

Recurrent Parotitis due to Parotid Duct Calculi

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ABSTRACT

Introduction

Recurrent parotitis is frequently encountered in Otolaryngology practice. Parotid calculi, however is extremely uncommon as compared to submandibular calculi. Hence parotid duct calculi as a cause of recurrent parotitis need a special emphasis.

Case Report

We present here a rare case of recurrent parotitis due to parotid duct calculi in a 35 yr old female patient, who initially had presented to ENT OPD with recurrent pain and swelling for last eight months. Clinical examination was suggestive of calculi in the left parotid duct area which was confirmed by relevant radiological evaluation including USG, CT scan and parotid sialography. Patient was treated by superficial parotidectomy along with removal of the calculi from the parotid duct.

Discussion

Calculi arising from the submandibular duct and gland are well established and quite easy to diagnose, but parotid calculi are quite unheard of in clinical practice. According to Western literature, parotid calculi account for 15-20% of all salivary gland calculi. We present here the case along with the relevant review of the literature.

Keywords

Parotitis; Salivary Duct Calculi

Submandibular calculi are frequently encountered in clinical practice, but parotid calculi had rarely been heard of. The anatomical and physiological differences favour the pathogenesis of a submandibular calculus rather than a parotid calculus. Though the western literature provides an overall incidence of 15-20%,¹ no such data is available with respect to the Indian literature. We present here a very rare case of a 35 year old female patient who initially presented to us with three episodes of pain and swelling over her left cheek within a short duration of eight months. Clinical and radiological evaluation raised suspicion of recurrent parotitis due to multiple parotid calculi which was treated by superficial parotidectomy. A detailed review of the literature including the various treatment options is mentioned herewith.

Case Report

A 35 year old female patient had presented to our ENT OPD with the chief complaint of three episodes of swelling and pain over her left cheek since last 8 months. Each episode used to last for few days only accompanied

by high fever. During this period, the patient had been treated conservatively by the family practitioner. Patient remained symptom free for a few months and again there was recurrence of the swelling and pain over the same region. She also noticed spurt of saliva heralding the relief of symptoms. On meticulous history taking, she did not complain of any spontaneous expulsion of stone in her mouth.

General survey of the patient was unremarkable. Regional examination revealed a well defined swelling 5 cm in front of the tragus on the left side of her cheek. The swelling measured 1.25 cm x 2 cm in dimension, oval in shape with irregular surface, firm consistency and

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well defined margins. It was not tender on superficial palpation but slightly tender on deep palpation. The skin over the region was normal without any sinus or fistula or fixity to the underlying structures. Examination of the pre auricular region was normal without any palpable abnormality in the parotid region. No palpable lymph nodes could be appreciated in the neck. Rest of the clinical examination of all other salivary glands was within normal limits. Intra oral examination too did not reveal any significant abnormality in the region of the parotid duct opening. No stone was clinically palpable from within the mouth.

Routine hematological and biochemical parameters were within normal limits. Radiological evaluation by USG of the region was suggestive of multiple echogenic shadows in the left parotid region. CT scan too revealed multiple calculi involving the left parotid duct and the substance of the parotid gland (Fig. 1). Parotid duct

