Submandibular Intraductal Calculi Removal as an Office Procedure With Radiofrequency Device

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SUMMARY
Salivary duct obstruction secondary to calculi is a common disorder of the submandibular gland and often manifesting as painful episodic swelling of the gland during meals. Complications may arise in unresolved obstruction leading to infections, abscess formation and a hypofunctioning gland. Treatment of this disorder has evolved from the traditional sialadenectomy to organ preserving procedures done under general or local anaesthesia. Our technique using Ellman Surgitron radiofrequency device, is another alternative technique for transoral removal of extraglandular calculi. It is a simple, quick an easy technique to learn that can be done in the office setting under local anaesthesia.

KEY WORDS:
Submandibular gland, Sialolithiasis, Radiofrequency surgery

INTRODUCTION
Sialolithiasis is a common non-neoplastic disorder of the major salivary glands. Obstruction of the submandibular ductal system causes recurrent swelling of the gland during meals which is often painful. Chronic obstruction and stasis with subsequent infection can lead to sialadenitis, abscess formation or potentially Ludwig's angina.

Submandibular gland excision was the traditional treatment of choice but it has now been replaced by various organ preserving procedures in particular for removal of extraglandular calculi, done either under general or local anaesthesia (LA). Intraoral surgeries, sialendoscopy and retrieval with microforceps or basket and retrieval under fluoroscopy guidance have been used with different success rates. Extracorporeal shockwave (ESWL) lithotripsy have also been used as a primary treatment avoiding the need for instrumentation of the ductal system.

Radiosurgery has been a new entity performed in various fields. In the domains of otorhinolaryngology, radiosurgery have been performed mainly for tonsillectomy and surgery for obstructive sleep apnoea. However there are no reports in the English literature for its use in salivary gland pathology.

We are reporting our preliminary experience using a radiofrequency (RF) device for simple transoral calculi removal done in the office setting and its potential application in adjacent procedures in the treatment of calculous obstruction of the submandibular duct.

CASE REPORT
Between March 2008 and September 2008, five patients with symptomatic sialolithiasis of the submandibular duct system underwent this procedure in our ORL clinic. Preoperative clinical assessment was done to look for the presence of calculi and concurrent infection followed by occlusal view X-ray assessing the site of impaction, size, shape and number of calculi. If stone was palpable and found in the distal part of the duct amenable for transoral surgery then these patients were offered sialodochotomy and calculi removal using RF device.

The procedure was performed with the patients in a sitting position and their mouths open. Local infiltration was done with Lignocaine 1% and adrenaline 1:100 000. Ellman Surgitron RF device (Ellman International Inc.) model F.E.P.F. EMC at a frequency of 3.8 Mhz and AC power output of 140Watts was utilized. A needle electrode was used to make an incision on the mucosa overlying the calculi using both the cut and cut/coagulation mode at a power level of 3-4. The mucosal incision was made along the axis of the duct and Wharton's duct was then identified. Further incision was made on the duct over the bulging calculi. Exposed calculus was then removed leaving the duct laid open. Patients were sent home the same day with a course of antibiotic (Tablet Amoxicillin-Clavulanic Acid 625mg BD for 1 week) and instructed to gargle with Thymol Gargle. Admissions to ward were only considered for overt infection. They were reviewed again 2 weeks later to assess for resolution of symptoms and complications of treatment.

DISCUSSION
Intraoral surgery is a favoured approach for extraction of stones anteriorly placed and visible at the punctum(1). This approach has been described over the years with modifications of techniques and instruments. Sobol et al described sialodochotomy with papillotomy without closure of the duct or stenting stating that continuous flow of saliva will help prevent stricture(2). In some centres, this practice differed and continuity of the ducts was reestablished with sutures(3).

Cold instrument has been the conventional instrument used for intraoral surgery, however bleeding can obscure visualization leading to higher risk of neurovascular injuries especially for surgery done on middle third and posterior part of the duct where the lingual nerve crosses the duct. CO2 laser is also used as an alternative for cold instruments but it

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