Transcatheter Adjustable Complete Ring Annuloplasty for Mitral and Tricuspid Valve

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Disclosure Statement of Financial Interest

• Grant / Research Support
  • Philips – St Jude Medical

• Consulting Fees / Honoraria
  • Valtech – St. Jude Medical – LivaNova

• Royalty / Intellectual Property Rights
  • Gore

• Stock Shareholder / Equity
  • Vascular Therapies – MitrAssist – Entourage – BioInspire – Cardiac Implants – Valtech – Pi-Cardia – HRT - Medivalve
Repair of FMR

- Early increased posterior leaflet tethering
- Progressive (+) LV remodeling and insufficient coaptation reserve
  
  (Mihalievic T et al. J Am Coll Cardiol. 2007;49(22):2191-2201)

- Rate of moderate or severe MR recurrence at 2 years is 58.8%
- No difference with MVR in reverse LV remodeling or survival
- Patients in the repair group had more serious adverse events related to HF and cardiovascular readmissions
  

CTSN (Cardiothoracic Surgical Trials Network)
Conventional wisdom for FMR ... Undersized Ring Annuloplasty in attempts to improve durability of MVRp

RING WARS

- Recurrent MR rate is near 60% at 2 years post repair
- Progressive and augmented tethering of the PML is a major contributor to recurrence (Kuwahara E, et al. Circulation. 2006;114[suppl I]:I-529–I-534)
- Undersized ring annuloplasty may be a flawed concept in FMR
- A new and alternative concepts in Rx of FMR is warranted
The Cardiac Implants Ring Delivery System (RDS)

- Composed of a fabric tubular ring with a protected internal cinching cord
- Pre-set array of anchors
- Single-step delivery of a complete flexible ring on the atrial side of the mitral or tricuspid valves via IJV approach
- Once delivered, the ring is allowed to heal for 6-8 weeks with new tissue growth embedding the ring and its internal cinching mechanism around the valve
- The adjustable ring can then be cinched to a desired size annuloplasty or even be used as a docking for a valve-in-ring procedure (ViR)
Ring Delivery System

Ovine surgical model at 90 days
Histopathology (CVPath – Dr. R. Virmani)

All device components were incorporated within collagenous tissue in-growth (except, by design, the internal cinching wire)

Ring secured by tissue with anchor at downward angle into atrioventricular sulcus of posterior myocardial wall
Planning and Selection

Tricuspid Implant
Post Cinching Analysis

Post ring implantation  "cinching"
Post Cinching Analysis

Mitral Implant

Post ring implantation

post "cinching"

Pre-Cinching

Post-Cinching

36.2 x 26.5

29.4 x 17.0
Suitable for ViR

Mitral Implant
New Paradigm for Treating Functional MR and TR

Functional MR

Transcatheter Mitral ± Tricuspid repair that promotes reverse remodeling of LV

Platform
Transcatheter Mitral ± Tricuspid Replacement
Conclusion

• Reshaping / resizing the annulus of the valve(s) in a chronic setting after a process of healing is an effective procedure

• An adjustable FLEXIBLE complete ring annuloplasty of the mitral and/or tricuspid valve, will favor better reverse remodeling

• Platform for ViR procedure in the future
thank you

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