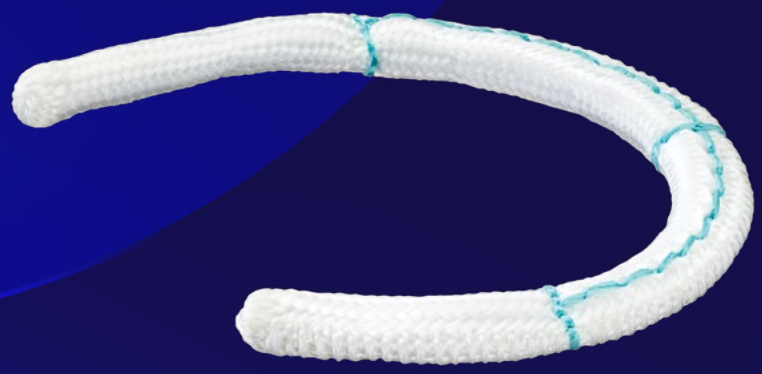
Medtronic

Clinical study results

Low incidence of postoperative pacemaker implantation following tricuspid valve repair



Impact of the contemporary Tri-Ad™ 2.0 Adams annuloplasty band in a multicenter study

This research is physician-initiated and physician-led. Medtronic did not provide funding for the research.

Low incidence of postoperative pacemaker implantation and effective tricuspid repair

Evidence suggests a high rate (>10%) of permanent pacemaker implantation following tricuspid valve repair performed at the time of mitral surgery.[1] However, tricuspid repair device design may help preserve the conduction system. This prospective multicenter study evaluated tricuspid repair using the Tri-Ad 2.0 annuloplasty band at two Canadian high-volume centers: University of Western Ontario London, and University of Ottawa Heart Institute, Ottawa.[2]

Patient population

120 patients undergoing tricuspid valve repair at the time of mitral surgery

Mean age: 68 ± 10.7 years

42% female (50/120)

Study period: 2023-2024

Concomitant procedures

Aortic surgery: 4 patients (3.3%)

Aortic valve surgery: 17 patients (14.2%)

Coronary artery bypass grafting: 4 patients (3.3%)

Key outcomes[2]

Permanent pacemaker implantation

3.3%

PPI rate

4 implants out of 120 patients. One implant was for chronic resynchronization therapy due to severe biventricular dysfunction.

94% of patients had

tricuspid regurgitation (TR) ≤ 2

with a mean follow-up of 0.5 ± 0.6 years

Survival at 30 days

97.5%

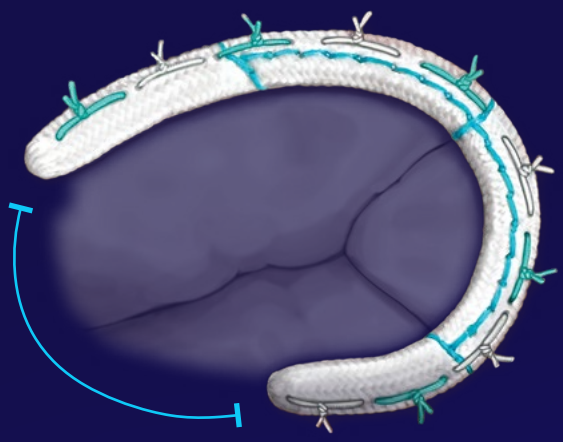
Results demonstrated

Tricuspid valve repair performed at the time of mitral valve surgery with the contemporary Tri-Ad 2.0 band was safe and showed industry-leading low pacemaker implantation rates, with low rates of residual/recurrent TR.

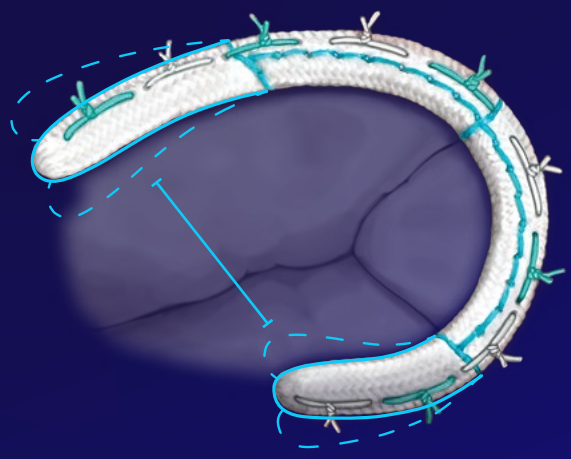
Key risks of tricuspid annuloplasty include recurrent regurgitation, stenosis, and band dehiscence.

Repair the valve.
Preserve the rhythm.

