Transoral endoscopic cricopharyngeal myotomy for congenital cricopharyngeal achalasia

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Abstract

Objective: To report a carbon dioxide laser assisted transoral endoscopic cricopharyngeal myotomy to treat congenital cricopharyngeal achalasia in an infant.

Study design: Case report.

Methods: An infant was diagnosed with congenital cricopharyngeal achalasia soon after birth and was fed via gastrostomy tube until 9 months of age. At that time he underwent a transoral endoscopic cricopharyngeal myotomy with a carbon dioxide laser. There were no complications from the surgery. The patient’s diet was advanced on the third post-operative day and the dysphagia noticeably improved. The gastrostomy tube was then removed and the patient thrived with oral feeding.

Conclusions: Carbon dioxide laser can be used safely in infants to perform transoral endoscopic cricopharyngeal myotomy. This minimally invasive technique avoids an open surgical approach in a young child.

Introduction

Pediatric cricopharyngeal achalasia (CA) is a neuromuscular disorder of the cricopharyngeus muscle that is characterized by a lack of coordination between the opening of the upper esophageal sphincter (UES) and subsequent pharyngeal contractions, or alternatively by insufficient relaxation of the UES. Patients suffering from CA typically present with complaints of dysphagia, choking during feeding, emesis, pooling of secretions, and failure to thrive. Signs of CA upon physical exam may include drooling, noisy breathing, loud swallowing sounds, and gagging during feeding or on oral secretions. Feeding difficulty may require nasogastric feeding or gastrostomy tube placement.

To our knowledge, the following case represents the youngest patient to undergo endoscopic cricopharyngeal myotomy with a carbon dioxide laser for the treatment of CA. This case report will describe the patient’s clinical course and the surgical technique.

Case Presentation

A full-term 8-week old male was admitted for failure to thrive and feeding difficulties which worsened since birth. Typical feeding sessions lasted 30 to 60 minutes and were frequently interrupted by choking episodes. Videofluoroscopic swallowing study had a prominent cricopharyngeal bar which was consistent with cricopharyngeal achalasia (Figure 3). Nasogastric feeding was initiated and was well tolerated. Endoscopic injection of botulinum toxin was attempted prior to definitive treatment but feeding improvement was limited to 2 weeks. Dysphagia recurred and he was readmitted. A gastrostomy tube was placed to allow for further growth before curative treatment. At 9 months of age he underwent an endoscopic carbon dioxide laser cricopharyngeal myotomy. On postoperative day 3 he began oral intake with minimal difficulty swallowing. He was discharged home and his gastrostomy tube was removed when he followed up in clinic after he demonstrated adequate weight gain from oral intake.

Surgical Technique

Suspension microlaryngoscopy was established visualizing the esophageal inlet and cricopharyngeal bar (Figure 2). The carbon dioxide laser was set to 5 watts with a super pulse mode of 0.1 seconds on and 0.5 seconds off. A 2 mm bar configuration was utilized. A midline vertical incision was created through the pharyngeal mucosa and was carried through the cricopharyngeal muscle. The dissection extended to the depth of the buccopharyngeal fascia which was preserved (Figure 4 and 5). There was minimal bleeding and the patient was extubated uneventfully.

Discussion

Diagnosis of CA is considered when a barium swallow or videofluoroscopic swallowing exam demonstrates a prominent cricopharyngeal muscle or posterior “bar” in the upper esophagus. Alternatively, esophageal manometry can be done to assess the pressure of the UES. Esophageal manometry will show an elevated upper esophageal sphincter pressure, however not all centers perform manometry in infants.

Once diagnosed, treatment options for CA include observation, mechanical dilatation, endoscopic botulinum toxin injection, and cricopharyngeal myotomy. In this case, we used the botulinum toxin to confirm the rare diagnosis prior to proceeding with definitive treatment. Cricopharyngeal myotomy can be performed via an open surgical procedure or endoscopically using a CO2 laser.

We selected to treat this patient with the endoscopic CO2 laser myotomy due to its minimally invasive nature and the potential to avoid an open neck operation in a young child. For surgeons experienced in laser assisted laryngoscopic operations, this procedure can be considered in appropriately selected children with congenital cricopharyngeal achalasia.

Conclusion

- Endoscopic CO2 laser cricopharyngeal myotomy can be performed safely in infants.
- CO2 laser myotomy avoids an open surgical procedure in a young infant and has lasting results.
- Surgical recovery is fast and oral feeding can begin soon after treatment.

References