

Minithoracotomy Compared With Conventional Sternotomy For Ascending Aortic Replacements A Propensity Score Matched Study

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BACKGROUND:

Replacement of the ascending aorta is usually performed through a conventional or occasionally a partial sternotomy. Approaches like a mini right thoracotomy are not usually used because of concerns of bleeding and exposure. Using an improved suturing technique, we have successfully performed a small series of ascending aorta replacements through a mini right thoracotomy.

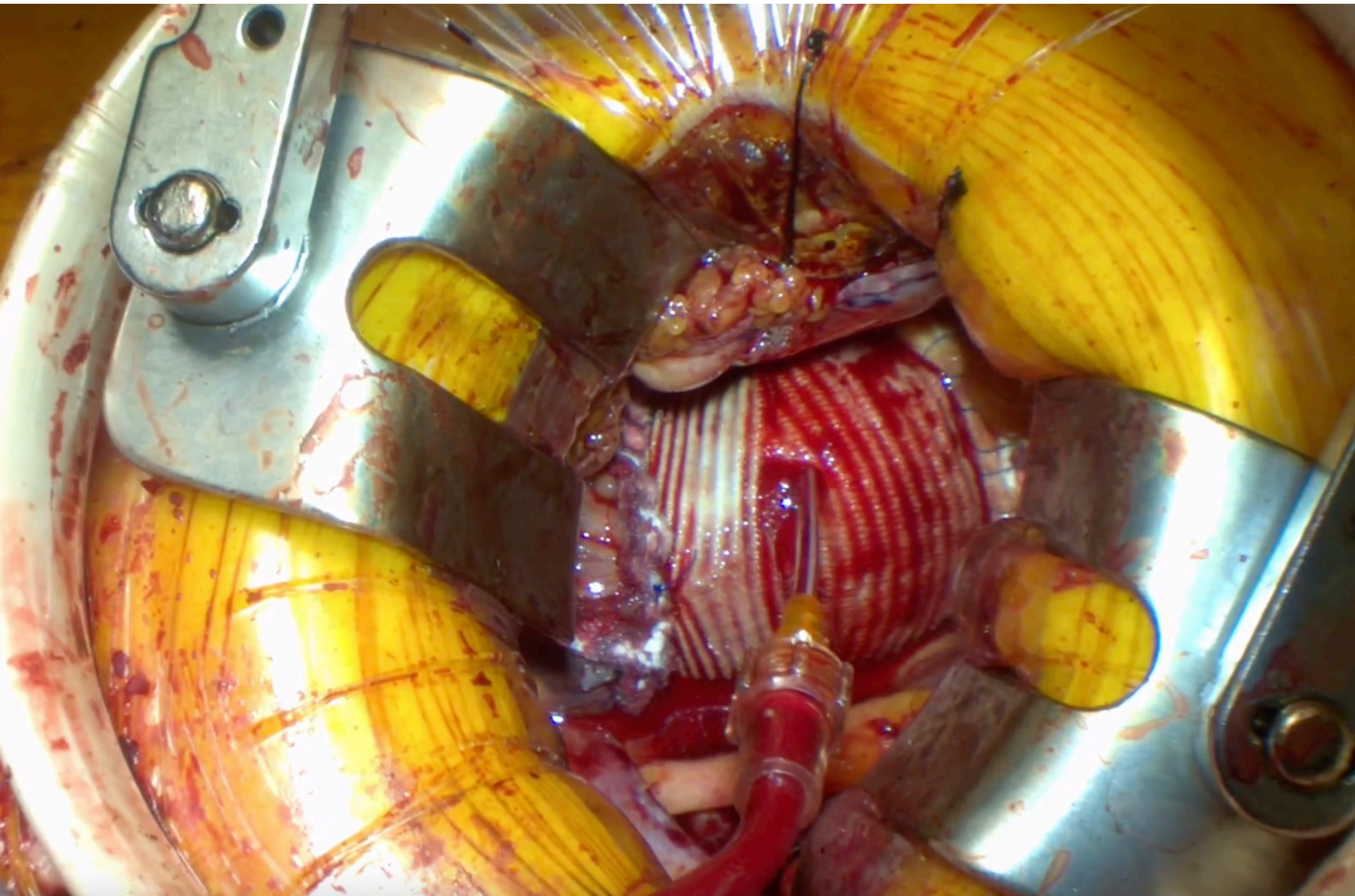
METHODS:

Patients with ascending aorta replacements with or without aortic valve replacement during the period of 2008 to 2023 were identified. A total of 602 Aortic replacements were done with or without Aortic Valve replacements for Ascending Aortic Aneurysms. Of the 602 patients there were 572 patients done through a conventional sternotomy and 30 patients had a minimally invasive right thoracotomy. In the sternotomy group, the surgeries were performed through a conventional sternotomy and central cannulation. In the thoracotomy group, the surgeries were performed with peripheral cannulation. The anastomoses were re-enforced with a felt on the aortic side and folding graft technique on the graft sidePropensity Matching through Greedy Nearest Neighbor 2:1 matching was used to compare 60 cases using Conventional Sternotomies and 30 cases using Minimally Invasive Right Thoracotomies. The student T-Test was used for numerical variables and chi-square test for categorical variables.

RESULTS:

There were no mortalities observed in either of the two groups. No significant differences were seen between the two groups in terms of total operating time, cardiopulmonary bypass time, aortic cross clamp time, total ventilation times, postoperative renal failure, bleeding requiring re-exploration, need for post operative permanent pacemaker, readmissions, postoperative CVA or TIA. However Postoperative Atrial Fibrillation occurred significantly more frequently in the Conventional Sternotomy group than in the Mini Thoracotomy group (41.7% Vs 20%, p=0.041

ASCENDING AORTIC REPLACEMENTS BY MINIMALLY INVASIVE THORACOTOMY Vs CONVENTIONAL STERNOTOMY				
		Conventionaln=60	Minimally Invasiven=30	p-value
Age (Years)	Mean(SD)	66.75(11.76)	65.90(10.55)	0.739
BMI	Mean(SD)	30.22(6.25)	29.96(6.02)	0.854
OR Total Time (Minutes)	Mean(SD)	354.83(82.25)	324.33(80.15)	0.098
CPB Time (Minutes)	Mean (SD)	147.47(53.47)	134.30(33.95)	0.222
Cross Clamp Time (Minutes)	Mean(SD)	102.30(34.56)	98.87(20.56)	0.645
Post Op A Fib-Yes	Count(%)	25(41.7%)	6(20%)	0.041
Post op Rebleed- Yes	Count(%)	0(0%)	0(0%)	
LOS-Surgery-Discharge (Days)	Mean(SD)	8.13(5.20)	7.10(5.42)	0.383
30 day- Alive	Count(%)	60(100%)	30(100%)	



CONCLUSIONS:

Ascending aorta replacements through a mini right thoracotomy are feasible and safe with our suturing technique. Outcomes are comparable to the conventional sternotomy approach in the short term. The lower incidence of postoperative atrial fibrillation rate suggests improvement in quality of life and post operative recovery. These findings support the consideration of mini thoracotomy approach in select cases, especially in patients with small ascending aortic aneurysms.