

Evolution of endoscopic mitral valve surgery in the era of transcatheter edge-to-edge repair: an 11-year period at a high-volume center

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Background

Mitral regurgitation (MR) is the second most frequent valvular heart disease in Europe representing an important cause of morbidity and mortality. Despite increasing use of transcatheter edge-to-edge repair (TEER), endoscopic Mitral Valve Surgery (MVS) remains an established treatment approach aiming at reduced surgical trauma and improved recovery.

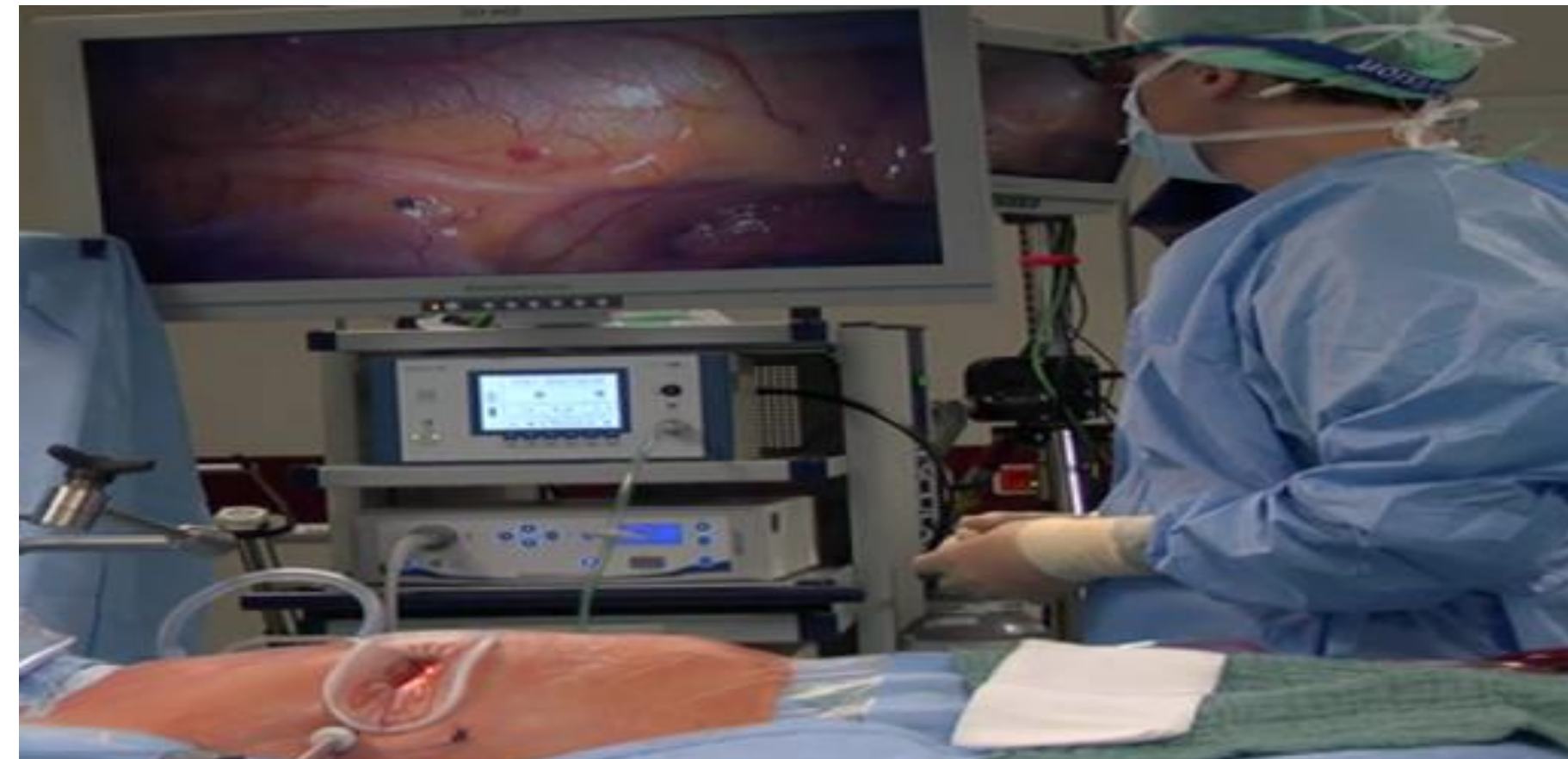
Patients and Methods

Between 2012 and 2022, a total of 1.037 consecutive patients underwent fully endoscopic MVS. Patients received limited right-sided anterolateral skin incision and 3D-camera visualization. Data was retrospectively analyzed.

