Figure 1. Axial computed tomography of the neck showing a 4-cm right peritonsillar abscess (black arrow) with significant mass effect and compression of the airway (white arrow)

preparing for possible decompensation. Neck imaging and subsequent medical and surgical management are crucial to the prompt and effective treatment of this uncommon but potentially life-threatening infection in infancy. ■

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Bedside Airway Ultrasound in the Evaluation of Neonatal Stridor

A female infant was born at term after an uneventful gestation. Immediately after birth, she exhibited inspiratory stridor and cyanosis, necessitating respiratory support with continuous positive airway pressure and oxygen supplementation. Once stabilized, she was admitted to the neonatal unit. The physical examination was unremarkable. Stridor worsened with vigorous breathing, crying was dysphonic, and severe episodes of airway obstruction occurred during oral feedings. The differential diagnosis included laryngomalacia, congenital vocal cord palsy, tracheoesophageal fistula, and a vascular ring.

A gastric tube was inserted, and chest radiography confirmed passage of the tube to the stomach. Bedside airway ultrasound showed normal bilateral vocal cord movement and a near-total collapse of arytenoids during vigorous crying (**Figure** and **Video 1**; available at www.jpeds.com). Airway obstruction was mild on quiet breathing and disappeared during sleep (**Video 2**; available at www.jpeds.com). These finding were highly suggestive of laryngomalacia.

The infant was sedated with dexmedetomidine (0.7 μg/kg) and midazolam (0.05 mg/kg) and airway endoscopy was performed. Laryngomalacia was confirmed (**Video 3**; available at www.jpeds.com). The subglottic area, trachea, and main bronchus were normal. Evolution was favorable, with improvement in stridor and dysphonia over the succeeding months.

Laryngomalacia in the most common cause of stridor and airway obstruction in neonates and small infants.[1] A clinical diagnosis suffices in most cases; however, severe or atypical (eg, biphasic stridor, dysphonia, choking) presentations require confirmation by direct visualization of the larynx during spontaneous breathing using airway endoscopy, which also serves to evaluate the inferior airway for additional or alternative diagnosis. However, the airway endoscopy procedure requires specialized equipment and staff and is not always readily available. Moreover, this technique is somewhat invasive and disturbing to the child and often requires sedation, which may obscure the precise evaluation of dynamic airway obstruction. Finally, the procedure itself or the use of

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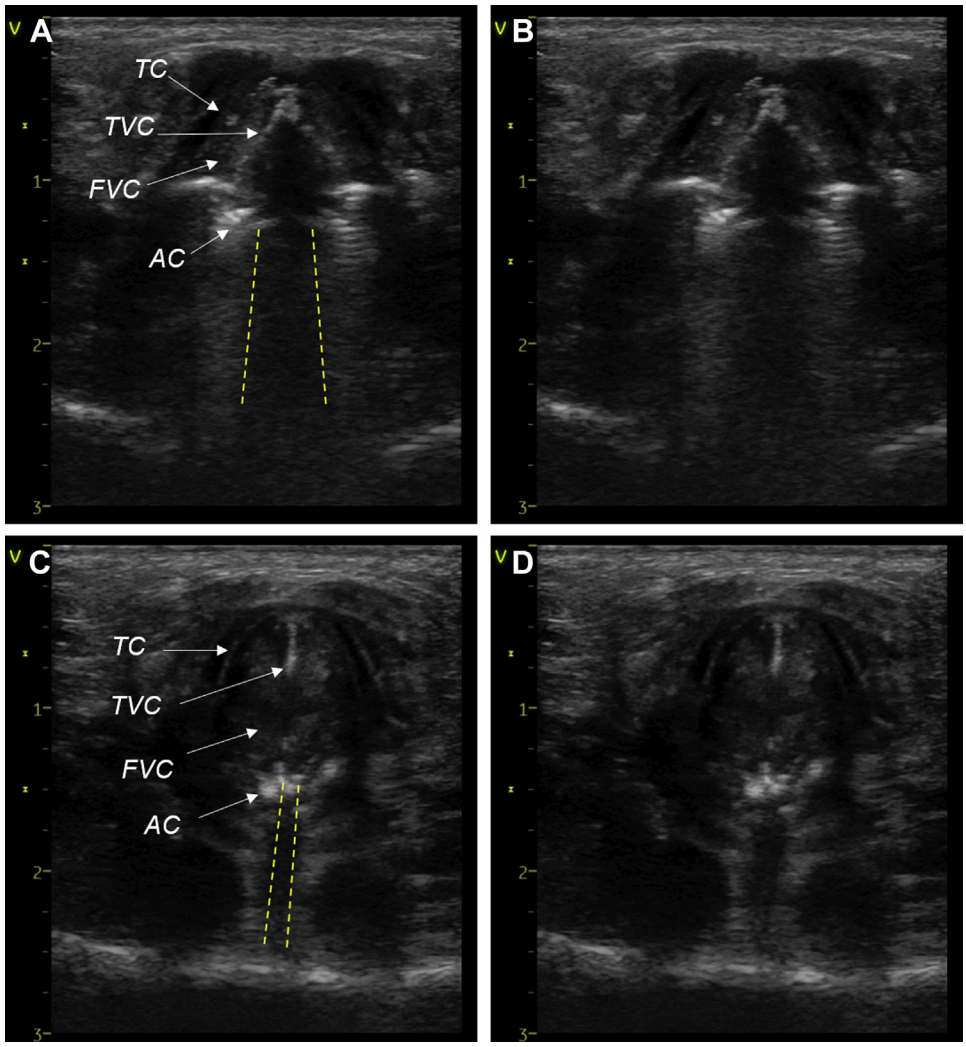

Figure. Airway ultrasound findings in laryngomalacia. Inspiratory collapse of arytenoids and narrowing of glottic opening during vigorous crying is clearly observed. **A** and **B,** Transverse view at the level of the thyroid cartilage during expiration. **C** and **D,** Transverse view at the level of the thyroid cartilage during inspiration. TC, thyroid cartilage; TVC, true vocal cord; FVC, false vocal cord; AC, arythenoid cartilage. The dashed lines indicate the width of the air column artifact caused by glottic opening. Note the near-complete glottic closure on inspiration.

sedation may be associated with such adverse events as hypoxia, hypercarbia, and laryngospasm.

Airway ultrasound permits noninvasive evaluation of the larynx without the need for sedation. Relevant laryngeal anatomy, such as thyroid cartilage, vocal cords, and arytenoid cartilages, is readily visualized. Airway ultrasound allows assessment of the degree of glottic opening and vocal cord movement during inspiration and expiration, during quiet breathing and vigorous crying alike, permitting a genuinely dynamic assessment of the airway.[2] Airway ultrasound has been successfully used in the diagnosis of vocal cord palsy and, more recently, laryngomalacia, which together account for most cases of congenital stridor.[3-5] Other well-known uses of airway ultrasound are to confirm endotracheal intubation and ultrasound-guided cricothyroidotomy.[2] Despite its many advantages, airway ultrasound is largely underused, and many pediatricians remain unaware of its potential in airway assessment and management.

Our case shows how airway ultrasound may aid the clinician in diagnosing a very common clinical condition such as laryngomalacia in a timely and safe manner. Airway ultrasound may help narrow the differential diagnosis in

cases of neonatal stridor and may avoid other unnecessary and costly explorations. ■

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