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Anterograde excision of a sublingual gland: new surgical technique for the treatment of ranulas

Zhigang Liu *, Bin Wang [1]

Oral and Maxillofacial Surgery Department, Sanming First Hospital of Fujian Medical University, 29 Liedong Street, Sanming, Fujian, 365000, China

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Abstract

Wharton's duct is dissected in a retrograde direction from the orifice of the duct to the hilum of the submandibular gland when the gland is being excised conventionally. Here we describe an anterograde technique, in which Wharton's duct is dissected in an anterograde direction from the hilum of the submandibular gland to the orifice of the duct. This prospective clinical study included 50 consecutive patients with ranulas who had anterograde excision of the sublingual gland between May 2012 and January 2015. The intraoral incision was similar to that for conventional excision. Wharton's duct and other important anatomical structures located in the space behind the sublingual gland were all identified at the beginning of the procedure, followed by anterograde dissection of Wharton's duct. After the glandular tissue lateral to the duct had been incised completely, the duct was exposed and the gland cut into two parts. Finally, the two parts were removed, and the ranula ruptured. The patients were followed up from 6 months-2 years. There were no complications. Anterograde excision of the sublingual gland is based on the anatomy, and this reduces the risk of complications after removal of a ranula.

Keywords: sublingual gland excision; ranula; Anterograde; retrograde

Introduction

Ranulas are mucoceles that develop as a result of mucous extravasation from the sublingual gland, and are classified into "oral" and "plunging" ranulas depending on the site. Techniques for their treatment vary, and there is a lack of consensus about the most appropriate, but some authors think that transoral excision of the ipsilateral sublingual gland with evacuation of the ranula results in the lowest morbidity.[1–4] To date, retrograde dissection of Wharton's duct, from the orifice of the duct to the hilum of the submandibular gland, is the technique usually used in conventional excision of the sublingual gland, and the anterograde approach has not to our knowledge been described.

Patients and methods

We prospectively studied 50 consecutive patients with ranula who were treated by anterograde excision of the sublingual gland between May 2012 and January 2015 at Sanming First Hospital, Sanming, Fujian, China.

All oral ranulas presented as fluctuant, unilateral, bluish, soft tissue masses confined to the floor of the mouth. All plunging ranulas presented as submandibular masses with a "tail-sign," or diagnosis of plunging ranula, on preoperative computed tomography (CT). Diagnosis was established by fine-needle aspiration and the finding of mucus with a high amylase activity in each case. Patients with bilateral ranulas

* Corresponding author. Oral and Maxillofacial Surgery Department, Sanming First Hospital, 29 Liedong Street, Sanming, Fujian, 365000, China. Tel.: +8615259899319.
E-mail addresses: lzg8273@hotmail.com (Z. Liu), 15280592770@139.com (B. Wang).
[1] Tel.: +8615280592770.

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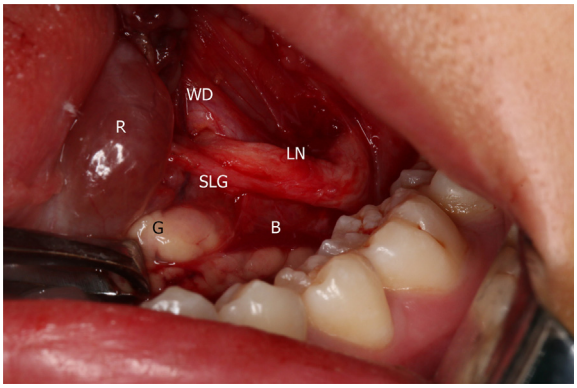

Figure 1. Before anterograde excision of the sublingual gland the important anatomical structures and the first crossing point of Wharton's duct (WD) and the lingual nerve (LN) were identified in the space behind the sublingual gland (G). B=branches of the sublingual artery and vein, SLG=sublingual ganglion, and R=ranula.

