



Alfieri stitch in mini-thoracotomy repair of degenerative mitral regurgitation: Useful tool or bad idea?

Zwischenberger BA, Gaca JG, Carr K, Wang A, Glower DD

Duke University Medical Center • Durham, North Carolina

ABSTRACT

Objective: The Alfieri stitch is a mitral repair technique that can easily be applied in less invasive approaches to the mitral valve. However, the Alfieri stitch is seldom used and has raised concern of producing mitral stenosis or recurrent regurgitation. **Methods:** 1183 consecutive patients undergoing repair of degenerative mitral regurgitation via right mini-thoracotomy from 1997 to 2019 were examined from a prospectively maintained database. Propensity score matching was performed on patients with and without Alfieri stitch to compare outcomes up to 10-years. **Results:** The Alfieri stitch was used in 615/1183(52%) of patients with annuloplasty in all patients. Patients receiving the Alfieri stitch were less urgent with less heart failure and more likely to have robotic assistance (95/615(15%) v 43/568(8%), $P<0.001$), receive a flexible band (92/615(15%) v 25/568(4%), $P<0.001$), or have larger rings (37 ± 3 v 34 ± 4 mm, $P<0.001$). Alfieri repairs were more likely to also have chordal replacement (405/615(66%) v 185/568(33%), $P<0.001$) or cleft closure (333/615(54%) v 207/568(36%), $P<0.001$). In 209 matched patient pairs, Alfieri patients did not differ significantly in baseline characteristics or procedure performed other than the Alfieri stitch. Matched Alfieri patients had longer clamp (130 $\pm$ 38 v 119 $\pm$ 34 min, $P=0.001$) and pump times (213 $\pm$ 59 v 194 $\pm$ 59 min, $P=0.003$), but no difference in postoperative course. Matched Alfieri patients had only slightly higher mean postoperative gradient (4.0 $\pm$ 1.4 v 3.2 $\pm$ 1.3 mmHg, $P<0.001$). At 10 years, matched Alfieri patients showed insignificant differences in survival (87 $\pm$ 4% vs 83 $\pm$ 5%, $P=0.5$) or cumulative incidence of mitral reoperation (9 $\pm$ 4% vs 2 $\pm$ 2%, $P=0.2$), severe mitral regurgitation (8 $\pm$ 3% vs 1 $\pm$ 1%, $P=0.3$), or moderate or more mitral regurgitation (32 $\pm$ 8% vs 21 $\pm$ 6%, $P=0.4$). **Conclusions:** In selected patients undergoing repair of degenerative mitral regurgitation via right mini-thoracotomy approach, use of the Alfieri stitch can be associated with only slightly higher mean mitral gradient, without significantly increased risk of mitral reoperation or recurrent regurgitation at 10 years. Based on early 10-year data, the Alfieri stitch may be a safe and easily applied adjunct to minimally invasive mitral repair in selected patients.

PURPOSE

- Examine applicability and impact of Alfieri stitch in R mini-thoracotomy degenerative mitral repair

