ABSTRACT

Submandibular sialolithiasis is the commonest disorder affecting the salivary glands and its successful surgical management therefore assumes foremost importance for the maxillofacial surgeon who routinely comes across such clinical scenarios. Described below is a similar case in a 42-year-old male patient who presented to the department with a chief complaint of pain while chewing and infrequently appearing submandibular swelling who was then examined and successfully operated upon using transoral sialolithotomy procedure for excision of the sialolith involving the submandibular salivary gland. The patient was followed up subsequently for 1 year and no adverse outcomes whatsoever were observed. The authors find that the procedure is a simple one which can be carried out under local anesthesia and that it is free from significant adverse outcomes.

Keywords: Sialolith, Sialolithiasis, Submandibular swelling, Transoral sialolithotomy.

CASE REPORT

A 42-year-old male patient reported to our department with severe pain and intermittent swelling in the left lower submandibular region of 1 month duration. There were episodes of pain in the same region for last 1 year but of a moderate variety which the patient could tolerate. The pain was intermittent, sharp in nature, radiating to the tongue. The pain aggravated during eating and was relieved at rest. The onset of swelling was corresponding with the episodes of pain. There were occasions of mild swelling during meals for the last 2 months. There was no associated history of fever, malaise, weight loss, anorexia, or burning sensation in the oral cavity. Extraoral examination failed to show a distinctive, diffuse swelling over the left submandibular region with normal appearing overlying skin (Fig. 1). There were no signs of sinus, fistula, or ulceration in the affected region. The swelling was warm and tender on palpation with a firm consistency. No nodular or matting characteristics were noted. Intraoral examination showed inflammation of the left floor of the mouth with absent salivary flow from the left Wharton’s duct orifice. However, no pus discharge was detected from the duct orifice. The left submandibular gland was tender on bimanual palpation. Radiographic examination with a mandibular occlusal view showed a bilobed sialolith, cylindrical in shape and approximately 1.5 to 2 cm in length, in the left submandibular region (Fig. 2). A diagnosis of sialolithiasis of the left submandibular duct was made. After induction of local anesthesia, sialolithotomy with sialodochoplasty was performed.
Management of Submandibular Sialolith using Transoral Sialolithotomy

via an intraoral approach. Upward and medial pressure was applied to the submandibular gland, and an incision was placed directly over the sialolith to expose it (Fig. 3). After sufficiently mobilizing the sialolith, it was delivered through the surgical opening. The restored flow of submandibular gland secretion was visualized from the opening created. A 1-year follow-up showed the patient to be completely asymptomatic with satisfactory glandular function and flow of saliva (Fig. 4).

DISCUSSION

The exact pathogenesis of sialolithiasis remains unclear, and various hypotheses have been forwarded. It has been suggested that a sialolith is the end-result of the progressive enlargement of an initial organic nidus, which occurs by deposition of inorganic and organic substances. Organic substances include glycoproteins, mucopolysaccharides, and cellular debris. The inorganic components are comprised of calcium carbonates and calcium phosphates. Other factors, such as changes in pH, reduced salivary flow, or increases in calcium concentrations, are seen as contributing factors to the precipitation of calcium. The role of the anatomic contributing factors cannot be understated. A comparison of the submandibular gland to its other counterparts, viz., their rate of sialolith formation, suggests that the submandibular gland has a high rate of sialolith formation when compared with the other salivary glands. Furthermore, a comparison of the submandibular gland to the parotid in terms of the difference in viscosity of the saliva also points toward stasis in secretory flow being an important contributing factor. Some have attributed this higher incidence in submandibular salivary gland to the distance the saliva has to travel from the gland parenchyma to the duct orifice, the alkaline and viscous nature of the saliva, and angulations formed by the duct. Sialolith formation can lead to gland destruction due to pressure.

The primary diagnostic modality for sialolith remains radiology. Although the standard occlusal radiograph is the most reliable method of viewing the submandibular sialolith, the region visualized is limited posteriorly to
the second molar, making it unsuitable for larger sialoliths, which may occur frequently in the posterior portions of Wharton’s duct. The posterior portion of the duct can be visualized only by placing the X-ray cone posterior to the gland and directing it in an upward, anterior, and slightly medial direction.\(^9\) Calcifications, however, can also be visualized very early by use of a computed tomography scan, which is sensitive even to stones that are radiolucent on standard radiographs.\(^10\) The treatment objective for sialoliths is restoration of normal salivary secretion. The desired and routinely employed surgical management of sialolith is done in a minimally invasive manner, via a transoral sialolithotomy, to avoid the morbidity associated with sialadenectomy.\(^11\) Whenever the stone can be palpated intraorally, it is best to remove it through an intraoral approach.\(^12\) When performing stone removal from Wharton’s duct, one must first isolate the duct and then provide a longitudinal incision into the duct over the stone to retrieve it. By direct cut down of the stone, the initial incision is taken directly to the depth of the stone without primary isolation of the duct. Direct cut down is not advised because of the risk of ductal stenosis, except when the sialoliths are at the orifice of the duct or when there is a large stone in the submandibular gland pushing the gland upward and anteriorly.\(^9\) Further posterior stones, 1 to 2 cm from the punctum, can be removed by cutting directly into the stone in the longitudinal axis of the duct while carefully protecting the lingual nerve. Submandibular gland removal is indicated only when a stone of substantial mass is detected within the gland itself that is not surgically accessible intraorally and when there are small stones present in the vertical portion of Wharton’s duct from the comma area to the hilum.\(^11\) Newer treatment modalities, such as extracorporeal short-wave lithotripsy and sialoendoscopy are effective alternatives to conventional surgical excision for smaller sialoliths. However, for larger sialoliths, transoral sialolithotomy with sialodochoplasty or sialadenectomy (for giant sialoliths) remain the mainstay of management.

### REFERENCES