INTRODUCTION

Laryngotracheal stenosis (LTS) is a rare, but well-described entity. Adult LTS is generally acquired, most commonly secondary to complications from prolonged intubation or tracheotomy. Surgical management of LTS includes tracheotomy, open resection with anastomosis or open reconstruction with expansion or grafting and endoscopic procedures. Endoscopic management has gained favor as an initial treatment strategy in many patients, as the procedure is potentially less morbid. (1) We present an unusual case of calcified subglottic stenosis in which the novel implementation of an ultrasonic aspirator (UA) was employed during microdirect laryngoscopy (MDL) to remove the stenotic tissue.

CASE PRESENTATION

A 68-year-old female with a remote history of trauma resulting in tracheostomy for 6 months and mild persistent asthma presented due to inability to intubate for elective procedure.

In office flexible laryngoscopy revealed subglottic scar band with an anterior and posterior channel. (Fig 1a)

Non-contrasted CT neck confirms calcified band at level of cricoid. (Fig 1b)

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• PFTs showed a reduction in vital capacity, but no evidence of fixed obstruction.

• The hand piece was able to fit through a laryngoscopy, though an angled scope was required for adequate visualization.

• Subsequent MDL for staged resection of bony stenosis

• Airway management via supraglottic jet ventilation.

• A mucosal flap was elevated over the bony prominence of the stenosis.

• Using a 30-degree rod lens scope for visualization, the UA (Sonopet™, Stryker) was used to remove the bony ledge. (Fig 3a)

• Ultimately, the patient required two, serial ultrasonic aspirator interventions for the airway to be sized with a 5.0 MLT tube. (Fig 3b)

• At 6 month follow-up, endoscopy confirmed airway patency without recurrence of scar. The patient remains asymptomatic. (Fig 3c)

DISCUSSION

The reported incidence of LTS after intubation ranges from less than 1% to 8.3%. (1,2)

• Mucosal capillary blood flow is compromised by an oversized or overinflated endotracheal tube.

• Mucosal edema and ulceration results in ciliary flow disruption. (1)

• Resultant stasis predisposes chronic chondritis, cartilage necrosis and, ultimately, stenosis.

Composition of stenotic tissue is variable.

• Animal models have shown temporal maturation from soft granulation tissue to mature, firm scar. (3)

• Mineralization or calcification of soft tissues after trauma has been described in the orthopedic literature. (4)

• In the case our patient, calcification of the mature scar band was likely the result of endochondral ossification driven by the intact adjacent perichondrium of the cricoid cartilage.

CONCLUSION

Laryngotracheal stenosis is an uncommon complication of intubation that can be treated endoscopically or via open resection. Calcification of the submucosal tissue is uncommon and difficult to treat with commonly described techniques. Novel use of an ultrasonic aspirator allowed for safe removal of calcified tissue in this unusual case.

REFERENCES


