Commentary

This study may be the key to our understanding of the cardiopulmonary defects associated with severe pectus excavatum deformities! Although older children, and especially teenagers with severe pectus excavatum deformities, have reported improvement in exercise tolerance and decrease in fatigability after operative correction, studies that have shown some improvement in cardiac output after repair have nevertheless failed to indicate exactly how this improvement can be explained. The authors of this study have used a new technology, echocardiographic calculation of ventricular volumes before and after pectus excavatum repair, and have shown significant increase in ventricular volumes and increase in cardiac output at rest. In particular, the right ventricular volume changes after pectus repair are critically important observations and probably explain the functional cardiac output improvement during exercise after pectus excavatum repair. Our group¹ has recently shown that there is improvement in cardiac output with exercise after repair in teenagers, but we could not define a good explanation other than to suggest that there might be distortion of the heart as a result of compression. This article gives dramatic evidence that there is indeed on-line compression of the right ventricle and presumably, therefore, a decrease in filling volume followed by a decrease in cardiac output at rest.

The next step, which may already be in progress, is to carry out the study with exercise before and after the

operation. The clearest evidence of functional improvement is with exercise, not at rest, and therefore probably this would be a definitive study to corroborate the impact of the sunken sternum on the right ventricle.

The authors focused on the lack of correlation of the degree of elevation of the sternum with the improvement in filling volumes of the right ventricle. However, I think they lose sight of the fact that the so-called pectus index measurements that they used did not have third-dimensional components and, therefore, they may not be documenting or detecting the actual correlation.

The real message of this study and its importance do not lie in correlating sternal elevation with improve-

ment in cardiac output but rather in the fact that the compression of the right ventricle is relieved by operative correction, and this is the explanation for improvement in cardiac output.

*J. Alex Haller, MD
Baltimore, Md*

REFERENCE

1. Quigley PM, Haller JA Jr, Jelus KL, Loughlin GM, Marcus CL. Cardiorespiratory function before and after corrective surgery in pectus excavatum. *J Pediatr* 1996;128:638-43.

12/1/98447

Bound volumes available to subscribers

Bound volumes of *The Journal of Thoracic and Cardiovascular Surgery* are available to subscribers (only) for the 1999 issues from the Publisher, at a cost of \$134.00 for domestic, \$165.85 for Canadian, and \$155.00 for international subscribers for Vol 117 (January-June) and Vol 118 (July-December). Shipping charges are included. Each bound volume contains a subject and author index and all advertising is removed. Copies are shipped within 60 days after publication of the last issue of the volume. The binding is durable buckram with the Journal name, volume number, and year stamped in gold on the spine. Payment must accompany all orders. Contact Mosby, Inc, Subscription Services, 11830 Westline Industrial Drive, St Louis, MO 63146-3318, USA; phone 800-453-4351 or 314-453-4351.

Subscriptions must be in force to qualify. Bound volumes are not available in place of a regular Journal subscription.