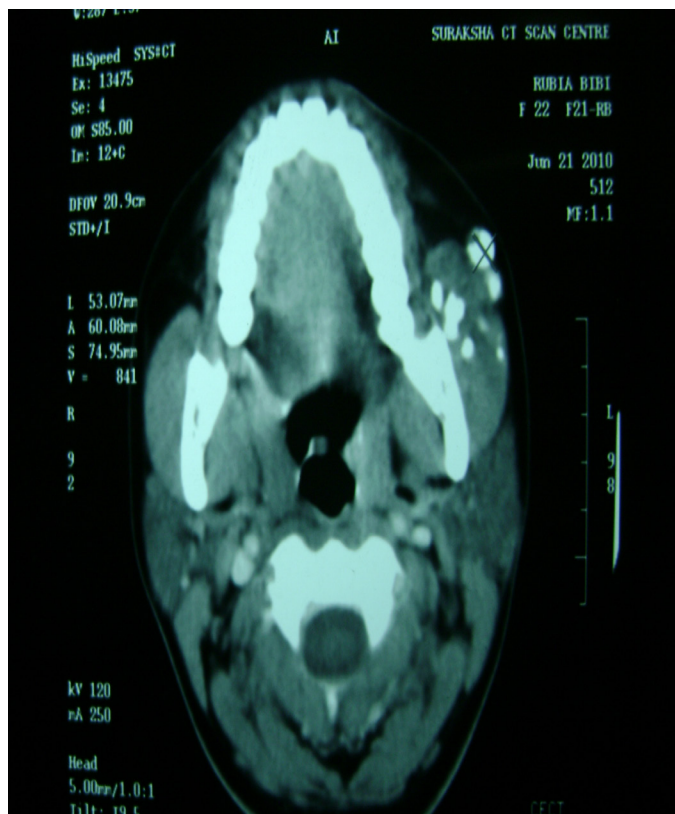


Fig. 1. CT scan showing multiple calculi in the parotid region, involving the parotid duct and the left parotid gland.

sialography was done which showed multiple irregular filling defects with dilated parotid duct proximal to the site of the obstruction. The radiological evaluations were all suggestive of multiple calculi in the left parotid duct and the left parotid gland without any involvement of other salivary glands.

We decided to perform a superficial parotidectomy of the left side along with removal of the calculi from the parotid duct under GA. After proper consent, antiseptic dressing and draping, the conventional lazy S incision was made for superficial parotidectomy and the incision was extended anteriorly 5 cm along the Langer's line from the level of tragus in order to facilitate the easy removal of the calculi from the parotid duct. Gentle dissection was then done to delineate the superficial lobe, the branches of facial nerve and the parotid duct area. The parotid duct was found to be fusiformly dilated in the mid 1/3rd region. Temporary ligatures were applied loosely at the proximal and distal end of the dilated duct area and incision was made over the duct. We could extract multiple firm calculi from within the parotid duct. The isolated parotid duct was thoroughly washed with normal saline to remove the sludge. Subsequently the temporary sutures were removed and the duct was sutured under microscope using 4-0 polyglactin taking care not to injure the opposite wall. Superficial lobe of the parotid gland was then removed taking utmost care not to injure the facial nerve (Fig. 2). The incision was then closed using 3-0 polyglactin (Vicryl®) and 3-0 monofilament silk. The above mentioned calculi were chalky white in color with hard but brittle consistency. (Fig. 3). There was no obvious change in the colour of the calculi on exposure to air. The post operative recovery was uneventful with no clinical features of facial nerve palsy or recurrence or any episodes of acute parotitis even after 30 months of follow up.

Discussion

Calculi arising from the submandibular duct and gland are well established and quite easy to diagnose, but parotid calculi are quite unheard of in clinical practice. According to Western literature, parotid calculi account for 15-20% of all salivary gland calculi,¹ though the same cannot be justified with respect to the Indian

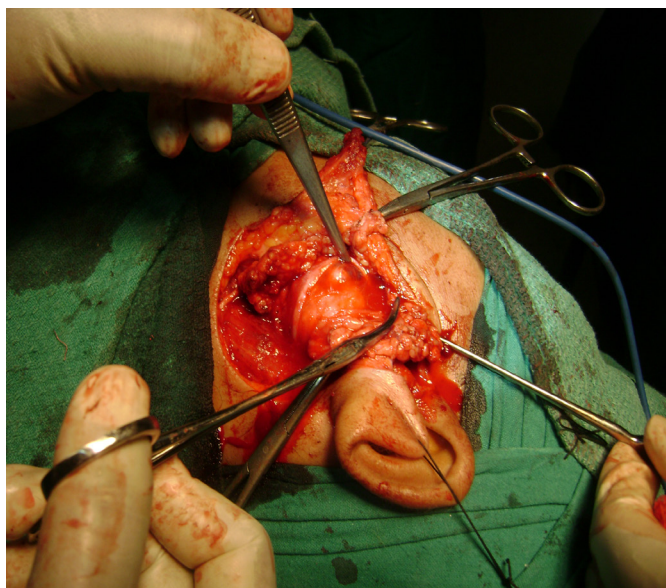


Fig. 2. Superficial parotidectomy being done with delineation of the branches of facial nerve.

population. They are more common in adults though slightly younger age group may predominate.²

The pathophysiology of submandibular duct calculi may not always be applicable in case of parotid duct calculi. The secretion from parotid duct is mainly serous and the gland drains along the gravity, which is in sharp contrast to the submandibular gland, which secretes mainly mucinous secretion against the gravity. This might explain the common occurrence of the submandibular duct calculi in contrast to the rarity of the parotid duct calculi.

