

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 15 MAR 2011		2. REPORT TYPE		3. DATES COVERED 01-03-2010 to 01-03-2011	
4. TITLE AND SUBTITLE Does the method of sternal repair influence long-term outcome in management of treated mediastinitis?				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) 81st Medical Group,301 Fisher Street,Keesler AFB,MS,39534				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) 81st Medical Group, Clinical Research Laboratory, 301 Fisher Street, Keesler AFB, MS, 39534				10. SPONSOR/MONITOR'S ACRONYM(S) 81 MDG, CRL	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT We reviewed our management of postoperative mediastinitis and evaluated the impact of different flap repair on long term survival.					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Public Release	18. NUMBER OF PAGES 1	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

Does the Method of Sternal Repair Influence Long-Term Outcome in Management of Treated Mediastinitis?

B. Zane Atkins, MD; Mark W. Onaitis, MD; Kelley A. Hutcheson, MD; Keith Kaye, MD, MPH; Walter G. Wolfe, MD

Dept. of Surgery Durham Veterans Affairs Medical Center Durham, NC

Introduction: Postoperative mediastinitis (POM) remains a dreaded complication of cardiac surgery, reducing early and long-term survival. Current management of POM is based on sternal debridement, eradication of infection, and definitive sternal reconstruction, often by various flap techniques. Despite previous studies demonstrating improved short-term results with omental flap (OF) repair as compared with muscle flaps (MF), no consensus for definitive sternal reconstruction exists. We reviewed our management of POM and evaluated the impact of different flap repair types on long-term survival.

Methods: Records of 222 adult patients status post cardiac surgery with POM were reviewed (1994-2008). Superficial infections and sternal nonunions were excluded. Management principles included sternal debridement, targeted antibiotic coverage, and sternal reconstruction by various methods. Three groups were evaluated based on method of sternal repair: MF (n = 96), OF (n = 65), and secondary sternal closure (n = 61). Control of mediastinal infection was augmented with negative pressure therapy (NPT) in 73 patients. Intergroup comparisons were performed with ANOVA. Multivariable Cox proportional-hazards regression analysis assessed the impact of demographics, perioperative details, and different methods of closure on long-term survival.

Results: Demographics, perioperative details, and POM presentations were similar between groups. The most common wound isolates were methicillin-resistant *S. aureus* (29.7%), methicillin-sensitive *S. aureus* (29.7%), Gram-negative rods (15.3%), and coagulase-negative staph (9.9%) and were not significantly different between groups. Those undergoing secondary sternal closure were managed with NPT significantly more often ($p < 0.0001$) and were discharged from hospital faster than PF or OF groups ($p = 0.014$). Recurrence of wound complications was significantly more common among the PF group ($p = 0.006$). POM management with NPT significantly improved survival compared with no NPT ($p = 0.008$). Heart failure, sepsis, age > 65 years, and peripheral vascular disease were independent predictors of mortality. Survival was similar between groups based on method of sternal closure ($n = 0.81$).

Conclusions: Few studies have examined factors associated with POM-related mortality. This study demonstrates that POM management protocols incorporating NPT to control mediastinal infection allows secondary sternal repair more commonly and improves long-term survival. PF repair was associated with higher rates of recurrent wound complications, but survival was not influenced by sternal repair method. Different techniques for sternal reconstruction in POM may be considered without regard for impact on long-term survival.

