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Commentary: Preventing postoperative surgical-site infections in cardiac surgery: Just follow the guidelines

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In this edition of JTCVS online, Takami and colleagues¹ report the impact of preoperative nasopharyngeal cultures (NCx) on surgical-site infections (SSIs) after cardiac surgery. In their study, a positive preoperative NC was an independent risk factor for a postoperative SSI. However, the pathogen isolated in preoperative NCx was infrequently isolated from postoperative SSIs. The authors concluded that in addition to screening for methicillin-resistant *Staphylococcus aureus*, preoperative NCx may be useful to predict SSI following cardiac surgery performed via a sternotomy.

Unfortunately, there are numerous issues with this study that limit the conclusions that can be made. The most serious flaw was the failure of the authors to follow the recommendations of the Society of Thoracic Surgeons (STS) guidelines on the use of perioperative antibiotics^{2,3} and the American Association for Thoracic Surgery (AATS) guidelines for the prevention and treatment of sternal wound infections.⁴ Adherence to these guidelines has resulted in an incidence of deep sternal wound infections (DSWIs) of 0.3% to 0.5% in the STS database.⁵ The incidence of chest wound SSI in this current study was 1.7%, nearly 3 to 4 times greater! Other areas of nonadherence to the STS and AATS guidelines in this study included the following:

1. Mupirocin ointment was used for only 3 days instead of the recommended 5-day course.

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CENTRAL MESSAGE

Following the current STS and AATS guidelines is the best way to prevent SSI in cardiac surgery.

2. Patients did not receive additional antibiotic coverage for gram (–) organisms when only vancomycin was used as the sole perioperative antibiotic. It is the recommendation of both the STS and AATS guidelines that an aminoglycoside be added for one preoperative and postoperative dose when vancomycin is used as the primary prophylactic antibiotic to achieve optimal gram (–) coverage.²⁻⁴ This may explain the isolation of *Enterococcus* and *Pseudomonas* species that were seen in both the pharyngeal and chest SSI cultures in patients with a DSWI. Furthermore, when enterococcus and pseudomonas species were isolated preoperatively, no attempt was made to broaden the perioperative coverage against these pathogens, and more importantly, to identify whether they were associated with infections in other sites, specifically the pulmonary and genitourinary systems.
3. The authors removed bone wax before closing the sternum to decrease the risk of infection. However, it is unclear as to how you can remove all the bone wax without causing bleeding from the sternal edges once it has been applied. Bone wax should be avoided in all sternotomies, which is a Class III recommendation in the AATS guidelines.⁴ Vancomycin paste has been shown to eliminate DSWI,⁶ and its use in all sternotomy patients is now a Class I recommendation in the AATS guidelines.⁴ It is also hemostatic.

The incidence of the use of postoperative tracheostomies in this study was 8.3%, which is greater than at most centers, and was identified as a risk factor for SSI. The authors plan to limit their use of all types of tracheostomies in their practice. In view of their results, the “liberal” use of

tracheostomies cannot be considered a “best practice” for postop cardiac surgery patients.

In view of these limitations, what can we conclude from this study? A positive NCx for organisms other than staphylococcal species should prompt a thorough search for other sites of infections in patients undergoing cardiac surgery and the institution of a broader spectrum of antibiotics to treat these organisms. The STS and AATS guidelines were instituted to eliminate postoperative cardiac surgical SSIs. The study by Takami and colleagues¹ reminds us what happens when these guidelines are not followed.

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