

Improved results of the vacuum assisted closure and Nitinol clips sternal closure after postoperative deep sternal wound infection

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Objective: Postoperative deep sternal wound infection is a severe complication of cardiac surgery, with a high mortality rate and a high morbidity rate. The objective of this prospective study is to report our experience with the vacuum assisted closure (VAC) system for the management of deep wound infection. We also devised an innovative closure technique post VAC therapy using thermo reactive clips. The advantage of this technique is that the posterior face of the sternum does not have to be separated from the mediastinal structures thus minimizing the risk of damage. **Methods:** From October 2006 to October 2008, we prospectively evaluated 21 patients affected by mediastinitis after sternotomy. Nineteen patients had sternotomy for coronary artery bypass grafting (CABG), one patient for aortic valve replacement (AVR) and another one for ascending aortic replacement (AAR). All patients were treated with the VAC system at the time of infection diagnosis. When the wound tissue appeared viable and the microbiological cultures were negative, the chest was closed using the most suitable procedure for the patient in question; nine patients were closed using pectoralis flaps, nine patients using Nitinol clips, one patient with a combined technique (use of Nitinol clips and muscle flap), one patient with a direct wound closure and another patient, who needed AAR with a homograft performed in another institution, was closed using sternal wires. **Results:** We had no mortality; wound healing was successfully achieved in all patients. In more than 50% of the patients, the VAC therapy allowed direct sternal resynthesis. The average duration of the vacuum therapy was 26 days (range 14–37 days). **Conclusions:** VAC is a safe and effective option in the treatment of post-sternotomy mediastinitis, with excellent survival and immediate improvement of local wound conditions; furthermore, the use of Nitinol clips after VAC therapy demonstrated to be a safe and non-invasive option for sternal resynthesis. After VAC therapy, a reduction in number of muscular flaps used and an increase of direct sternal resynthesis were observed.

Key Words: Deep sternal wound infection • Post-sternotomy mediastinitis • Vacuum assisted closure • Nitinol clips

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