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Reply to the Editor:

Dr Luciani and coworkers have proposed an indication of polydioxane (PDS) sutures for elective sternal closure, indicating that candidates to undergo closure with PDS cord (Johnson and Johnson Co, Ltd, New Brunswick, NJ) must be properly selected. A PDS sternal suture shows a protective effect against steel wire cutting through the bone in a subgroup of elderly, female, and petite patients without PDS filament fractures. Therefore, this subgroup is a good candidate for PDS sternal closure. For patients with slightly larger body surface areas, the PDS cord could be used together with steel wires to avoid PDS filament fractures. Patients who have had open wound treatment of mediastinitis are also good candidates. Absorbable sutures have the advantage of protecting against recurrent infection.

PDS sternal sutures have both advantages and disadvantages. PDS sutures are suitable for fragile and osteoporotic sternum to avoid bone cutting and might be effective for infected sternum because of its absorbability. But PDS sutures carry the risk of filament fracture caused by abrasion injury with the bone edge and gradual reduction of tensile strength after use in the

body. Manufacturer data show that the tensile strength decreased 50% to 65% of the previous value at 3 weeks and 30% to 40% at 6 weeks after implantation. Therefore, heavy polyester synthetic sutures are recommended to protect sternal splitting by bone cutting for bigger patients. The company has a newly developed PDS cord that is 1.5 mm in diameter with nearly twice the tensile strength (380 N) of PDS cord that is 1.0 mm in diameter (180 N). It should have sufficient strength, even several weeks after implantation. The sternal closure technique is another way to avoid PDS filament fracture. The figure-eight technique, in which the PDS suture is inserted just beside the sternum body above and below the intercostal space, should also increase the stability of sternal fixation and reduce tensile strength for each PDS suture. An absorbable sternal fixation pin (superFIXSORB; Johnson and Johnson Co, Ltd, Tokyo, Japan) is also helpful to increase the stability of sternal fixation (Figure 1).

We agree with the adjusting indication for PDS sutures proposed by Dr Luciani and coworkers. Absorbable sutures, such as PDS cord, have many advantages for elective sternal closure. PDS sutures should be used with an understanding of its disadvantages, and the figure-eight technique and PDS cord of 1.5 mm in diameter might expand its indication.

Figure 1. The figure-eight technique and an absorbable sternal fixation pin. PDS sutures are inserted just beside the sternum body above and below the intercostal space. Absorbable sternal fixation pins are placed in the sternal manubrium and body. PDS, polydioxane.

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Right ventricular remodeling

To the Editor:

The *Pediatric Cardiac Surgical Annual* for 2006 contained an article on remodeling surgery,¹ in which the claim was made that the surgical concept is based “on the anatomic features described by Torrent-Guasp et al.” We find this disturbing since, to the best of our knowledge, Torrent-Guasp and his colleagues have never studied the arrangement of the ventricular myocytes in the human right ventricle. Furthermore, although receiving increasing attention from surgeons working in the arena of acquired cardiac disease, their findings in animal hearts have never been validated by independent anatomic investigators. Thus, we would question the wisdom of basing surgical procedures on such a flimsy anatomic foundation. It is noteworthy that, in a recent supplement to the *European Journal of Cardio-thoracic Surgery*, Kocica and colleagues² state, “Under no circumstances is the attachment of the entire ventricular mass, which extends from the pulmonary artery on the one side and to the aorta on the other, considered to perform its “skeletal-muscle-like-contraction.”” Despite this statement, at no stage do Kocica and colleagues explain how the ventricular myocardial mass is compartmented so as to produce the “helical band.” Indeed, throughout the supplement, very many authors illustrate this purported helical band, yet in our own contribution to the supplement,³ we showed how, although it is possible to unravel the ventricular myocardium in the form of the helical band, there is no orderly arrangement of the myocardial aggregates within its alleged compartments. In our opinion, therefore, it is both dangerous and foolish to propose concepts for restorative surgery on the basis of unvalidated anatomic concepts. This is more so since del Nido and associates¹ chose to ignore a study specifically devoted to the orientation of the myocardial aggregates in tetralogy of Fallot,⁴ which lends no support to the concept of the “helical ventricular myocardial band.”

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Bifid cardiac apex: A rare morphologic structure To the Editor:

I read with great interest the case reported by Sayin and associates¹ in the February 2006 issue of the *Journal*. In this article, the authors presented an exceedingly uncommon pathologic condition and provided new insights about the extremes of cardiac morphogenesis. Although the described case is interesting, there are some concerns about the surgical technique. I would like to make the following comments.

The authors reported that the preoperative oxygen saturation was 92% and, by surgical intervention, the arterial oxygen saturation reached 96% postoperatively. As mentioned by the authors, the right ventricular volume was less than normal and the arterial desaturation was probably related to hypoplasia of the right ventricle.

First, the preoperative and postoperative hemodynamic data were lacking, and

the reader could not obtain the necessary information from the article about the degree of right ventricular and tricuspid valve hypoplasia. Additionally, the long-term effects of this accessory chamber on right ventricular contractile function are not known. An explanation for why a one and a half ventricle repair was not tried was not convincingly given. Finally, the authors must comment on the possible consequences of partial closure of an atrial septal defect on an already elevated right ventricular pressure.

Another issue with the technique is the persistence of a diverticulum-like chamber communicating with the left ventricle. The magnetic resonance imaging indicates that this chamber is large enough. I wonder why the authors did not consider this blind sac as a potential source of postoperative embolism and arrhythmias.

Because there are scanty data in the literature, such rare anomalies and their surgical corrections should be considered as important opportunities for determining the most accurate surgical approach. The description of a rare congenital anomaly is one aspect of this article, but the applied technique may lead to some interpretive errors because of the lack of necessary data.

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Reply to the Editor:

We thank Dr Basaran and appreciate his kind comments and suggestions regarding our article.¹ First of all, we have to stress that the purpose of our article was mainly to describe this rare cardiac morphologic condition—bifid cardiac apex. Although the patient was examined by several cardiologists in the preoperative period, none of them was able to diagnose the pathologic condition precisely. During the diagnostic workup, magnetic resonance imaging was also performed; however, the bifid apex and the third chamber could not be identified. As we mentioned in the article, the

preoperative echocardiogram and intraoperative data were not consistent. We had no data about the preoperative right ventricular volume and tricuspid valve. Therefore, intraoperatively, we decided to close the large atrial septal defect partially, without knowing of the existence of the third chamber. We absolutely agree that the long-term effects of this accessory chamber on right ventricular contractile function are not well known. Also, the intermediate and long-term results of one and a half ventricle repair for these kinds of patients are controversial owing to the evidence of pulmonary arteriovenous fistulas on follow-up. However, we disagree with the underestimation of the blind sac as a potential source of postoperative embolism and arrhythmias, because the exact pathologic condition could not be diagnosed preoperatively.

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Off-pump pulmonary valve placement To the Editor:

I read with great interest the article by Berdat and coworkers on off-pump pulmonary valve placement.¹ The authors present the results in 4 patients who underwent perventricular (transventricular) placement of a stented Shelhigh valve (Shelhigh, Inc, Union, NJ). The first clinical application of this procedure was published recently by Schreiber and colleagues.² I would like to congratulate the authors, who successfully used the perventricular technique for off-pump placement of the pulmonary valve.

The perventricular technique was initially used to close complex muscular ventricular septal defects, and the first report was published in *The Journal of Thoracic and Cardiovascular Surgery* by my colleagues and me.³ This technique has also been used to close perimembranous ventricular septal defects.⁴