Figure 2. Branches of the sublingual artery and vein (B) run anteriorly and then enter the posterior part of the gland (G).

were excluded, as were those who had previously been treated for ranula. Data collected included the patient's age and sex, and the site and type of ranula.

Surgical technique

All operations were done by the first and second authors. With the patient under general anaesthesia and nasotracheal intubation, a linear incision is made 1 cm medial to, and parallel to, the ipsilateral mandible, and extended from the orifice of Wharton's duct to the lingual side of the retromolar region. To control bleeding the site is infiltrated with a solution of lignocaine and epinephrine. The mucosa is then incised, and blunt dissection and mosquito haemostats used to expose the lateral aspect of the sublingual gland. The posterior part of the gland is gripped with an Allis clamp and constant traction exerted in an anterior, superior, and medial direction by the assistant, which exposes the loose areolar tissue behind the gland. Smooth, blunt dissection is used in the loose areolar tissue to identify Wharton's duct, the main trunk of the lingual nerve, the branches of the sublingual artery and vein, the relations of the lingual nerve and Wharton's duct, and the sublingual ganglion split from the main trunk of the lingual nerve (Figs. 1–2). "Branches from this ganglion are mainly distributed in the sublingual gland."[5] The sublingual ganglion and the branches of the sublingual artery and vein are ligated and divided as close as possible to the posterior surface of the gland.

The lingual nerve courses laterally to medially, crossing Wharton's duct first by passing below the nerve then by crossing it medially.[6] To prevent damage to the lingual nerve, therefore, anterograde dissection of Wharton's duct is started between the posterior surface of the gland and the first crossing point of Wharton's duct and the lingual nerve. It then continues anteriorly to create a tunnel lateral to Wharton's duct. After the glandular tissue lateral to the tunnel had been incised completely without bleeding, Wharton's duct is

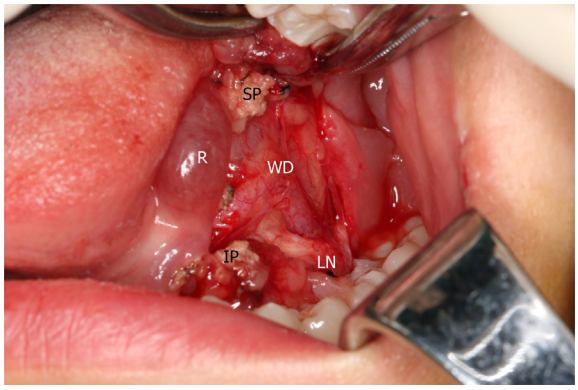

Figure 3. After the glandular tissue lateral to the tunnel has been incised completely without loss of blood, Wharton's duct (WD) is exposed and the gland cut into two parts: superior (SP) and inferior (IP). LN=lingual nerve and R=ranula.

exposed and the gland cut into two parts: superior and inferior. The two parts are then opened laterally with Allis clamps or mosquito haemostats to expose the medial aspect of the gland, and give a wider surgical field to visualise and protect Wharton's duct and the lingual nerve (Fig. 3).

The medial aspect and the inferior aspect of the inferior part are dissected meticulously with Metzenbaum scissors in direct contact with the surface of the gland under direct vision, avoiding injury to Wharton's duct, the lingual nerve, and the vessels, which are ligated and divided when encountered within the surgical field. The inferior part of the gland is then removed anteriorly. The superior part of the gland is then removed posteriorly (Fig. 4). Bartholin's duct is identified, ligated, and divided. The ranula is ruptured without excision and mucus drained naturally and suctioned. Finally, the surgical field is irrigated and inspected, followed by meticulous haemostasis. The incised mucosa is loosely sutured back, and a drain inserted through the incision.

Cefazolin sodium 1.0 g every 12 hours was given on admission and continued until the third postoperative day. Patients were recommended to take a liquid diet for 1 week. The drain was removed after 1–2 days, and patients were