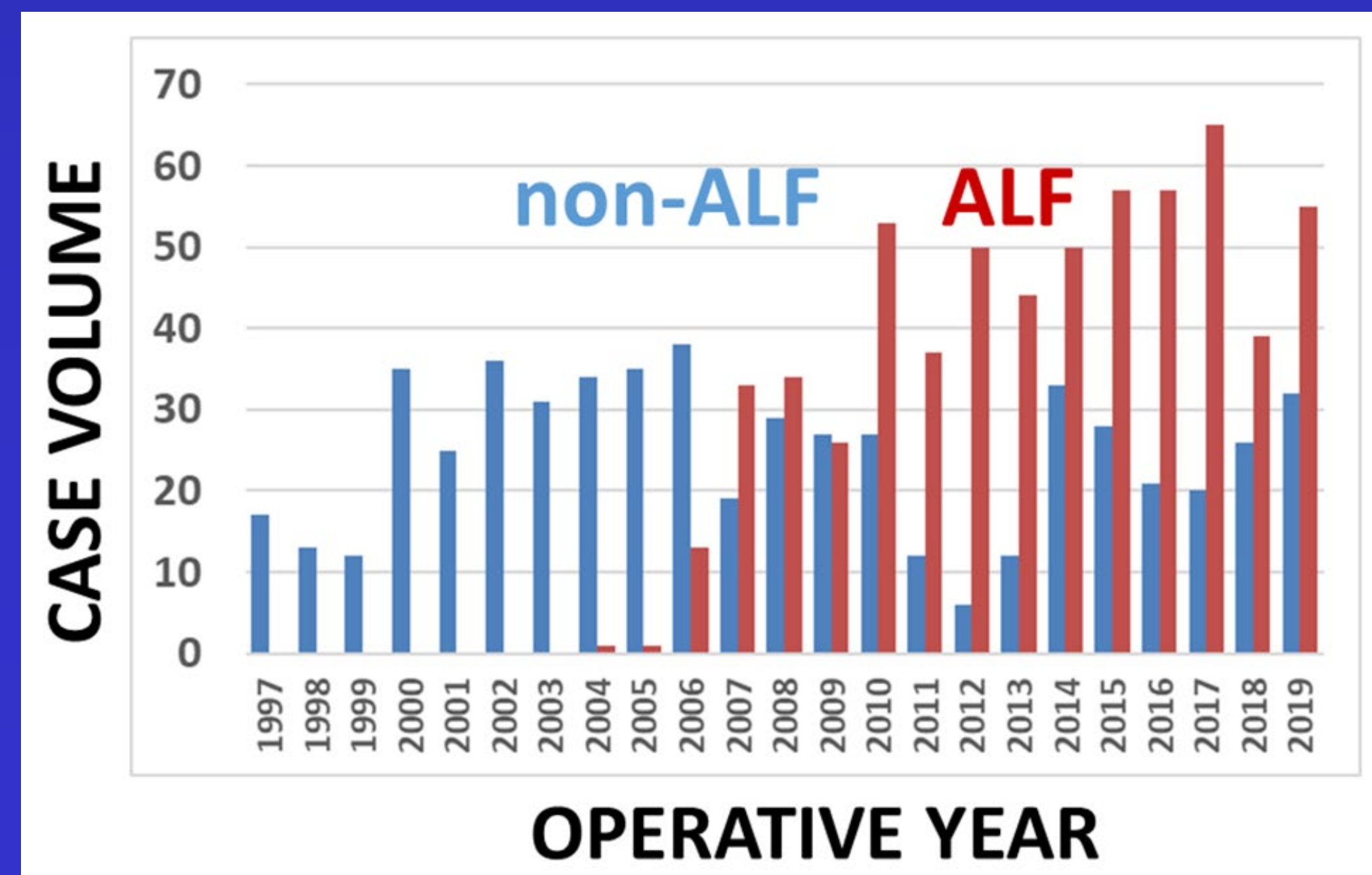
BACKGROUND

- R mini-thoracotomy increases operative time and increases difficulty
- R mini-thoracotomy favors fast and reliable mitral repair techniques
- Alfieri stitch infrequently used with limited data regarding durability and applicability to R mini-thoracotomy

