

Surgical management of tracheal stenosis

Athina E Patelarou

E-mail: apatelarou@hmu.gr

Abstract

Tracheal stenosis may be congenital or acquired. Acquired tracheal stenosis may be related to endotracheal tube or cuff erosion injuries. An overinflated endotracheal cuff may cause pressure necrosis of the tracheal mucosa, which leads to a tracheal narrowing. Tracheal stenosis is an occurrence most commonly associated with prolonged laryngotracheal intubation and tracheostomy. Since, the mechanism of tracheal stenosis development by prolonged intubation with high-pressure high volume cuffs was first uncovered, tracheal stenosis has been one of the most consequential complications of prolonged laryngotracheal intubation and tracheostomy.

Except for one randomized controlled trial, a large body of evidence for tracheal stenosis, the risk factors associated and the management has been largely based on retrospective chart reviews. Multiple forms of management with different degrees of success have been reported including Resection procedures, T tube placement, laser treatments, bronchoscopy dilation, and stents. Other causes of tracheal stenosis usually start with ulceration in the trachea. The frequency of acquiring tracheal stenosis depends upon the cause of the tracheal narrowing.

Post-intubation damage to the airway can be common. In congenital tracheal stenosis, mild stenosis can often be misinterpreted as asthma or recurrent bronchitis. Difficulty with breathing is the common first symptom. Like congenital tracheal stenosis, you may notice stridor, wheezing, or exertional shortness of breath. Bronchoscopy is considered the gold standard for diagnosing tracheal stenosis because your doctor will be able to directly visualize your trachea. Procedure is essential in the diagnosis and management of tracheal stenosis. CT scanning is not a great method for identifying a less severe degree of stenosis. Several options exist for treating tracheal stenosis, and several

types of physicians are trained in performing these procedures.

Dilations may be performed by a thoracic surgeon, head and neck surgeon or even some pulmonologists. Most treatments are endoscopic procedures requiring actual visualization of your trachea. Depending on the severity of the stenosis and its length, affected children may have severe respiratory distress with cyanosis. Regarding the surgical management, 7 patients underwent resection with end-to-end anastomosis as the primary procedure followed by bronchoscopy dilation. Collar incision was the most common type of surgical access and one patient had addition of partial sternotomy to the collar incision for surgical access. Another patient underwent associated trachea-esophageal fistula closure with tracheal stenosis bronchoscopy dilation.

Intra-operatively, long-segment stenosis was diagnosed only in 1 patient, who extended from the neck to the intra-thoracic trachea and the rest had tracheal stenosis only in the neck. 6 of the 7 patients who underwent tracheal resection and end-to-end anastomosis had documentation for the number of tracheal rings resected with 2 tracheal rings resection being the most common documented. Both patients who underwent bronchoscopy dilation didn't require any endotracheal intubation while all the rest were intubated and 2 of these patients were extubated 24 and 48 hours postoperatively in the ICU while the rest were extubated in the operating theater. Postoperative, all patients with or without recurrence have reported improvement in their symptoms. And the follow up was done using only clinical parameters in all patients except 2 patients who underwent chest CT scan with contrast and neck and chest x-ray. For those patients that developed tracheal stenosis after either laryngotracheal intubation or tracheostomy, the mean duration of intubation of

15 days is not different from other studies that report 5.2 days to 20.5 days average days of intubation across the literature. Patients with tracheal stenosis were young patients with no either sex predominance. They presented with stridor and shortness of breath and investigated using non-invasive modalities. They were treated with tracheal resection and anastomosis in most of the patients.