Transcatheter mitral valve repair: Fitting innovation into state-of-the-art therapy

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Many procedures in cardiac surgery were developed prior to open heart surgery and closed valvotomies have been the first procedures performed in rheumatic valve disease. In the last decade transcatheter therapies as a relative young discipline evolved rapidly in cardiac interventions.

Leaflet repair

Edge-to-edge

- MitraClip — CE mark
- Pascal — CE mark
- Valveclamp — FiH
- Mitraflex — Preclinical testing

Enhanced coaptation

- Mitra-Spacer — FiH
- Mitralix — FiH
- Mitral Butterfly — Preclinical testing

Chordal repair

- NeoChord — CE mark
- Harpoon — CE mark study
- Coremedic — FiH
- Cardiomech — FiH
- V-Chordal — FiH

Annuloplasty

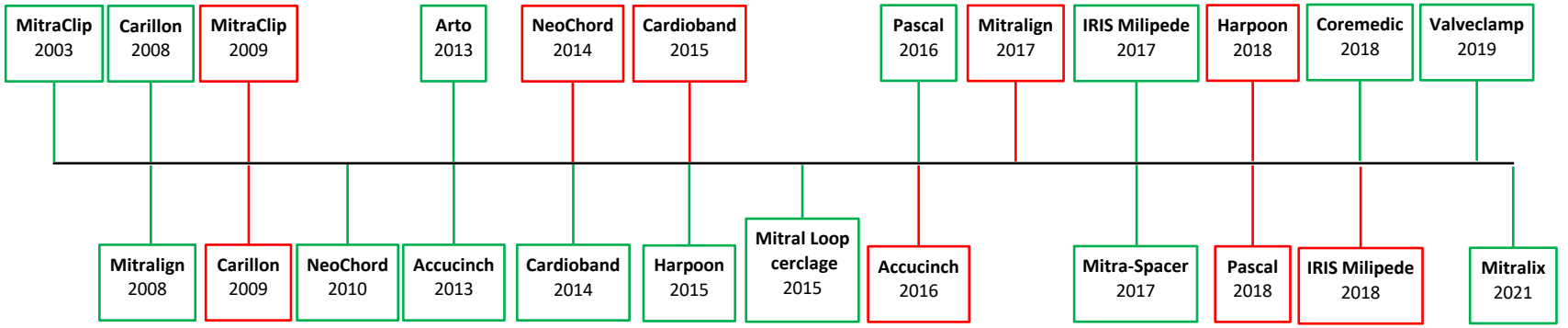
Direct

- Cardioband — CE mark
- Mitralign — CE mark
- Accucinch — FS study
- Iris device — FS study
- Amend — Preclinical testing

Indirect

- Carillon — CE mark
- Arto — FS study
- Mitral Loop Cerclage — FS study

Timeline



Feasibility study (FS study)

First-in-Human study (FiH)

Clinical goldstandard: Edge-to-edge repair

In the first phase the reintervention rate was **30%**

Device (study)	MitraClip (EVEREST)[1]
Patients (MR type)	84 (DMR) and 23 (FMR)
All-cause mortality (Follow-up year)	9.9% (3 years)
MR grade (n, Follow-up time)	≤ 1-2+ (50/76, 2 years)
Reintervention (no clip implantation)	9
Reintervention (at least 1 clip implantation)	23

[1]Feldmann T. et al. (2009): Percutaneous Mitral Repair with the MitraClip System: Safety and Midterm Durability in the Initial EVEREST (Endovascular Valve Edge-to-Edge REpair Study) Cohort. J Am Coll Cardiol. 54 (8): 686-694.

Device limitations

- Multiple clip implantation results in higher risk for infective endocarditis
- ACT placement requires exact distance measurements
- Myocardial anchoring of ACT influences long term results and durability of the repair
- Complex mitral valve anatomy

Conclusion

Further investigation of developing technologies such as Amend, Mitral Butterfly and Mitraflex may overcome these limitations.