



Edwards Konect tissue valved conduit



Take Home Points

1. Earlier referral for surgical intervention leads to IMPROVED outcomes.
2. Collaboration amongst cardiologist and cardiac surgeon is the key for a successful program.
3. A variety of treatment options exist which can be tailored to meet an individual's specific needs.



References

1. Cardiac Surgery in the Adult. Cohn and Edmunds. 2003.
2. Mechanical heart valves: 50 years of evolution. Gott et al. The Annals of Thoracic Surgery 2003, vol. 76 (6), p2230-2239.





Thank You