Interactive CardioVascular and Thoracic Surgery 15 (2012) 781–782
doi:10.1093/icvts/ivs283 Advance Access publication 6 July 2012

Simultaneous minimally invasive surgery for pectus excavatum and recurrent pneumothorax

Korkut Bostanci[a], Serdar Evman[b,*] and Mustafa Yuksel[a]

[a] Department of Thoracic Surgery, Marmara University Pendik Training and Research Hospital, Istanbul, Turkey
[b] Department of Thoracic Surgery, Umraniye Training and Research Hospital, Istanbul, Turkey

* Corresponding author. Department of Thoracic Surgery, Umraniye Training and Research Hospital, Adem Yavuz Cad. No: 1, Istanbul, Turkey. Tel: +90-5055301398; fax: +90-216-6321818; e-mail: sevman13@yahoo.com (S. Evman).

Received 21 February 2012; received in revised form 26 April 2012; accepted 16 May 2012

Abstract

A 19-year old male who had a pectus excavatum deformity and recurrent primary spontaneous pneumothorax was admitted to our clinic. An intervention simultaneously combining a videothoracoscopic apical wedge resection and minimally invasive repair of the pectus excavatum deformity was successfully performed.

Keywords: Chest wall • Minimally invasive surgery • Pectus excavatum • Pneumothorax

INTRODUCTION

Pectus excavatum is the most common congenital chest wall deformity, and the minimally invasive repair of the pectus excavatum (MIRPE) has become the treatment of choice in the last decade as it has been performed with a high degree of success. Primary spontaneous pneumothorax is caused by the rupture of the apical blebs, and apical wedge resection is the preferred approach in recurrent pneumothorax and prolonged air leakages. The classic open procedure for the pectus excavatum deformity has been combined with many thoracic procedures, particularly with open heart surgery for congenital cardiac anomalies or bullae resection, but there are not many reports on combined thoracic interventions with the MIRPE. As to the latest English published literature, this case is the first intervention combining MIRPE and video-assisted thoracoscopic surgery (VATS) apical wedge resection.

CASE DESCRIPTION

A 19-year old male was admitted to our clinic with a sudden onset of dyspnoea without any further associated symptoms, and a right pneumothorax was detected on chest X-ray (Fig. 1a). He had a history of right primary spontaneous pneumothorax and tube thoracostomy 3 months ago. On his physical examination, a pectus excavatum deformity was also noticed (Fig. 1b). The patient rejected the apical wedge resection procedure, thus a right tube thoracostomy through the fourth intercostal space was performed. His air leakage continued for 7 days and the right lung did not fully expand. As the patient was evaluated as having 'prolonged air leakage', a VATS apical wedge resection was planned. The patient agreed on the procedure and also wanted his chest wall deformity to be repaired.

In the supine position, a right-sided thoracoscopic apical wedge resection through two ports using two endoscopic gastrointestinal anastamosis (Endo GIA) linear 80-mm staplers was performed, followed by subsequent MIRPE under videoscopic guidance with a 31-cm pectus bar (Hipokrat A.S., Izmir, Turkey) and a stabilizer (Hipokrat A.S.) on one side. The patient was discharged on the sixth postoperative day as the air leakage stopped and the lung was fully expanded (Fig. 2a), with a good cosmetic result also on the anterior chest wall (Fig. 2b). He now awaits bar removal in 3 years' time.

DISCUSSION

Until the last decade, the most frequently performed operation for the correction of a pectus excavatum deformity had been an open procedure that involved the removal of the abnormal sternocostal cartilages, with preservation of the perichondrium as well as sternal elevation and stabilization [1]. In 1998, a minimally invasive repair technique of the pectus excavatum was reported by Nuss *et al.* [2], which involved remodelling of the anterior chest wall by employing a retrosternal metal bar without any cartilage resection. This technique has rapidly gained acceptance as the preferred method for pectus excavatum repair as the procedure is associated with small skin incisions, a shorter operation time, minimal blood loss and early return to full activity.

