Technical note

Use of a novel tongue retractor for intraoral removal of proximal/hilar submandibular gland stone

Senri Oguri, Toshinori Iwai*, Jun Ueda, Iwai Tohrai

Department of Oral and Maxillofacial Surgery, Yokohama City University Graduate School of Medicine, 3-9 Fukuura, Yokohama, Kanagawa 226-0004, Japan

ARTICLE INFO

Article history:
Received 27 October 2016
Received in revised form 19 January 2017
Accepted 13 March 2017
Available online 4 April 2017

Keywords:
Tongue retractor
Intraoral removal
Proximal/hilar submandibular gland stone

ABSTRACT

Objective: Intraoral removal of proximal/hilar or intraglandular stones is technically difficult, because the surgical field is limited. However, intraoral removal of deep submandibular gland stones has several advantages over submandibular sialoadenectomy, including shorter operation time and better gland function. To overcome the technical difficulties associated with intraoral removal of deep submandibular gland stones, we designed a novel tongue retractor and here describe its use.

Methods: The tongue retractor for the intraoral removal of proximal/hilar submandibular gland stones has a wing on each side for the retraction of soft tissues. After careful dissection along Wharton’s duct to the hilum of the submandibular gland, we used the new tongue retractor.

Results: The new tongue retractor enables the lingual soft tissues to be retracted easily and it maintains a better surgical field, compared with standard tongue retractors. For hilar/intraglandular stones in the medial portion of the submandibular gland, after dissection of the medial side of the gland, the newly designed tongue retractor provided a good surgical field for easy and reliable stone removal.

Conclusion: This novel tongue retractor offers a better surgical field and shorter operation time for intraoral stone removal than standard tongue retractors.

© 2017 Asian OAMS, ASOMP, JSOP, JSOMS, JSOM, and JAMI. Published by Elsevier Ltd. All rights reserved.

1. Introduction

Salivary gland stones are commonly located in the submandibular gland [1,2], with around 50% of such stones found in the proximal/hilar region [3]. Small stones in this region can now be removed with minimal invasiveness by sialendoscopy; large stones are removed intraorally. Intraoral removal of proximal/hilar or intraglandular stones is technically difficult, because the surgical field is limited [2,4]. However, intraoral removal of deep submandibular stones has several advantages over submandibular sialoadenectomy, including shorter operation time and better gland function [1,4]. To overcome the technical difficulties associated with intraoral removal of deep submandibular gland stones, we designed a novel tongue retractor and here describe its use.

2. Methods

The tongue retractor (FOUR MEDICS, Tokyo, Japan) for the intraoral removal of proximal/hilar submandibular gland stones was fabricated according to our design specifications (Fig. 1). The retractor has a wing on each side for the retraction of soft tissues. The head of the retractor is square-shaped, and the top is constricted in the middle to fit the mucosa of the oral floor. The medial surface of the retractor has notches to prevent slipping. The size of the retractor is shown in Fig. 2.

A mucosal incision is made at the lingual side of the retromolar region after retraction of the tongue using a commercial tongue retractor, and then the sublingual gland is exposed. The sublingual gland is retracted laterally, and Wharton’s duct and the lingual nerve are identified. After careful dissection along Wharton’s duct to the hilum of the submandibular gland, with the submandibular gland raised with extraoral finger pressure, medial side of the submandibular gland is exposed. Then, a newly designed tongue retractor is inserted in the medial side of the submandibular gland, and the use enables simultaneous retraction of the hyoglossus muscle as well as the tongue retraction.

3. Results

The new tongue retractor enables the lingual soft tissues to be retracted easily and it maintains a better surgical field (Fig. 3a), compared with standard tongue retractor (Fig. 3b). For
Fig. 1. Arrow head indicates a common tongue retractor. Arrow indicates a novel tongue retractor for intraoral submandibular gland surgery.

Fig. 2. Design and size of a novel tongue retractor.

Fig. 3. a: Use of a novel tongue retractor during intraoral submandibular gland surgery. Arrow indicates Wharton’s duct. Arrow head indicates submandibular gland. b: Use of a standard tongue retractor during intraoral submandibular gland surgery. Arrow indicates Wharton’s duct.

Fig. 4. a: Use of a novel tongue retractor during intraoral submandibular gland surgery. Arrow indicates Wharton’s duct. Arrow head indicates submandibular gland. b: Use of a standard tongue retractor during intraoral submandibular gland surgery. Arrow indicates Wharton’s duct.

4. Discussion

In our experience, most hilar/intraglandular submandibular stones are located in the upper or medial portion of the submandibular gland. Because standard tongue retractors provide only a limited surgical field, intraoral removal of deep submandibular stones is difficult and time-consuming. When there is incomplete stone removal, surgeons may perform transcervical submandibular sialoadenectomy which has risks of facial nerve injury and visible scarring.

This novel tongue retractor offers a better surgical field and shorter operation time for intraoral stone removal than standard tongue retractors. It may also be useful for intraoral removal of the submandibular gland in patients with intraparenchymal submandibular stones or benign submandibular tumors. Therefore, we recommend the use of this novel tongue retractor for intraoral submandibular gland surgery.

Conflict of interest

The authors have no conflicts of interest.

Ethical approval

Not required.
References