Endoscopic Mitral Valve Surgery (2012-2022)
(n=1037)

initial-period
(2012-2017)
(n=487)

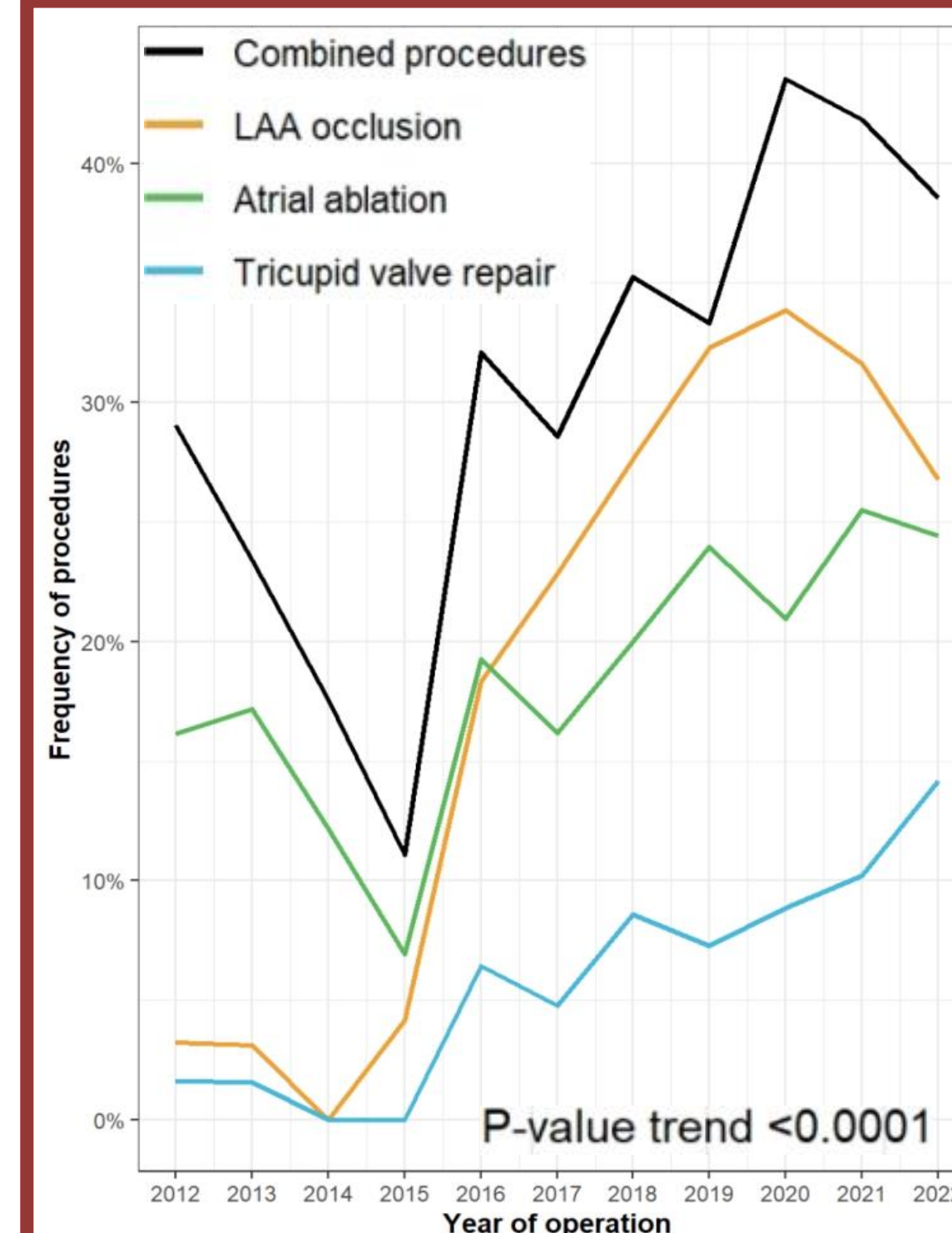
late-period
(2018-2022)
(n=550)



