Resection of Subglottic and Cervical Tracheal Stenoses With Laryngeal Mask Airway Ventilation: Long Term Surgical Results

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INTRODUCTION
Tracheal resection for a benign stenosis traditionally requires pre-resection dilation of the stricture to facilitate intubation of the airway for initial intra-operative ventilation¹. Ventilation using a Laryngeal Mask Airway may be a less traumatic approach for intra-operative ventilation. While short-term outcomes have been documented², long-term outcomes using this technique have not been published.

AIM
To examine the long-term surgical results of patients who have undergone cervical tracheal (TR) or cricotracheal (CTR) resection of a benign stenosis, with intraoperative Laryngeal Mask Ventilation (LMAV).

METHODS
All patients between 2006 and May 2018 undergoing TR or CTR for benign strictures at a single institution were retrospectively reviewed. Primary outcome was the rate of re-stenosis requiring any reintervention.

The surgical technique was standardized for every patient. A cervical collar incision was performed. The proximal extent of the resection was localized endoscopically using the bronchoscope through the LMA. Cross-field ventilation was performed after the trachea was transected. The anastomosis was performed using interrupted sutures of 3-0 absorbable polyfilament (Vicryl) on an end-to-end fashion. For cricotracheal resections, the posterior aspect of the cricoid was preserved and dissection of the subperichondrial plane performed.

RESULTS

Demographics
- Mean age 53 yo (20-82)
- 36% (20/55) patients had preoperative dilation
  - 10 had laser, of these 4 had concomitant steroids injection or mitomycin
  - Mean number of preoperative dilation: 2.4 (1-8)
- Number of tracheal rings resected
  - Mean 2.2 (0-6)
- Median 2

Outcomes
- LOS
  - Mean 9.1 days
  - Median 8 days
  - Mean follow-up: 29.8 months (range 0.9-126.1), median: 21.1 months
- 30 days mortality: 0%
- Restenosis rate 24% (13/55)

Successful resolution of the preoperative stricture was ultimately achieved in 95% (52/55)

4% (2/55) of patients strictures were deemed intractable despite surgical and endoscopic therapies, and these patients were never decannulated.

Subgroup of patients with restenosis requiring an intervention (13/55)
- 13F, mean age 53 yo, median 51 (range 29-77)
- 92% (12/13) had CTR, 8% (1/13) had TR
- 3 patients failed to be decannulated
- 2 developed a refractory recurrent stenosis
- 1 patient expired POD46 of an unrelated intracranial bleed
- Only 15% (2/13) had previous dilations in the subgroup who did not have restenosis, 43% (1/4/12) had previous dilations
- Mean number of procedures for the patients who had recurrence of the stenosis: 1.5 (1-3) (excluding the 2 patients with intractable strictures).

Complications:
- Dysphonia: 11/55
- Hypertrophic scar requiring revision: 9/55
- Bleeding requiring re-exploration: 1/55
- Cellulitis: 2/55
- Pneumonia: 1/55
- Partial anastomotic dehiscence: 1/55
- Stroke: 1/55
- Tracheocutaneous fistula: 1/55

Blister vocal cord paralysis not requiring any intervention: 1/55

CONCLUSIONS
1. Resection of benign subglottic and cervical tracheal stenoses with LMAV is an effective, safe ventilation strategy with excellent long term results.
2. LMAV avoids the need for stenosis dilation at anesthesia induction and facilitates intraoperative bronchoscopy.
3. LMAV is feasible despite reduced tracheal lumen size
4. Preoperative dilation of the stricture does not seem to impact post-operative stenosis recurrence

REFERENCES

DISCLOSURES
The authors have Nothing to disclose.

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