METHODS

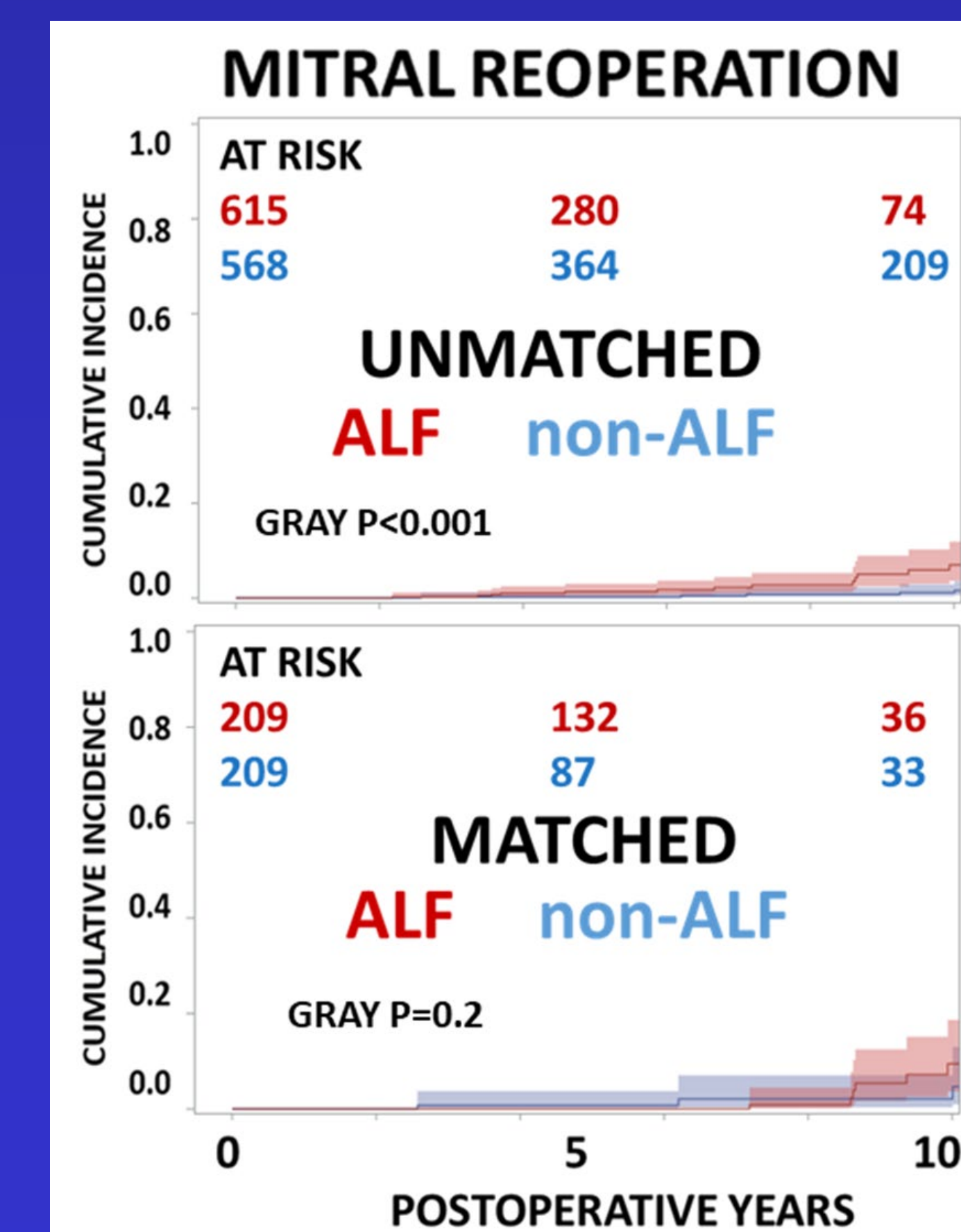
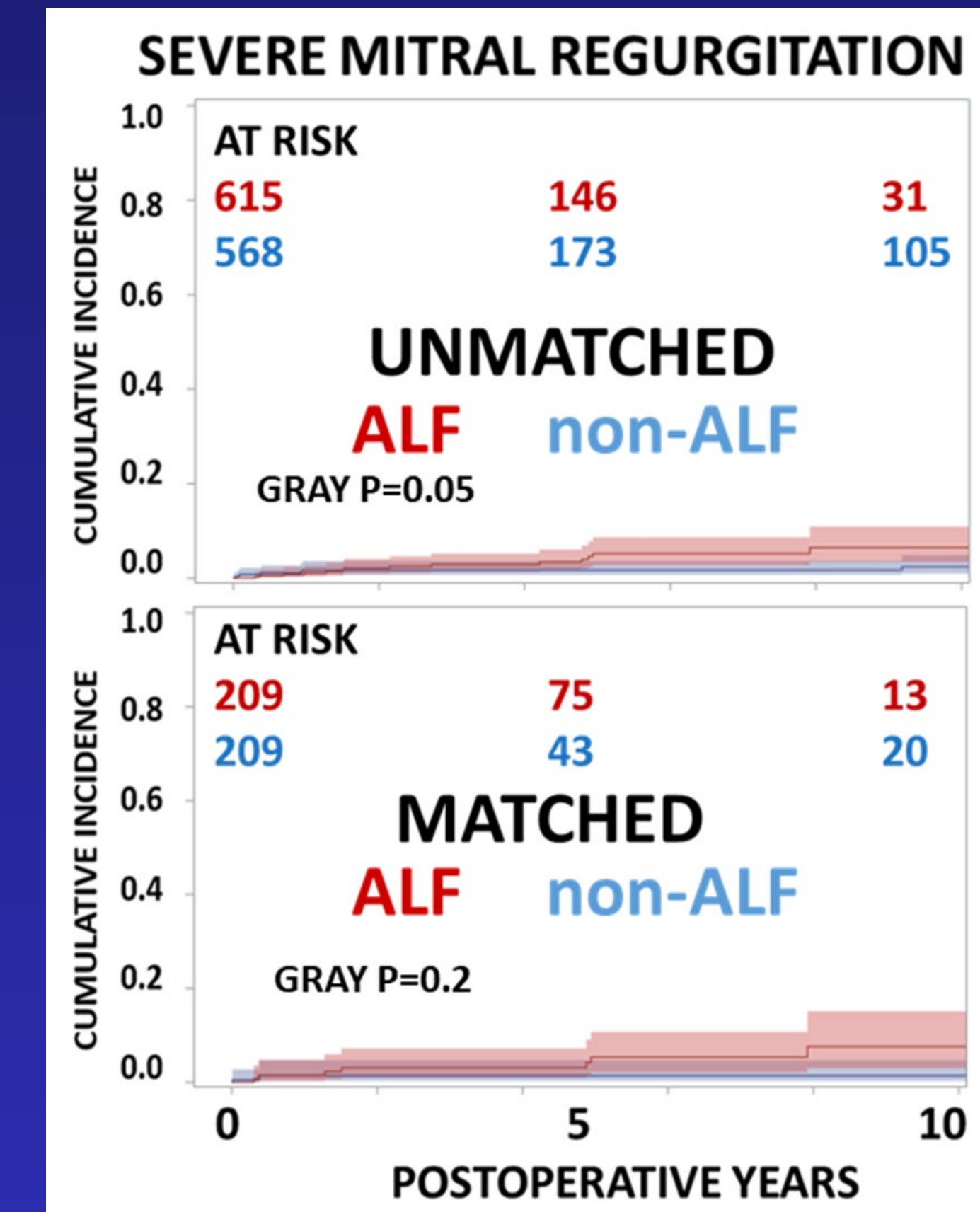
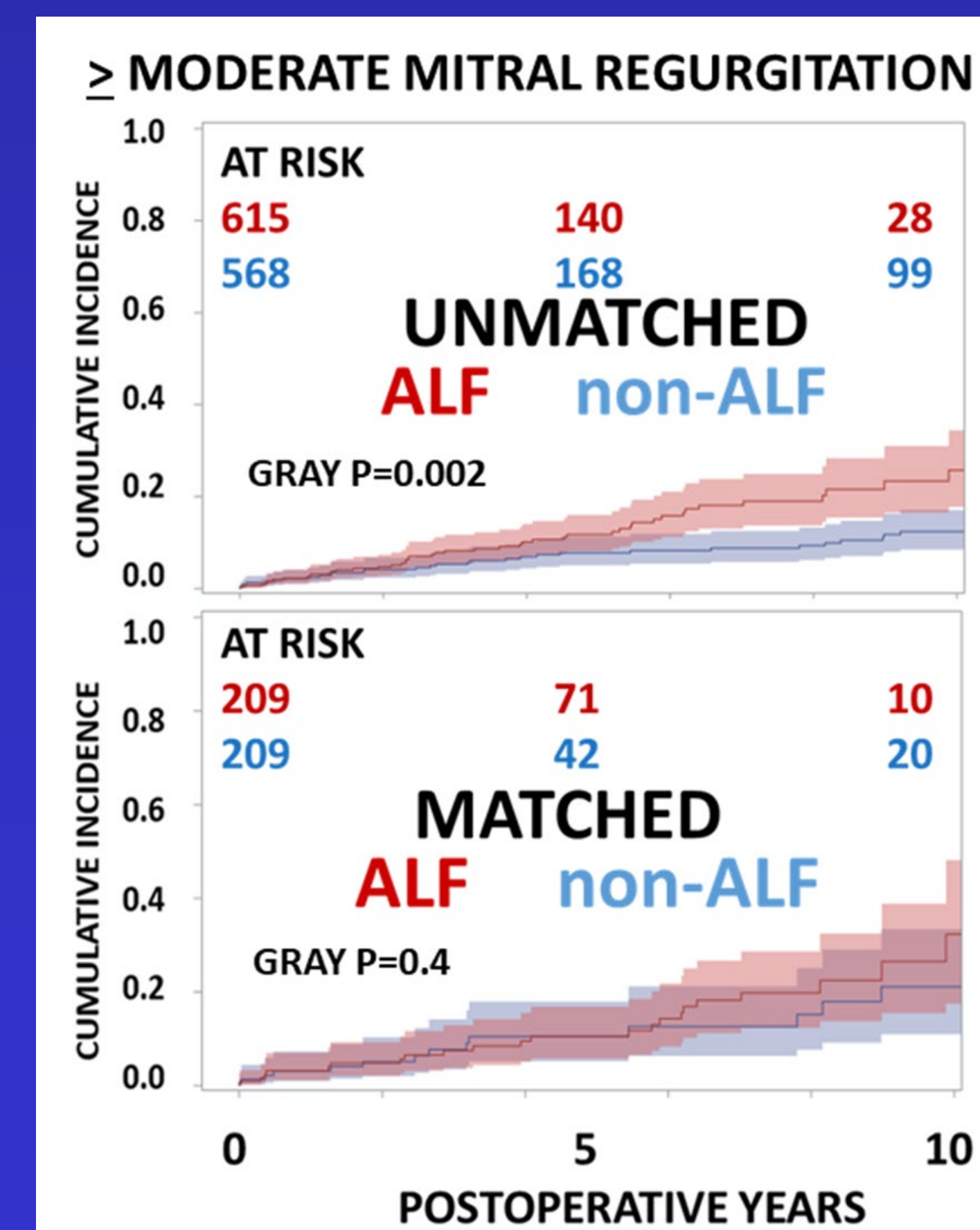
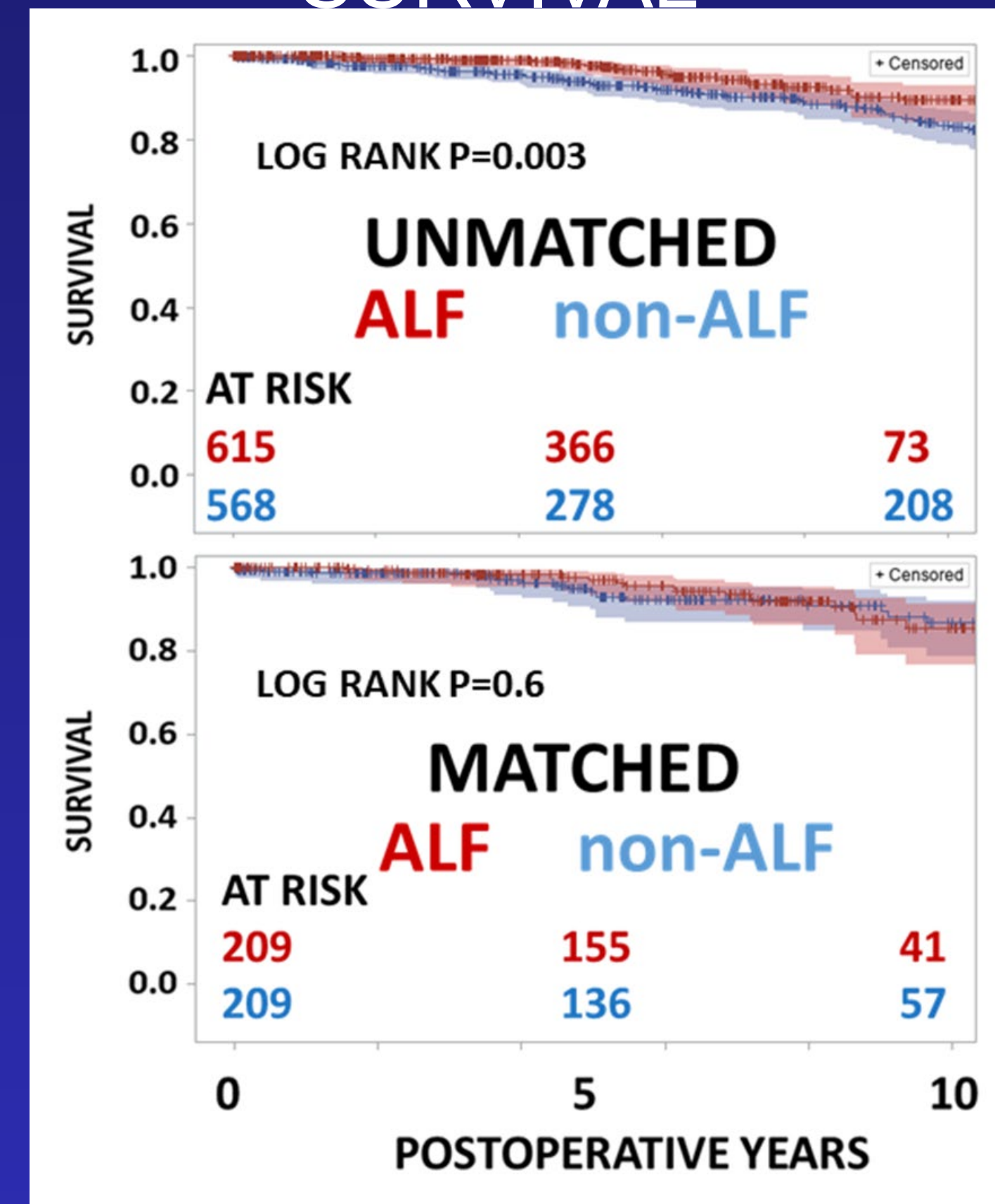
- 1183 consecutive degenerative mitral repairs 1997-2019
- 4-10 cm R mini-thoracotomy
- Alfieri stitch N=615 versus non-Alfieri N=568
