

Incorporating vacuum bell therapy into pectus excavatum treatment

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Provenance: This is an Invited Article commissioned by Guest Editor Frank-Martin Haecker, MD (Department of Pediatric Surgery, University Children's Hospital, University of Basel, Spitalstrasse 33, Basel, Switzerland).

Abstract: Vacuum bell therapy (VBT) was initially described over 100 years ago by Lange in 1910 but this treatment option has been substantially refined in the last decade largely due to the efforts, work, and collaboration of Dr. Frank-Martin Haecker with Eckart Klobe, the engineer who designed and produces the most commonly used vacuum bell today.

Keywords: Vacuum bell therapy (VBT); pectus excavatum; chest wall deformities

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In this manuscript, Haecker and Sesia outline how vacuum bell therapy (VBT) provides patients with a non-operative approach that is attractive due to the potential serious, albeit rare, complications associated with minimally invasive repair of pectus excavatum (MIRPE). Compared to surgery, VBT has the distinct advantage of having few side-effects if used as directed. In addition, the side-effects are typically minor and self-limited including: bruising, petechial bleeding, subcutaneous hematoma, skin breakdown, dorsalgia, and transient paresthesia. The effects of lifting the sternum and anterior chest wall, at least temporarily, have been confirmed both radiographically by computer tomography (1) and thoroscopically during MIRPE (2,3). However, the sustained lift of the chest wall, and subsequent "correction" of pectus excavatum, by the effects of repetitive use of the vacuum bell is variable with this therapy. Complete "correction" of PE via VBT has been reported in the literature to range from 13.5–37.5%. Schier *et al.* published short-term results of VBT on 60 patients in 2005 and about 20% were "corrected" after 5 months of treatment (1). In 2011, Dr. Haecker published the first longer-term report demonstrating similar results with close to 13.5% being "corrected" after 18 months of VBT (4). More recently in 2015 Lopez *et al.* reported a 31.5% rate of "correction", increasing to 37.5% when looking at a pediatric subgroup (5). Dr. Haecker and Dr. Sesia have

also set out to help clarify which subgroups of patients may or may not be optimal candidates for VBT. As they have noted, VBT has also found other niches in the surgeons' armamentarium for treating patients with pectus excavatum including: mild defects, intraoperative sternal elevation, under-correction, mild recurrences, and patients adverse to surgical correction.

In summary, I applaud Dr. Haecker and Dr. Sesia for continuing to provide a beacon in some uncharted waters to the rest of the surgeons of the world as we embark on this journey together to provide optimal care and reasonable options to our pectus excavatum patients and their families.

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Footnote

Conflicts of Interest: Zimmer Biomet is the consultant.

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