Physician - Minimal Invasive, TAVI, Robotic Cardiac Surgery

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Comparison of Different Surgical Approaches for Ascending Aortic Surgery with or without Aortic Valve Involvement: Right Anterior Minithoracotomy Versus Conventional Median Sternotomy

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Objective: This study aimed to present our initial clinical experience and show the feasibility and safety of the right anterior minithoracotomy (RAT) approach for ascending aorta surgery with or without aortic valve involvement.

Methods: This single-center study included 112 patients who underwent ascending aortic replacement with or without aortic valve intervention between September 2018 and March 2024. Patients with aortic dissection and a history of previous cardiac surgery were excluded. RAT was performed in 48 (42.9%) patients, and conventional median sternotomy was performed in 64 (57.1%) patients. The primary endpoints included operative variables, reoperation for bleeding, transfusion requirements, extubation time, length of intensive care unit (ICU) and hospital stays, and postoperative complications. The secondary endpoint was 30-day mortality. Ascending aorta and aortic valve morphology were evaluated preoperatively using computed tomography angiography and Doppler echocardiography. Surgical procedures for both groups included the Bentall procedure, valve sparing root replacement (the David procedure), supracoronary ascending aorta replacement, and supracoronary ascending aorta replacement+aortic valve replacement.

Results: Total operation time was significantly lower in the conventional median sternotomy group (237.84±24.87 min *vs.* 259.57±27.41 min, p=0.0001). The mean ventilation time (12.73±2.96 h *vs.* 19.43±4.21 h) and the mean length of ICU stay (1.71±0.86 days *vs.* 3.6±1.71 days) were both shorter in the RAT group (p<0.0001 for both). The rate of wound infection was significantly lower in the RAT group (p=0.036).

Conclusion: Right anterior minithoracotomy is a novel and promising approach for ascending aortic surgery with or without aortic valve involvement. This study suggests that this approach is both feasible and safe. Furthermore, it has the advantages of better wound healing, shorter ICU and hospital stays, less blood transfusion, and a quicker extubation period.

Keywords: Aorta, minimally invasive, RAT.