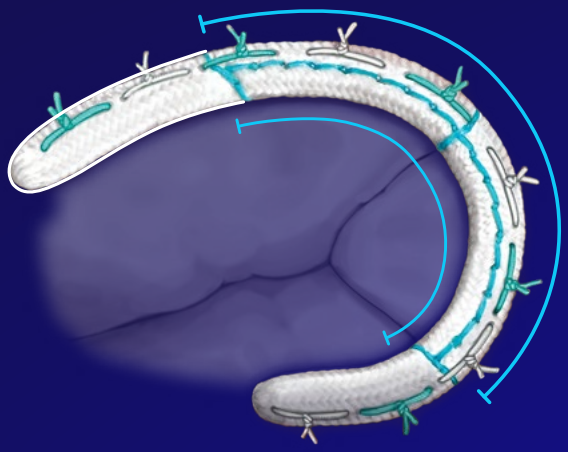
The Tri-Ad 2.0 Adams annuloplasty band is designed with flexible, semi-rigid components and a large opening area to help preserve a patients intrinsic conduction system.



Large open area to reduce conduction risks[3,4]



Soft, flexible segments to prevent ring dehiscence[3–5]



Semi-rigid segment for targeted remodeling of annulus dilation[5]

Tri-Ad 2.0 Adams annuloplasty band is engineered for repairing annular dilation and low rates of pacemaker implantation

1. Ragnarsson S, Taha A, Nielsen SJ, et al. Pacemaker implantation following tricuspid valve annuloplasty. *JTCVS Open*. Published online September 9, 2023.
2. Loshusan B. Low Incidence of Postoperative Pacemaker Implantation Following Tricuspid Valve Repair: Impact of a Contemporary Tricuspid Valve Annuloplasty Device in a Multi-Center Study. Presented at: AATS Mitral Conclave; December 11–12, 2025; New York, NY.
3. Jung W, Choi JW, Hwang HY, Kim KH. Early Clinical Outcomes of Tricuspid Valve Repair with a Tri-Ad Annuloplasty Ring in Comparison with the Outcomes Using an MC3 Ring. *Korean J Thorac Cardiovasc Surg*. April 2018;51(2):92–99.
4. Milla F, Castillo JG, Varghese R, Chikwe J, Anyanwu AC, Adams DH. Rationale and initial experience with the Tri-Ad Adams tricuspid annuloplasty ring. *J Thorac Cardiovasc Surg*. April 2012;143(4 Suppl):S71–S73.
5. Lee H, Kim J, Jung JH, Yoo JS. Mid-term outcomes of tricuspid annuloplasty using the Tri-Ad Adams tricuspid annuloplasty ring. *Interdiscip Cardiovasc Thorac Surg*. July 2024;39(1):ivae131.

Tri-Ad™ 2.0 Adams Tricuspid band
Indications: The Tri-Ad 2.0 Adams tricuspid band is indicated to repair damaged or diseased tricuspid valves with regurgitation as assessed by echocardiography, consistent with contemporary guidelines for the management of valvular heart disease.

Contraindications: The Tri-Ad 2.0 Adams tricuspid band is contraindicated in patients who are not candidates for surgical tricuspid valve repair per contemporary guidelines for the management of valvular heart disease and in whom tricuspid valve repair is not feasible. The device is contraindicated in the following instances: active bacterial endocarditis, heavily calcified valves, greatly dilated annulus (not reducible by standard techniques), severe valvular dysfunction (not correctable by standard techniques), valvular retraction with severely reduced mobility, and congenital malformations with lack of valvular tissue.

Warnings/Precautions/Adverse Events: Only physicians who have received proper training in valve repair should use this device. Adverse events can include: adverse biological response, arrhythmia leading to low cardiac output and/or hypotension, damage to coronary arteries, embolism, heart block or conduction disturbance, hemolysis, hemorrhage, infection or endocarditis, leaflet perforation, paravalvular leak, band dehiscence, stenosis, stroke, thromboembolism, thrombosis, uncorrected or recurrent regurgitation, and valvular tissue damage. These adverse events could lead to reoperation or organ dysfunction.

Caution: Federal law (USA) restricts these devices to sale by or on the order of a physician.

For a listing of indications, contraindications, precautions, warnings, and potential adverse events, please refer to the Instructions for Use (IFU). If applicable, consult electronic IFUs (eIFUs) at www.medtronic.com/manuals. Note: eIFUs can be viewed using a current version of any major internet browser.

Medtronic

710 Medtronic Parkway
Minneapolis, MN 55432-5604
USA
Tel: +1.763.514.4000
Toll-Free: 800.328.2518

Cardiovascular Lifeline Technical Services
Toll-free: 877.526.7890
Tel: +1.763.526.7890
rs.cstechsupport@medtronic.com

medtronic.com

©2026 Medtronic. Medtronic, Medtronic logo, and Engineering the extraordinary are trademarks of Medtronic. All other brands are trademarks of a Medtronic company.

US-CV-2602156 v1.0
10/2026