Complex pectus excavatum in adults: which is the best solution?

Guglielmo Mario Actis Dato‡, Alessio Maiello‡, Giacomo Ravenni*, and Riccardo Casabona‡

† Division of Cardiac Surgery, Mauriziano Umberto I Hospital, Turin, Italy
‡ Division of Orthopaedic Surgery, Mauriziano Umberto I Hospital, Turin, Italy

* Corresponding author. Cardiac Surgery Unit, Umberto I Hospital, Corso Turati 62, 10128 Turin, Italy. Tel: +39-011-5082162; fax: +39-011-5082068; e-mail: giacomoravenni@gmail.com (G. Ravenni).

Received 6 December 2012; accepted 27 December 2012

Keywords: Chest wall deformity • Nuss • Pectus excavatum

We read with great interest the paper of Puma et al. [1], in which they propose an external longitudinal titanium support after sternochondroplasty for severe asymmetric pectus excavatum repair. Pectus excavatum has probably been the chest deformity with the largest number of proposed techniques for its correction over the years.

The very interesting solution proposed by Dr Puma gives rise to a few considerations:

(i) We agree with the concept that an open procedure in severe asymmetric pectus excavatum should be preferred over minimally invasive techniques, also in the case of young patients. A careful selection in this particular class of patients is mandatory in order to evaluate the complexity of chest-rib-spine deformity and bone apposition in sternochondral ribs. The execution of a Nuss procedure in these cases may produce an immediate result that is less satisfactory due to the unbalanced tension in the most depressed chest wall portions.

(ii) We completely agree on the need of wedge and linear anterior osteotomy by preserving rib integrity in order to avoid an ‘ad axim’ displacement that could lead to sternal splitting and chest instability.

(iii) The risks of steel-strut removal as mentioned by the authors mostly arise from technical mistakes such as inadequate straightening of the bar before its extraction. We generally adopt an easy and safe way to straighten the bar and have never had complications [2].

(iv) Foreign-material removal, even if it is titanium, in our opinion, is always preferable to prevent intolerance or infections during the follow-up.

(v) We have some doubt concerning procedure-related costs. The necessity of two titanium bars and several screws seems to entail more expenses than a single steel bar.

In our experience, even in the presence of a severe deformity of the chest associated with other malformations such as a severe scoliosis, a modified Ravitch procedure with implantation of a seagull wing moulded prosthesis can be safely performed with good immediate and long-term results [3].

REFERENCES


LETTER TO THE EDITOR RESPONSE

Reply to Actis Dato et al.

Francesco Puma*, Jacopo Vannucci and Stefano Santoprete

Thoracic Surgery Unit, University of Perugia Medical School, Perugia, Italy

* Corresponding author. Thoracic Surgery Unit, University of Perugia Medical School, Loc. Sant’ Andrea delle Fratte, 06134 Perugia, Italy. Tel: +39-075-5782267; fax: +39-075-5782600; e-mail: fr.puma@yahoo.it (F. Puma).

Received 14 December 2012; accepted 27 December 2012

Keywords: Chest wall • Pectus excavatum • Surgery/techniques • Surgical equipment
We thank the editor for the opportunity to explain better the rationale for our recently proposed technique [1]. When many different procedures are described for the treatment of the same disease, it is clear that the ideal technique has not been identified yet.

In our opinion, the method devised by Actis Dato et al. [2] has a valid theoretical basis and has, in their hands, proved to be safe and effective. Furthermore, the authors have such a considerable experience in this field that their opinion has to be taken into the utmost consideration by the scientific community.

In conceiving our technique, we aimed to avoid some drawbacks associated with the use of metallic retrosternal bars while trying to maintain similar long-term results. In fact, a transverse posterior bar limits the thoracic compliance, causes exposures to serious damage in the case of trauma, can be painful and requires a second operation for removal. We think that such disadvantages may justify the research on novel methods. The use of new titanium plates specifically built for sternal stabilization avoids the need for a posterior support, while ensuring the same solidity of the reconstructed sternum. These results can be achieved thanks to the highest strength-to-weight ratio of titanium: the Synthes struts (Synthes®, Canada Ltd.) modelled on the anatomical sternal shape are so thin and light that their removal is not required. As correctly noted by Actis Dato et al., the procedure is relatively expensive [3]. This disadvantage is undoubtedly more than offset by the avoidance of a second surgery for the bar removal. Finally, the economic impact of the procedure is limited, as it is indicated in a carefully selected group of patients, with a condition difficult to correct such as the severe asymmetric pectus excavatum.

REFERENCES


---

LETTER TO THE EDITOR

Bilateral lobar lung transplantation and size mismatch by pTLC-ratio

Michael Eberlein a, Servet Bolukbas a and Robert M. Reed c

a Lung Transplant Program, Division of Pulmonary, Critical Care and Occupational Medicine, University of Iowa Hospital and Clinics, Iowa City, IA, USA
b Department of Thoracic Surgery, Dr.-Horst-Schmidt-Klinik, Wiesbaden, Germany
c Division of Pulmonary and Critical Care Medicine, University of Maryland School of Medicine, Baltimore, MD, USA

* Corresponding author. Lung Transplant Program, Division of Pulmonary, Critical Care and Occupational Medicine, University of Iowa Hospitals and Clinics, 200 Hawkins Drive, C 33 GH, Iowa City, IA 52242, USA. Tel: +1-319356-1265; fax: +1-319353-6406; e-mail: michael-eberlein@uiowa.edu (M. Eberlein).

Received 20 November 2012; accepted 3 January 2013

Keywords: Lung transplantation • Lung size mismatch • Lobar lung transplantation

We read with great interest the important investigation by Inci et al. [1] on bilateral lobar lung transplantation (LTx). As a rationale, the authors cite that significantly oversized allografts are associated with perioperative complications and worse outcomes. The citation provided refers to a dog model of lobar LTx that compared allografts oversized on average 3.1-fold vs allografts that were similarly 3.3-fold oversized, but subsequently downsized 10–19% via peripheral wedge resections. At 4 h after LTx, the control group had higher pulmonary vascular resistance (PVR) and lower PaO2 versus the allografts that were significantly 3.3-fold oversized. In a porcine model of lobar LTx, a 1.8-fold oversized allograft was compared with a size-matched allograft. That study reported a superior function with lower pulmonary artery pressures and lower PVR associated with the oversized allografts [3]. Neither animal model ideally reflects the clinical experience in humans. The human experience using significantly oversized lobar LTx with a 2.07-fold-oversized allograft was reported with good long-term outcomes [4]. Whereas there is evidence that (within surgically feasible limits) oversized allografts are not associated with worse clinical outcomes, there is evidence that significant undersizing could be problematic [5]. Donor-to-recipient lung-size mismatch is preferably assessed by the predicted total lung capacity (pTLC)-ratio (=donor pTLC/recipient pTLC) [5, 6]. In paediatric living lobar LTx, there is an association between undersizing (pTLC-ratio < 0.8) and worse survival [5]. Inci et al. focus on height difference between groups and the donor pTLC to recipient actual TLC difference. However, recipient actual TLC likely reflects the lung pathology more than the recipient’s thorax size. Thus, it would be helpful, if Inci et al. could provide pTLC-ratio matching data for their cohorts. If, for example the pTLC-ratio of a conventional LTx is 1.25 (which should not be associated with worse clinical outcomes) and a lobar LTx leads to an actual pTLC-ratio of 0.75, one could expect that the very undersized situation created could lead to inferior clinical outcomes. Inci et al. report on a 39% occurrence of haemothorax. The association of undersizing (pTLC-ratio < 1.0)