Figure 4: The hooks after completed healing of the breastbone, 6 months after implantation.

considering the fact that sternal restabilization using steel wire increases the mortality rate.

In our opinion, the ASCS® System addresses some crucial problems that can arise during secondary sternal restabilization by avoiding any dangerous manipulations to adjacent critical tissues. Its use is simple and does not require a special learning curve. The system should always be considered to be the first choice when restabilization of the sternum becomes necessary.

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Conflict of interest: none declared.

SUPPLEMENTARY MATERIAL

Supplementary material is available at ICVTS online.

REFERENCES


eComment. Is the sternal closure technique using titanium hooks and wires cost-effective?

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The publication by Kilian et al. proposes a new technique for sternal closure in patients with secondary or additional stabilization [1]. They successfully performed the new technique using titanium hooks and wires in 15 patients and revealed very satisfactory results. The most striking feature was the possible avoidance of substernal dissection in redo cases with sternal instability, thereby decreasing the risk of graft or myocardial/pulmonary injury. We congratulate the authors for their effort and successful results.

We believe that there is one more topic to be emphasized on this subject. It is very well known that substernal dissection in redo cardiac surgery including sternal repair may lead to injury in adjacent structures. In this context, the use of thermoreactive nitinol clips was reported recently by our group [2]. We documented the ease of the technique due to the nature of the material and the parasternal application procedure. Moreover, we also reported the cost-effectiveness of the method. From the early years of cardiac surgery, various reports documenting sternal re-closure techniques have been published. The most frequently employed technique is still the Robicsek weave [3]. It is simple, cheap and objectively effective. The only drawback is the need for substernal re-dissection. In our study, we also compared the costs of sternal re-closure methods avoiding substernal re-dissection. The cost for thermoreactive nitinol clip implantation was $550; $700–1400 for rigid-plate fixation and $5800 for the transverse sternal-plating system. We concluded that thermoreactive nitinol clip implantation was more advantageous. We think that the authors should also have done a cost analysis to provide readers with a possible comparison between the mentioned techniques.

Conflict of interest: none declared.

References

used as a secondary closure device after failure of the standard rewiring technique. The merit of this innovative approach and its feasibility are well discussed in this paper.

However, the main benefit of this new system, that is, the application of hooks without dissecting the retrosternal space, has been previously described by Ceresa et al. [2]. The sternal wound is successfully approximated by the application of three Stratos bars fixed to the anterior arches of the second, forth and sixth ribs bilaterally. Each bar consists of two rib clips and a connecting bar. The Stratos system (Strasbourg Thoracic Osteosynthesis system, MedXpert GmbH, Eschbach, Germany) is frequently used for rib fixation and coverage of chest wall defect. It consists of titanium rib clips available in different angles and in two sizes and connecting bars, thus allowing the application of this system for any anatomical situations.

As rightly pointed out by the authors, multiple techniques have been used to correct sternal dehiscence including nitinol thermo-reactive sternal clips [3-4] and numerous metal plating systems. One of the most-used plating systems is the new Titanium Sternal Fixation System (Synthes, Switzerland) [5]. It consists of titanium plates available in different lengths, flexible cables and self-tapping cannulated sternal screws. Nevertheless, the surgical management mandates a careful dissection of the deeper aspect of the sternum and extensive lysis of adhesions, especially in the case of longitudinal plating fixation for late sternal dehiscence. Voss et al. [5] stated that sternal plate fixation was possible without adhesiolysis of the retrosternal area, albeit with an increased risk of damaging underlying mediastinal structures. This technique is also time-consuming and costly.

In this article, the authors describe a simple, effective and minimally invasive technique for complex sternal closure using new titanium hooks applied parasternally and achieving adequate sternal stabilization. It does not require re-entry into the retrosternal space or extensive mobilization of major pectoralis muscles.

**Conflict of interest:** none declared.

**References**


