



RESEARCH ARTICLE

GIANT PAROTID DUCT SIALOLITH - A CASE REPORT

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ABSTRACT

Sialolithiasis is the most common disease of the salivary glands. Sialolithiasis accounts for 30% of salivary diseases. Sialolithiasis most commonly involves the submandibular glands (83-94%) and less frequently the parotid (4-10%) and the sublingual glands (1-7%). Intraductal sialoliths are more common when compared to intraglandular sialoliths. According to the available literature, salivary calculi affecting the parotid gland are usually unilateral and are located in the duct. Their size is smaller than submandibular sialoliths, most of them being less than 1 cm. They rarely measure more than 1.5 cm. The mean size varies from 6 to 9 mm. Giant sialoliths are defined as the sialoliths greater than 1.5 cm. in size. Large intra-glandular sialoliths have been frequently reported but large sialoliths in the salivary ducts have been rarely described. Herewith, we report a case of a giant sialolith in the left parotid duct occurring in a 56 year old female, with the clinical and radiographic presentation and a review of literature.

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INTRODUCTION

Sialolithiasis is the most common disease of the major salivary glands after mumps (Andretta M *et al.*, 2005). Sialolithiasis refers to the formation of calcareous concretions in the salivary duct or glands causing obstruction of salivary flow resulting in salivary ectasia, sometimes even dilatation of the salivary gland (Gadipelly *et al.*, 2016). Its incidence is higher than it is generally realized. Sub-clinical incidence may be considerably higher (Ottaviani *et al.*, 1997). Postmortem studies indicate that the incidence of sialolithiasis among general population is 1.2% (Galli *et al.*, 1997). 80-90% of sialolithiasis usually occurs in the submandibular gland followed by parotid gland (5-20%) and then by sublingual (2%) and minor salivary glands (2%) (Andretta M *et al.*, 2005, Galli A *et al.*, 1997, Manoharan *et al.*, 2013 and Gadipelly *et al.*, 2016). Parotid sialolithiasis usually involves one gland at a time, and the stones are usually solitary and often involves the ductal system of the gland (Al-Share AA *et al.*, 2011). Their size is smaller than submandibular sialoliths, most of them less than 1 cm (Manoharan *et al.*, 2013). The English literature search suggests that parotid calculi will rarely attain a size of greater

than 1.5 cm except reports by Manoharan *et al.* and Gadipelly *et al.* Here is case report of large parotid calculi occurring in the duct close to the papilla.

CASE REPORT

A 56 - year old female attended the dental OPD with chief complaint of swelling in the right side of the face associated with pain since 5 days. History of present illness revealed that, swelling was of sudden onset, localized to preauricular region, aggravated at mealtimes and subsided gradually after consumption of food. The associated pain was localized, continuous, dull aching in nature which, aggravated at mealtimes or sight of food. There was no history of trauma. Past-medical history revealed that the patient was a known case of diabetes and hypertension and was under medication. Past-surgical, past-dental, personal and family histories were non-contributory. General examination revealed no obvious abnormalities. On local extra-oral examination, the patient had facial asymmetry due to a swelling on the right side of the face. On inspection, swelling was well-defined, extending superiorly from the right infra-orbital margin to the lower border of the right side of the mandible inferiorly, anteriorly from the right nasolabial fold to posterior border of the ramus of the mandible posteriorly. The swelling was about approximately 4" × 4" in size.

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Figure 1. Radiograph



Figure 2. Intra operative



Figure 3. Post operative



Figure 4. Sialolith

The skin over the swelling was smooth, stretched, shiny and red in color. There were no secondary changes. On palpation, the swelling was warm, firm in consistency and tender to palpation. The swelling was not compressible, reducible or fluctuant. On local intra-oral examination, the mouth opening was normal. Maxillary teeth on right side showed mild

attrition. There was evidence of deep caries with pulp involvement with 47. A swelling was present in the right buccal mucosa extending from the opening of the right Stensen's duct posteriorly to the angle of the mouth anteriorly, superiorly from the right upper buccal sulcus upto the level of occlusal plane inferiorly. The margins of the swelling were illdefined. The mucosa in the region of the swelling was smooth and normal in color except at the opening of Stensen's duct. It also revealed a hard mass along the course of the duct. Intra-oral palpation revealed the intra-oral swelling to be hard and tender. Pre-surgical routine blood investigations were done. Provisional diagnosis of obstructive salivary gland was made by characteristic history and physical examination. Diagnosis confirmed by x-ray and ultrasound. As the calculus was located near the duct orifice and planned surgical removal by an intra-oral approach under local anesthesia. The dilated duct was left open without suturing. Patient was kept on antibiotics and analgesics and was discharged with the advice to take lemon slices frequently. No recurrence of pain and swelling when patient was reviewed in subsequent appointments.

