

5th International Conference on **Clinical & Experimental Cardiology**

April 27-29, 2015 Philadelphia, USA

Our experience: Minimally invasive aortic valve replacements

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The small incisions of minimally invasive surgery have the proposed benefit of less surgical trauma and an improved cosmetic outcome, corresponding to a faster postoperative recovery. Here, we report our experience performing minimally invasive aortic valve replacements, via a minimally invasive anterior thoracotomy or mini-sternotomy approach, in comparison to conventional sternotomy. A total of 189 aortic valve replacements were completed from January 2012 – December 2013, where 82(43.4%) were mini-thoracotomy, 44(23.3%) mini-sternotomy, and 63(33.3%) conventional sternotomy. Analysis of postoperative complications revealed that the mini-thoracotomy approach, when compared to the mini-sternotomy and conventional sternotomy, had a lower incidence of prolonged ventilator support [2.4% vs. 11.4% and 11.1%, respectively($p = 0.054$)]. Further, the mini-thoracotomy approach, compared to the mini-sternotomy and conventional sternotomy, required a shorter ICU stay [38.3 vs. 62.8 and 92.7 hours, respectively ($p < 0.05$)] and shorter postoperative length of stay [6.5 vs. 9.4 and 9.3 days, respectively($p < 0.05$)], resulting in an overall shorter hospitalization [8.8 vs. 12.8 and 14.7 days, respectively($p < 0.05$)]. Incidence of stroke [1.2% vs. 2.3% and 1.6%, respectively($p = 1.0$)], reoperation for bleeding [4.8% vs. 6.8% and 4.8%, respectively($p = 0.84$)], renal failure [6.1% vs. 9.1% and 6.4%, respectively($p = 0.82$)], and atrial fibrillation [21.9% vs. 34.1% and 23.8%, respectively($p = 0.34$)], were lower in the mini-thoracotomy group compared to the mini-sternotomy and conventional sternotomy; however, these differences were not statistically significant. Overall, minimally invasive techniques demonstrated a trend towards better survival [mini-thoracotomy 2.4%, mini-sternotomy 2.3%, and conventional sternotomy 4.8% ($p = 0.77$)]. Therefore, we believe that minimally invasive aortic valve replacement is a safe and effective alternative to conventional sternotomy.

Biography

Siavash Saadat is a third year surgical resident at Rutgers - Robert Wood Johnson Medical School. He is a graduate of University of Connecticut School of Medicine, and completed his undergraduate coursework at Georgetown University. His interests are in adult cardiac surgery and has published research on cardiomyocyte differentiation and pathways leading to vasculogenesis.

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