Recurrent spontaneous pneumothorax is an indication for surgery, and VATS has recently been the most preferred approach for these patients [3]. Surgical corrections of congenital cardiac anomalies and associated chest wall deformities with the

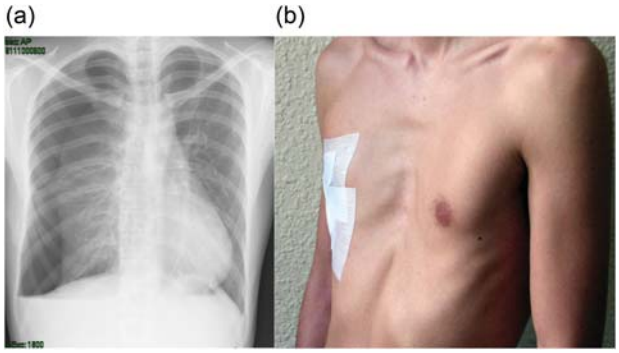

Figure 1: (**a**) Right-sided recurrent spontaneous pneumothorax and (**b**) preoperative anterolateral view of pectus deformity.

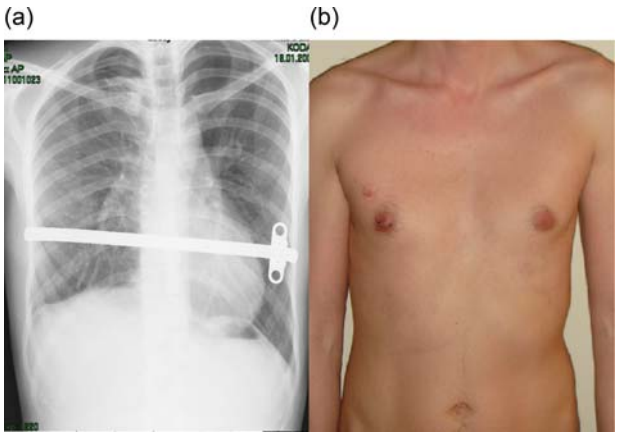

Figure 2: (**a**) Postoperative chest X-ray showing an expanded right lung with the pectus bar and (**b**) postoperative view of the chest wall.

open procedure have been performed together and reported several times in the literature [4]. Simultaneous open cardiothoracic operations and MIRPE are being used with an increasing acceptance worldwide [5], but still lack satisfactory cosmetic results and the meaning of being 'minimally invasive'. Utilizing the thoracoscopic approach for an additional cardiac or pulmonary disease simultaneously with MIRPE must be the procedure of choice for such situations, to maximize the potential effects of minimally invasive surgery. Our case is one of the very few examples of such combined procedures reported so far, and we believe this approach will gain wide approval.

Conflict of interest: none declared.

REFERENCES

[1] Robicsek F, Watts LT. Surgical correction of pectus excavatum. How did we get here? Where are we going? Thorac Cardiovasc Surg 2011;59: 5–14.
[2] Nuss D, Kelly RE, Croitoru DP, Katz ME. A 10-year review of a minimally invasive technique for the correction of pectus excavatum. J Pediatr Surg 1998;33:545–52.
[3] Bryant AS, Cerfolio RJ. Pneumothorax and pneumomediastinum. In Sugarbaker D, Bueno R, Krasna M, Mentzer S, Zellos L (eds). Adult Chest Surgery. China: The McGraw-Hill Companies 2009 pp. 917–24.
[4] Hasewaga T, Yamaguchi M, Ohshima Y, Yoshimura N, Oka S, Ootaki Y. Simultaneous repair of pectus excavatum and congenital heart disease over the past 30 years. Eur J Cardiothorac Surg 2002;22:874–8.
[5] Jaroszewski DE, Fraser JD, DeValeria PA. Simultaneous repair of cardiac pathology and severe pectus excavatum in Marfan patients using a modified minimally invasive repair. Chest Dis Rep 2011;1:e3. doi:10.4081/cdr.2011.e3.