DISCUSSION

Sialolithiasis is a relatively common disease, reported to account for up to 30% of salivary gland disorders (Torres-Lagares D *et al.*, 2006). Patient age in our case report was adult of 56 years old as in commonly occurring age range (50-60 years). The exact etiology and pathogenesis of salivary calculi is not known. Several hypotheses put forward to explain the etiology of these calculi include: mechanical, inflammatory, chemical, neurogenic, infections, strange bodies etc. Traditional theories suggest that the formation of sialoliths occur in two phases: Formation of a central core and a layered periphery. The central core is formed by the precipitation of salts, which are bound by certain organic substances. The second phase consists of the layered deposition of organic and inorganic material. Submandibular sialoliths are thought to be formed around a nidus of mucus, whereas parotid sialoliths are thought to be formed around a nidus of inflammatory cells or a foreign body. A retrograde theory for sialolithiasis has also been proposed. Aliments, substances or bacteria within the oral cavity migrate into the salivary ducts and become a nidus for further calcification. Some authors have suggested hypercalcemia as one of the causative factors of formation of sialolith in animal model. This, however, has to be proved in humans. Thus a preventive diet, regarding the calcium concentration does not exist in the current literature (Konstantinidis *et al.*, 2007). Symptom of salivary gland or duct obstruction by a sialolith is salivary duct swelling at meal time without any reason and lasts for less than 2 hrs, later it disappears and may reappear throughout the day. On some occasions, the swelling is accompanied by an episode of salivary colic, an acute, lacerating pain which does not last for long and disappears after 15 or 20 minutes. Patient also complained of similar type of pain during meal times. The clinical symptoms are characteristic and aid in early diagnosis, however, pain is only one of the symptoms and it does not occur in 17% of cases (Giacomo Oteri *et al.*, 2011). Sialoliths are usually unilateral and do not cause xerostomia. They consist of mainly calcium phosphate and smaller amounts of carbonates in the form of hydroxyapatite as also magnesium, potassium and traces of ammonium. The ratio of organic to inorganic material in a submandibular stone is 18:82, whereas that in a parotid stone is 51:49 (Bodner *et al.*, 1999). Sialoliths

are usually small and measure from 1 mm to less than 1 cm in size. They rarely measure more than 1.5 cm. The mean size varies from 6 to 9 mm. Grossly, the sialolith has a round or ovoid shape, a porous texture and a pale yellow color. Parotid stones are smaller in size and more radiolucent than submandibular stones but our case of 2 X 1 cm size, pale yellow colour stone with porous texture, larger than conventional parotid stones and of radiopaque in nature. Sialoliths are usually more or less organized hard concretions, of a pale yellow colour and porous aspect. They usually have an oval or long shape, although we may also find some in the form of a cast (Bodner *et al.*, 1999). Messerly removed a 51 mm long calculus that occupied the entire length of Stenson's duct in a 66-year-old man (Rust *et al.*, 1969). Brusati and Fiamminghi removed a sialolith from the left submandibular duct of a 55 year-old man measuring 27 x 31 mm (Brusati *et al.*, 1973) More recently Leung *et al.* removed a sialolith 14 x9 mm from the right submandibular duct (Leung *et al.*, 1999).

The diagnostic aids other than sialography are CT scan and MRI with the benefits of minimal invasiveness and accuracy. Sialoendoscopy is better option to visualize intraductal stenosis and inflammatory changes (Bodner *et al.*, 1999). Treatment options vary according to size and site of calculi. Differential diagnosis include diffuse unilateral swelling in parotid region, sialadenitis is considered when mass is absent and lymphadenitis, pre-auricular cyst, sebaceous cyst, benign lymphoid hyperplasia or extra- parotid tumor are considered when mass is superficial in the salivary gland. In case of a diffuse swelling in the parotid region, unrelated to the parotid glands, masseteric hypertrophy, lesions of the temporomandibular joint have to be considered. It is also important to differentiate sialoliths from other soft tissue calcifications. Parotid sialoliths are characterized by pain and swelling of the salivary gland, whereas, other calcifications such as calcified lymph nodes are symptom-free. There are various methods available for the management of salivary stones, depending on the gland affected and stone location. Regarding the general management of sialoliths, for small calculi, the treatment of choice should be medical rather than surgical. The patient with small liths can be administered natural sialogogues such as small slices of lemon or sialogogue medication. Drugs like pilocarpine and short-wave infrared heating will stimulate contraction of ducts, but medium or large salivary colic may occur and calculus may not be cleared. The treatment of choice, for parotid stones not responding to conservative treatment, is extracorporeal shock-wave lithotripsy under sonographic control. Moreover, it does not require anaesthesia, sedation or analgesia. This method is reported to be effective, with patients stone-free in 50-60% and symptom-free in 80-90%. Although lithotripsy is a useful technique, there is the potential risk of parenchymal damage and fibrosis of the gland (Konstantinidis *et al.*, 2007). Some authors advocate treatment of sialolithiasis by means of intraductal instillation of penicillin or saline. According to these authors, this method is more effective than systemically administered drugs due to low recurrence rate and many other advantages (Torres-Lagares *et al.*, 2006). When medical therapy is ineffective the next alternative is surgical removal of the calculus or even of the whole gland. One of the disadvantages is facial nerve damage. Intraoral surgery is more effective than extraoral technique because of no visible scar (Torres-Lagares *et al.*, 2006). Parotidectomy should be considered as the last treatment option, in patients with multiple stones (> 3mm stones) in the same gland, recurrent

episodes of sialadenitis and after failure of minimal invasive techniques and shock-wave lithotripsy (Zenk *et al.*, 1998, Iro H *et al.*, 1992). The most conservative technique is the anastomosis of Stensen's duct by means of microsurgery. Factors affecting treatment are size, site and composition of sialolith. Salivary stone removal through the oral cavity, creation of a salivary fistula interventional sialoendoscopy, and resection of the gland are treatment options.

Conclusion

Giant salivary gland calculi are considered rare, especially those occurring in the parotid duct. Giant ductal sialolith in the parotid duct might be asymptomatic or in the most cases the patient may present with episodes of salivary colic characterized by pain, localized in area of the stone, exudation and swelling in the oral cavity, complicated by sialadenitis, due to stasis of saliva, bacterial ingress and suppuration. Surgical treatment has traditionally been used as therapy to restore a physiologic salivary flow, in case of giant ductal sialoliths.

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