

Physician - Coronary Artery Diseases and Surgery

[MSB-71]

Optimizing Total Coronary Revascularization: Exploring Total Coronary Revascularization with Anterior Thoracotomy Access Via Third vs. Fourth Intercostal Space in Coronary Artery Bypass Graft Surgery

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Objective: This study aimed to assess the feasibility and comparative advantages of accessing total coronary revascularization with right anterior thoracotomy (TCRAT) for coronary artery bypass grafting (CABG) through the third and fourth intercostal spaces.

Methods: A retrospective analysis was conducted on 465 patients who underwent CABG utilizing TCRAT via either the third or fourth intercostal space between January 2022 and April 2024. The third intercostal space was utilized in 315 (67.7%) patients (Group 1), while the fourth intercostal space was utilized in 150 (32.2%) patients (Group 2). Data regarding patient demographics, intraoperative details, postoperative outcomes, and long-term follow-up were collected and analyzed. The primary endpoints included procedural success, perioperative complications, and left internal mammary artery (LIMA) length.

Results: The LIMA length was significantly higher in Group 2 (16.8 ± 0.18 cm vs. 18.2 ± 1.12 cm, $p=0.013$), despite efforts to turn the retractor back and remove the distal side in Group 1. The mean cardiopulmonary bypass time was shorter in Group 1 (73.8 ± 17.2 min vs. 89.3 ± 13.4 min) since CPB was not needed for proximal LIMA harvesting, and proximal anastomosis was mostly performed with a cross-clamp. However, cross-clamp time was similar between the groups.

Conclusion: Total coronary revascularization with right anterior thoracotomy for CABG surgery is feasible and effective when accessed through either the third or fourth intercostal space. The fourth intercostal space may provide slightly better visualization for the distal part of LIMA, a longer LIMA graft, and lesser rib fracture, leading to lesser postoperative pain. On the other hand, the third intercostal space is best for proximal LIMA harvesting with lesser LIMA injury without the need for CPB initiation for proximal LIMA harvesting. Surgeon preference, patient anatomy, and procedural considerations should guide the choice of intercostal space for TCRAT implementation in CABG.

Keywords: CABG, LIMA length, TCRAT.