How-to-do-it

The use of absorbable material in correction of pectus deformities

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Abstract

Various techniques have been described for correction of the congenital anterior chest wall deformities. We described a new technique in which 33 patients were used in correction of those deformities. In this new technique we used the resorbable copolymer plaque and polymer screw for the fixation of the sternum. We have obtained excellent results in one-year follow up period. This technique was developed to avoid a second operation, which usually requires for removal of the metal support. Resorption of copolymer plaques and polymer screws are completed at the end of the first year. © 2001 Elsevier Science B.V. All rights reserved.

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1. Introduction

Pectus excavatum and carinatum are the most common types of congenital anterior chest wall deformities. Various techniques have been described for correction of those deformities [1,2]. This technique was developed to avoid a long hospitalization and a second operation, which usually requires for removal of the metal support.

The resorbable copolymer plaque and polymer screw (The Lactosorb Material, W. Lorenz Surgical) (Fig. 1) were used for the fixation of the sternum in a series of 33 patients with pectus excavatum or carinatum deformities.

2. Surgical technique

A midsternal incision is placed. Pectoral muscle flaps are mobilized. All of the involved cartilages are exposed and subpericordial resection of the costal cartilages is carried out. The attachment of the rectus muscle to sternum is divided with an electrocautery. Sternum is dissected bluntly from pericardium and pleura. All intercostal bundles are completely divided from sternum with the electrocautery, with the line of division being medial to the internal mammary arteries.

One or two anterior horizontal osteotomy is performed depending on to the type of deformity. Cartilaginous or osseous wedge fragment is placed into the osteotomy line in pectus carinatum deformity. The above part of operation is almost same with classic Rawitch technique.

In our new technique (Balkanlı) after the osteotomy was carried out, new corrected position is given to the sternum and than copolymer plaque is placed over the sternum on the line of osteotomy. Fixation is established with resorbable polymer screws (Fig. 2). The plaque and screws can be available in different length, width and thickness. Single chest tube is inserted if the parietal pleura have been opened and a hemovac drain is inserted across the sternum. In this technique, neither a metallic support nor non-absorbable suture is used after the osteotomy.

3. Comment

The most important point in pectus correction operation is to achieve a proper and long-term stability on the sternum following osteotomy. Although various techniques have been described up to now, some modifications of Rawitch’s technique have been widely accepted. Surgeons usually use some metallic supports such as Kirchner’s wire or plain struts [1,2]. It is usually necessary to perform a second operation for removing of those metal supports and some severe complications have been reported due to those supports [3,4]. This technique was developed to avoid a long hospitalization and a second operation, which usually requires for removal of the metal support.

Reabsorption of copolymer plaques and polymer screws are completed at the end of the first year.
The most distressing complication following surgical correction of pectus deformity is major recurrence of the deformity. It appears to occur with increased frequency in patients with poor muscular development and asthenic or ‘marfanoid habitus’ [1]. Retrosternal bars or strut fixation can be reserved for this kind of high-risk patients.

We obtained an excellent sternal stability by using those absorbable material and we have not observed any recurrence or severe complications in any of our patients after 1-year follow-up.

References


Appendix A. Conference discussion

Dr J.-M. Wihlm (Strasbourg, France): First of all, I think that you have specific patients because you are in the army, and I guess there are no girls in this series.

Dr Dakak: Yes, you are right.

Dr Wihlm: There are still no girls in the Turkish Army. The second is, the range of age started with 14.

Dr Dakak: Certainly 20 is a good age because they have finished growing, but 14 might be a little bit too early because they still can reproduce the deformation if you operate too early. What is your opinion?

Dr Dakak: I agree with you that they must be 20 years old, but we have patients who are 14, I think two or three patients who are 14 years old. We operate for cosmetic reasons.

Dr Wihlm: Yes, cosmetic reasons, and the question is, even for cosmetic reasons I think that the median incision is particularly non-cosmetic compared to the submammary bilateral incision. So you are not worried about this ugly median scar for a cosmetic procedure?

Dr Dakak: You are right. As you see, we operated on the majority of the patients with a midsternal incision. Only in seven patients was the submammary incision used. After this operation we used silicone plaque to put over the incision.

Dr Wihlm: For the skin scar?

Dr Dakak: Yes, for the skin scar.

Dr Wihlm: Okay. It’s called pressure therapy. You press on the skin.

Dr Dakak: We didn’t use pressure therapy. It may be used. We only used silicone plaque without pressure garment for skin scar.

Dr A. Lerut (Leuven, Belgium): What is the price of this material, the plaque? What is the cost? How much does it cost in dollars, for instance?

Dr Dakak: Approximately $1,000.

Dr Lerut: $1,000. So it’s pretty expensive. The question is whether you need the support of a metallic device. I don’t think that this is a necessity.

Dr Dakak: We didn’t use metallic support in this technique.

Dr Lerut: But before?

Dr Dakak: Before this technique we used two other techniques. The first one was a modified technique and we used Kirschner wires, and the second one that we presented before, we used still wire in this technique, but the last technique we didn’t use any metallic support.

Dr J.-F. Velly (Pessac, France): It’s a wide experience, 100 or more repairs like that in two and a half years. So what is your way for such a recruitment? Is it because you are working in a military hospital?

Dr Dakak: Yes.

Dr Velly: And because the patients are referred to the surgeon very quickly, even in the case of minimal deformity?

Dr Dakak: It’s an expensive operation, as our Chairman said before. Our people do not pay the cost of this operation in their civilian life. When they come to the army, we operate on them but take no money. Because of this, they will give permission for the operation.