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EXTERNAL SUPPORT FOR CARINAL STABILIZATION: FOLLOW-UP FROM INFANCY TO ADOLESCENCE

To the Editor:

With this letter, I intend to provide a long-term follow-up on the external carinal stabilization that was performed in a 2-month-old boy after tracheoplasty for severe long-segmental tracheal stenosis, who has now reached adolescence. The patient had pulmonary artery (PA) sling complex, which consisted of PA sling, left ligamentum arteriosum, severe long-segmental tracheal narrowing with complete rings (so-called rat-tail trachea), bilateral superior venae cavae, and ventricular septal defect. His initial anatomy and procedure have been previously described in detail. The external stabilization of the carina was achieved during his early infancy with a ring-enforced 8-mm polytetrafluoroethylene graft (Figure 1, A). External stenting has been successfully applied in adults, but the long-term influence of the external stents on his tracheobronchial tree remained unknown. Now the patient is 13 years of age. He did not require any further surgery and recent computed tomography imaging demonstrated stable externally stented carina (Figure 1, B-F). Pulmonary function test demonstrated airway obstructive pattern with forced expiratory volume in 1 second (FEV1) of 48% and forced vital capacity (FVC) of 79%. The patient has mild exercise intolerance and receives inhaler treatment for asthma.

Patients with long-segmental tracheal stenosis and PA sling are very rare. The need for tracheoplasty in children with PA sling repair has been associated with higher mortality. Although we have previously reported that all survivors of PA sling repair remained asymptomatic in early- to mid-term, they may develop respiratory symptoms at a long-term follow-up. Most importantly, we have previously demonstrated that although all survivors were in New York Heart Association functional class I or II, the spirometry performed at a median age of 10.4 years after PA sling and tracheal surgery demonstrated obstructive lung pattern with median FEV1 of 48% predicted, FVC of 74% predicted, and FEV1/FVC of 78% predicted. Thus, some degree of airway obstruction is common in patients after PA sling and tracheal surgery long-term and close follow-up is warranted for these patients.

The follow-up of our patient from infancy to adolescence demonstrates that external stenting, if required for carinal stabilization, can be used in an infant following repair of severe long-segmental tracheal stenosis and that application of the autologous pericardial flap as a substitute for pretracheal fascia was effective to prevent erosion of the stents into major vessels.

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FIGURE 1. A, Schematic of the carinal stabilization by external stenting following slide tracheoplasty and carinal enlargement in an infant. Computed tomography performed for long-term follow-up demonstrates stable stented carina (B), distal trachea (C), main bronchi (D), and left (E) and right (F) main bronchi.