Deep sternal wound infection (DSWI) is a serious complication of cardiac surgery with high additional morbidity and mortality. The incidence is less than 1%, but associated with mortality rates between 14 and 47% [1]. There are multiple predisposing factors ranging from patient-risk factors (i.e. obesity, chronic obstructive pulmonary disease, advanced age, male sex), perioperative patient management (i.e. antibiotic prophylaxis, hair removal, blood transfusion, ventilation time) and the surgical procedure.
itself. The most important aspect in the treatment of DSWI is to prevent it. Basic surgical rules, like sterility during the procedure, should be taken for granted. A further prophylactic treatment has recently been described by Schimmer et al. [2]. They reported a significant reduction of sternal wound complications after gentamicin–collagen sponge application before chest closure in a controlled, prospectively randomized, double-blind study.

If DSWI is present, the patients should be treated immediately. A specific group in the hospital with expertise in the treatment of wound complications, composed of surgeons (cardiac, thoracic and/or plastic), specially trained nurses and infectious disease specialists should follow and treat these patients. It is advisable that a systematic classification of the wound complication should be performed. This is important, not only for scientific reasons to compare clinical outcomes, but also to treat different forms of wound infections with a specific algorithm. One systematic classification of postoperative mediastinitis was introduced by El Oakley and Wright [1] in 1996. Different groups have further developed a management algorithm for DSWI [3, 4]. Individual algorithms based on local and institutional experience may be applied.

In an article by Biefer et al. [5] published in this issue, a single centre experience of 159 out of 7746 patients with DSWI following cardiac surgery is presented. Patients were treated either with vacuum-assisted-therapy (VAT) or with direct wound closure, and analysed, taking into account the results of cultures taken at the time of closure.

In 75% of patients, microbiological results were positive at the time of wound closure. There was no significant difference with regard to re-admission for reinfection in both groups. However, patients undergoing VAT stayed for a significantly longer period of time in the hospital.

The authors conclude that negative microbiological results are not mandatory before wound closure in patients with DSWI. They also state that the duration of VAT may therefore be shortened.

The basic principles in the treatment of DSWI are removal of foreign materials, wound debridement and broad-spectrum antibiotic therapy. The goal is to reduce or minimize bacterial load of the infected area, before further steps can be performed. These steps are either primary refixation of the sternum or reconstructive surgery of the chest with various plastic surgery techniques. Variation of one or the other technique may be applied with regard to the initial presentation.

Application of VAT has been introduced as an additional standard therapy in DSWI, because it induced several local effects which have been addressed in the article by Biefer et al. Whether negative microbiological results are mandatory before the wound can be closed in DSWI remains controversial. Negative microbiological samples taken from the wound do not mean that the wound is completely free of any infection and therefore wound closure is often performed with negative culture results, although bacteria are still present. On the other hand, microbiological results taken from optimal culturing methods as described by Tammelin et al. [6] can improve bacteriological diagnosis, and thereby surgical outcome.

As patients with DSWI are often critically ill, the success of wound treatment may also depend on their immune function. In other words, although we use optimal antibiotic treatment to sterilize the wound, the outcome of the DSWI may still be disastrous in patients with immune deficiency. Conversely, treatment of DSWI with adequate antibiotic treatment and early surgical wound closure can be successful in a patient with normal immunity, although microbiological results of the wound are still positive.

In summary, DSWI as a serious postoperative complication should be treated with priority and by a special team following a specific classification and treatment algorithm. Identification of patients at risk and prophylaxis to prevent wound complications is essential.

REFERENCES