- Propensity matching 209 pairs
- Robotic assistance 138/1183(12%)

	Alfieri	Non-Alfieri	p
N	209	209	
Age	58 $\pm$ 14	61 $\pm$ 13	0.1
Posterior Prolapse	146(60%)	157(75%)	0.2
Pump Time	213 $\pm$ 59	194 $\pm$ 59	0.001
Clamp Time	130 $\pm$ 38	119 $\pm$ 34	0.003
Leaflet Resection	22(11%)	22(11%)	1.0
PTFE Chord	113(54%)	113(54%)	1.0



RESULTS

SURVIVAL



SUMMARY

- ALF increased mitral gradient by 0.4 $\pm$ 1.5mmHg, $P<0.001$
- ALF increased pump time by 15 $\pm$ 4 min, $P<0.01$
- ALF increased clamp time by 10 $\pm$ 3 min, $P=0.02$
- No effect on survival, $P=0.6$
- No effect on recurrent moderate MR, $P=0.6$
- No effect on mitral reoperation, $P=0.2$

CONCLUSIONS

- Alfieri stitch is:
 - Easily applicable to R mini-thoracotomy
 - Mitral gradient < 1mmHg higher
 - No late severe mitral stenosis
 - 10-15 min longer operation time
 - Comparable late valve durability