Preoperative patient characteristics over time

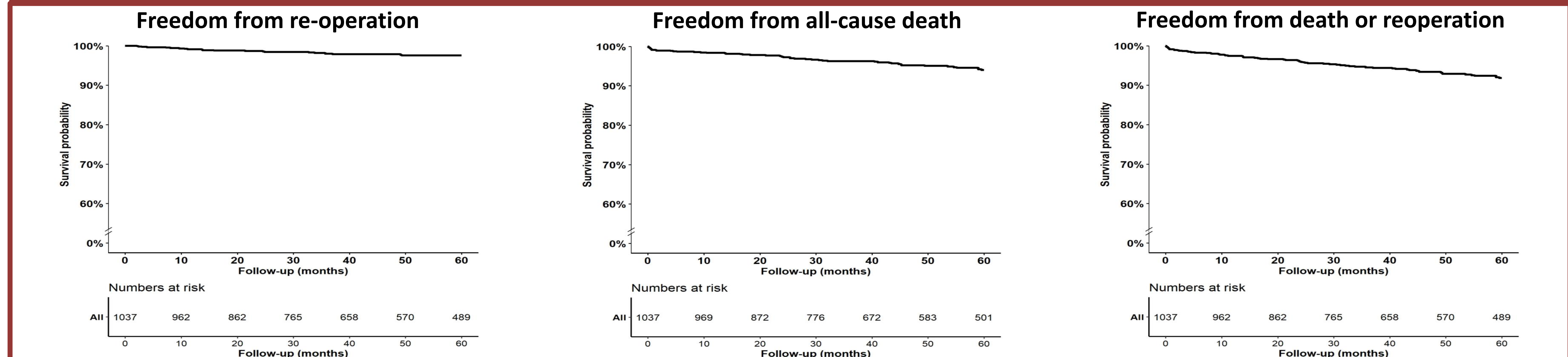
Variables	initial-period (n=487)	late-period (n=550)	p-value
Age (years), median (IQR)	59 (52-67)	61 (54-69)	0.002
Peripheral artery disease, n (%)	8 (1.7)	21 (3.8)	0.055
Coronary artery disease, n (%)	45 (9.3)	94 (17.1)	<0.001
STS PROM Score (%), median (IQR)	0.4 (0.3-0.6)	0.4 (0.3-0.8)	<0.001
NYHA ≥2, n (%)	349 (71.7)	449 (81.6)	<0.001
Endocarditis, n (%)	12 (2.8)	33 (6.0)	0.0026
Primary MR, n (%)	415 (88.3)	415 (78.3)	<0.001
EROA (cm ²), median (IQR)	0.4 (0.2-0.7)	0.5 (0.4-0.9)	0.0037
LVEF (%), median (IQR)	60 (60.0-60.1)	60.0 (55.0-64.0)	0.033

Concomitant procedures and perioperative outcome over time



Variables	initial-period (n=487)	late-period (n=550)	p-value
MV-repair, n (%)	469 (96.3)	492 (89.5)	<0.001
CPB time (min), med. (IQR)	176 (147-208)	153 (131-182)	<0.001
X-clamp time (min), med. (IQR)	109 (88-133)	89 (75-108)	<0.001
Sternotomy, n (%)	9 (1.8)	17 (3.1)	0.28
ECMO, n (%)	2 (0.4)	4 (0.9)	0.55
Revision, n (%)	34 (7.0)	42 (7.5)	0.89
Ventilation time (min), med. (IQR)	5.9 (4.0-9.0)	4.2 (3.0-6.0)	<0.001
30-day mortality, n (%)	5 (1.0)	2 (0.4)	0.36

Longterm Follow-up



Conclusion

Despite a continuous increase of patient age, prevalence of outcome-relevant comorbidities and surgical risk within the last decade, perioperative and longterm outcome of patients undergoing endoscopic MVS remain favorable. Particularly the possibility of concomitant cardiac procedures (e.g., tricuspid valve repair, ablation and LAA-occlusion) during endoscopic MVS, should be taken in consideration during routine heart-team discussion to determine the appropriate treatment option.