

# The voice and swallowing profile of adults with laryngotracheal stenosis before and after reconstructive surgery: A prospective, descriptive observational study

Gemma Clunie<sup>1</sup>, Justin Roe<sup>2</sup>, Chadwan Al Yaghchi<sup>1</sup>, Caroline Alexander<sup>2</sup>, Alison McGregor<sup>2</sup>, and Guri Sandhu<sup>1</sup>

<sup>1</sup>Imperial College Healthcare NHS Trust

<sup>2</sup>Imperial College London

December 26, 2022

## Abstract

**Objectives:** Airway reconstruction for laryngotracheal stenosis (LTS) improves dyspnoea. There is little evidence relating to impact upon voice and swallowing. We explored voice and swallowing outcomes in adults with LTS before and after reconstructive surgery. **Design:** With ethical approval, twenty consecutive LTS patients undergoing airway reconstruction at a tertiary referral center were prospectively recruited. Outcome measures were collected pre-reconstructive surgery, two-weeks post-surgery and up to 4-6 months post-surgery. These included physiological values (maximum phonation time (MPT) and fundamental frequency; penetration-aspiration score, residue score), clinician-reported (GRBAS, functional oral intake score, 100ml Water Swallow Test) and patient-reported outcomes (Voice Handicap Index-10, Reflux Symptoms Index, Eating Assessment Tool, Dysphagia Handicap Index). **Results:** The observational study identified patient-reported and clinician-reported voice and swallow difficulties pre- and post-surgery; median and interquartile range are reported at each timepoint: Voice Handicap Index-10 23 (8-31); 20.5 (9-33.5), 24.5 (12.5-29); Dysphagia Handicap Index 9 (0-37); 13 (7-44); 15 (4-34); GRBAS grade 1(1-2); 2 (1-2.5); 2(1-2); 100ml Water Swallow Test volume score 16.7 (11.1-20); 14.3 (12.5-16.7); 16.7 (14.3-20.0); 100ml Water Swallow Test capacity score  $16.3 \pm 9.0$ ;  $11.0 \pm 4.1$ ;  $12.5 \pm 2.6$ . **Conclusion:** We present the first prospective data on voice and swallowing outcomes in adults with LTS before and after reconstructive surgery. The variability of the outcomes was higher than expected but importantly, for many the voice and swallow outcomes were not within normal limits before surgery. The clinical value of the study demonstrates the need for individual assessment and management of LTS patients' voice and swallowing.

## Hosted file

Quant study manuscript 22.12.2022 with no tables, no figures, no title page.docx available at <https://authorea.com/users/341280/articles/615795-the-voice-and-swallowing-profile-of-adults-with-laryngotracheal-stenosis-before-and-after-reconstructive-surgery-a-prospective-descriptive-observational-study>

## Hosted file

Figure 1 Clin Oto 21.12.2022.docx available at <https://authorea.com/users/341280/articles/615795-the-voice-and-swallowing-profile-of-adults-with-laryngotracheal-stenosis-before-and-after-reconstructive-surgery-a-prospective-descriptive-observational-study>

## Hosted file

Figure 2 Clin Oto 21.12.2022.docx available at <https://authorea.com/users/341280/articles/615795-the-voice-and-swallowing-profile-of-adults-with-laryngotracheal-stenosis-before-and-after-reconstructive-surgery-a-prospective-descriptive-observational-study>

#### Hosted file

Figure 3 Clin Oto 21.12.2022.docx available at <https://authorea.com/users/341280/articles/615795-the-voice-and-swallowing-profile-of-adults-with-laryngotracheal-stenosis-before-and-after-reconstructive-surgery-a-prospective-descriptive-observational-study>

#### Hosted file

Table 1 Clin Oto 22.12.2022.docx available at <https://authorea.com/users/341280/articles/615795-the-voice-and-swallowing-profile-of-adults-with-laryngotracheal-stenosis-before-and-after-reconstructive-surgery-a-prospective-descriptive-observational-study>

#### Hosted file

Table 2 Clin Oto 21.12.2022.docx available at <https://authorea.com/users/341280/articles/615795-the-voice-and-swallowing-profile-of-adults-with-laryngotracheal-stenosis-before-and-after-reconstructive-surgery-a-prospective-descriptive-observational-study>

#### Hosted file

Table 3 Clin Oto 22.12.2022.docx available at <https://authorea.com/users/341280/articles/615795-the-voice-and-swallowing-profile-of-adults-with-laryngotracheal-stenosis-before-and-after-reconstructive-surgery-a-prospective-descriptive-observational-study>

#### Hosted file

Table 4 Clin Oto 22.12.2022.docx available at <https://authorea.com/users/341280/articles/615795-the-voice-and-swallowing-profile-of-adults-with-laryngotracheal-stenosis-before-and-after-reconstructive-surgery-a-prospective-descriptive-observational-study>

#### Hosted file

Table 5 Clin oto 22.12.2022.docx available at <https://authorea.com/users/341280/articles/615795-the-voice-and-swallowing-profile-of-adults-with-laryngotracheal-stenosis-before-and-after-reconstructive-surgery-a-prospective-descriptive-observational-study>