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A 10-year review of a minimally invasive technique for the correction of pectus excavatum

Donald Nuss [a, b, c] ... Michael E Katz [a, b, c]

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Abstract

Purpose: The aim of this study was to assess the results of a 10-year experience with a minimally invasive operation that requires neither cartilage incision nor resection for correction of pectus excavatum.

Methods: From 1987 to 1996, 148 patients were evaluated for chest wall deformity. Fifty of 127 patients suffering from pectus excavatum were selected for surgical correction. Eight older patients underwent the Ravitch procedure, and 42 patients under age 15 were treated by the minimally invasive technique. A convex steel bar is inserted under the sternum through small bilateral thoracic incisions. The steel bar is inserted with the convexity facing posteriorly, and when it is in position, the bar is turned over, thereby correcting the deformity. After 2 years, when permanent remolding has

occurred, the bar is removed in an outpatient procedure.

Results: Of 42 patients who had the minimally invasive procedure, 30 have undergone bar removal. Initial excellent results were maintained in 22, good results in four, fair in two, and poor in two, with mean follow-up since surgery of 4.6 years (range, 1 to 9.2 years). Mean follow-up since bar removal is 2.8 years (range, 6 months to 7 years). Average blood loss was 15 mL. Average length of hospital stay was 4.3 days. Patients returned to full activity after 1 month. Complications were pneumothorax in four patients, requiring thoracostomy in one patient; superficial wound infection in one patient; and displacement of the steel bar requiring revision in two patients. The fair and poor results occurred early in the series because (1) the bar was too soft (three patients), (2) the sternum was too soft in one of the patients with Marfan's syndrome, and (3) in one patient with complex thoracic anomalies, the bar was removed too soon.

Conclusions: This minimally invasive technique, which requires neither cartilage incision nor resection, is effective. Since increasing the strength of the steel bar and inserting two bars where necessary, we have had excellent long-term results. The upper limits of age for this procedure require further evaluation.

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Keywords

Pectus excavatum; minimally invasive surgery; computed tomography scans in chest disease; thorax abnormalities

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