Limitations of open chest management

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We read with interest the article ‘Open chest management (OCM) after cardiac operations: outcome and timing of delayed sternal closure’ (DSC) by Boeken et al. [1]. We would like to congratulate the authors on the good outcome and presentation of their results—quick surgery, low bypass times and low cross-clamp times for very delicate subset of patients. As cardiac surgery is facing more high-risk patients, it is important to develop and improve the management strategies to improve the outcomes of our treatment. Opening a chest is one that provides immediate improvement in cardiac output without escalating pharmacological support [2].

(1) According to Table 1, adding second pump run did not significantly prolong the total cardiopulmonary bypass (CPB) time in spite the fact that 84% of patients in the OCM group had additional ‘reperfusion bypass’. Do authors think that changes in cardiopreservation technique (deeper hypothermia, different cardioplegic solution/protocol) or slower wean off (CPB) could help in reducing the incidence of low cardiac output (LCO) and OCM?

(2) Prevalence of coronary artery disease and haemodynamically significant carotid stenosis (>70%) requiring carotid thrombendarterectomy (TEA) ranges between 3% and 15% [3]. Fisher’s exact test reveals significant correlation between concomitant TEA and OCM in your study. Only 0.3% of your patient population required concomitant carotid surgery which may reflect different screening approach and preference to staged procedure and may explain somewhat increased neurological complication rate of 9%.

(3) Although OCM enables easy access to a bleeding chest and increases cardiac output, it has its own disadvantages—mainly infectious and prolonged ventilation. LCO due to heart failure can be efficiently treated with mechanical circulatory support (allowing for best myocardial recovery and chest closure) and should be distinguished from LCO due to other causes. From our experience, earlier ventricular assist device (VAD) placement, especially for the right heart failure (short term), enables immediate chest closure and could potentially reduce the incidence of sternal infections. Additionally, in this study VAD was most likely utilized as the last resort therapy for refractory, unresponsive heart failure and is therefore predictive of poor outcome. Before liberal policy for OCM can be strongly advised, comparison of OCM with earlier VAD placement for LCO should be conducted.

(4) In Discussion section, authors conclude that the incidence of sternal infection, mediastinitis and sternal dehiscence were not significantly different when compared with primary sternal closure group. Although true for the latter, this is misinterpretation of both sternal infection and mediastinitis, which are, according to the Table 8, significantly higher in DSC group. Moreover, deep sternal wound infection/medias-tinitis (DSWI) carried mortality risk of 90%. Portland protocol reduces DSWI incidence to less than 1% [4].

Definitely, OCM strategy has a role in the management of cardiac surgery patients with emphasis in recognizing patient population that needs additional heart or lung support. Failure to recognize results in prolonged OCM, prolonged intubation and infectious complications. Negative aspects of this treatment modality should be carefully weighed against other treatment options.

REFERENCES


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