Double approach mitral paravalvular leak closure

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Potential conflicts of interest

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☑ I do not have any potential conflict of interest
MITRAL PARAVALVULAR LEAKS

Access

• Transseptal
  – obtained under both fluoroscopic and transoesophageal echocardiographic guidance to find a superior and posterior septal position

• Transfemoral
  – medial mitral paravalvular leaks – very rarely

• Transapical
  – difficult-to-reach mitral leaks
  – patients with both mechanical aortic and mitral valves

How to approach mitral valve leaks?

• How to Cross the leak

• How and from where to advance the sheath?

• Which devices?
History

- 59 male
- **1994**: subaortic diaphragm resection + Aortic Valve clearance
- **1995**: endocarditis (SBE) – Aortic valve replacement (AVR - biologic)
- **1995**: re SBE – AVR (metallic) + Mitral Valve Replacement (MVR - metallic)
- **2010**: Mitral Valve paravalvular leak – re MVR with bovine pericardial annulus + Aortic aneurysm repair
- **2014**: increasing dyspnoea + hemolysis
2 PARAVALLVAL LEAKS
posteromedial (bigger) – anterolateral (smaller)
2 PARAVALVULAR LEAKS – 3D
Transeptal – superior and posterior
TRANSEPTAL APPROACH

Very difficult due to septal fibrosis and calcification

AGILIS directed posteriorly

5 Fr MP catheter – long TERUMO
TERUMO THROUGH
SHUTTLE SHEATH through Amplatzer superstiff wire
AV III final result
AVIII 14x5mm vascular plug
Final result – moderate residual defect posteromedially – inability to approach anterolaterally

2D moderate residual leak

3D incomplete closure
6 months later: increasing dyspnea and re-hemolysis
RESIDUAL moderate POSTEROMEDIAL + moderate ANTEROLATERAL DEFECT

2 D

3 D – previous device properly aligned
Transapical approach
Both defects closed
AV III through first device
Transapical approach
Both defects closed

Posteromedial defect 2nd AVIII
10x5 vascular plug

Anterolateral defect AVIII 10x5 vascular plug
FINAL TOE

POSTEROMEDIAL – no leak

ANTEROLATERAL – trivial residual leak
Conclusion

• Patient made full recovery – 12 months post procedure is symptom free, NYHA I without hemolysis

• **MITRAL Paravalvular leak closure** is often a complex procedure; both transeptal and transapical approaches are feasible

• Both approaches can be used complementary
AORTIC PARAVALVULAR LEAK CLOSURE: USE OF COMPLEX CORONARY AND TAVI TECHNIQUES

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• 64 male
• Rheumatic fever
• **1994**: closed mitral valvotomy for MS
• **2000**: MVR metallic for MS
• **2001**: MVR metallic for SBE
• Residual mild AR at the time
• **2014:** severe AR, NYHA I-II, normal LV function
• **2016:** severe AR, NYHA III, worsening LV function
• MVR normal
• **2017:** AVR metallic (St Jude)
• 2 months later: *mild – moderate aortic paravalvular leak*
• **2018:** NYHA III – *worsening paravalvular leak – no hemolysis*
TOE

Normal MVR

Normal MVR
TOE

Moderate + aortic paravalvular leak – 2D

Moderate + aortic paravalvular leak – 3D
Size

Size

Size - biplane
Location

CT – R cor sinus

Location – 2D TTE – L cor sinus
PROCEDURE

MP non cor sinus

AL1 R cor sinus
PROCEDURE

AL 2 L cor sinus

AL 2 TERUMO unsuccesfull
PROCEDURE

AL2 BMU

AL2 GUIDEZILLA
PROCEDURE

AL2 GUIDEZILLA

TAVI CONFIDA WIRE THROUGH GUIDEZILLA
PROCEDURE

CONFIDA THROUGH GUIDEZILLA

CONFIDA IN LV
PROCEDURE

SHUTTLE SHEATH

SHUTTLE SHEATH THROUGH
PROCEDURE AVIII 8x4mm
PROCEDURE AVIII 8x4mm
PROCEDURE AVIII 8x4mm
BMU withdrawal
PROCEDURE AVIII 8x4mm

CHECK AVR BEFORE RELEASE

CHECK AVR AFTER RELEASE
PROCEDURE AVIII 8x4mm
PROCEDURE AVIII 8x4mm
final result
1 day post – 2D echo
1 day post – 2D echo
In conclusion

• Paravalvular leaks are often difficult to close due to distorted anatomy
• Various complex PCI and TAVI techniques may prove helpful