Intermittent episodes of pre auricular pain and swelling raise the suspicion of recurrent parotitis. In our case, the patient had three episodes of acute parotitis which were relieved by medications. However the probability of calculi being the cause of recurrent parotitis was suspected only after meticulous clinical examination.

The important noteworthy characteristic feature of parotid duct calculi is the persistence of the pain and swelling for days in contrast to the submandibular duct calculi which persists for a few hours. This may be anatomically explained by the wider dimension of the submandibular duct which dislodges the stone rapidly and hence quicker relief of pain.³ This also precisely



Fig. 3. Specimen of the calculi removed from the duct.

explains the duration of attacks in our case which used to last for few days rather than hours.

Parotid duct calculi most often lodge in the masseteric portion of the parotid duct. A review of 1,200 cases of major salivary gland calculi was done in 1986 which was suggestive of less than 10% incidence of parotid calculi. The parenchymal incidence was even rarer to the ductal involvement in the ratio of 1:35.⁴

Various investigations have been mentioned in the literature to diagnose parotid calculi. Patey suggested regular use of intra oral films in all cases of chronic parotitis to exclude underlying calculi.⁵

Parotid sialography is another reliable way to diagnose calculous disease. Parotid sialogram if done, will not only demonstrate the calculi, but will also demonstrate the radiopaque microcalculi, in addition to the secondary dilatation and constriction of the duct system.¹

With the advent of newer and better imaging techniques the use of ultrasonography for the diagnosis of parotid calculi was established in 1978.⁶ It is non-invasive as well as will not carry the harmful effects of ionizing radiation. In present day scenario, USG is in fact the first line and the most convenient way to diagnose the disease. Further imaging by CT scan may be done to

have a better anatomical location of the calculi.

The differential diagnosis of recurrent unilateral pain and swelling of the parotid gland are viral parotitis, Sjogren syndrome, ascending infection after tooth extraction or due to poor oral hygiene in terminal stages of head neck malignancies. In our case, the typical history, clinical examination, aided by the radiological confirmation helped in coming to the provisional diagnosis of recurrent parotitis due to parotid duct calculi.

Though spontaneous expulsion of the stones are reported in the literature, but the ideal treatment of parotid calculi is surgical.⁷ If the calculus is confined to the intra oral part of the parotid duct close to the duct orifice, stomaductoplasty is more viable.⁷ In those cases where the calculi is located distal to the duct orifice, where intra oral approach is difficult, pre auricular incision may be made to shell out the stone.⁸ If however there is involvement of the parotid gland in the form of parenchymal calculi or recurrent parotitis, superficial parotidectomy is the treatment of choice.

USG of the parotid region, in our case, was suggestive of multiple echogenic shadows in the left parotid region. CT scan too revealed multiple calculi involving the left parotid duct and the substance of the parotid gland, thus implying that the disease also had involved the superficial lobe. So we performed superficial parotidectomy. Total conservative Parotidectomy would not have been justified for such a benign innocuous lesion, as also recurrent inflammation of the deep lobe is extremely rare and is not mentioned in literature. Though there are some complications associated with superficial parotidectomy like facial nerve palsy, Frey's syndrome or gustatory sweating, but the excellent surgical outcomes outweigh its potential complications in competent hands.⁷ Parotid calculi are rare in the pediatric age group.⁹ If diagnosed, conservative measures like chewing and milking are well justified.¹⁰

Recent treatment of the parotid calculi needs a brief mention. With the technological advances, Ultrasound-guided piezoelectric extracorporeal shockwave lithotripsy (ESWL) has been used in Europe for the treatment of parotid calculi with good results.^{11,12} The procedure was done in 42 patients and 5 out of the 10

patients, who had intraparenchymal disease, had no evidence of recurrence after treatment.¹¹ No document however exists regarding use of sialoendoscope for extraction of calculi from the parotid duct, but it may well be used in remote future.

References

1. Bullock K N. Parotid and submandibular duct calculi in three successive generations of one family. *Postgrad Med J.* 1982; 58:35-6
2. Elmostehy MR. Parotid salivary calculus. Report of a case. *Oral Surgery Oral Medicine and Oral Pathology* 1968; 26:18
3. Thomson J P S and Hobsley M. Parotid duct calculus. *Proceedings of the Royal Society of Medicine* 1973, 66:352-3
4. Seifert G, Miehke A, Haubrich J, Chilia R. *Diseases of the Salivary Glands: Pathology, Diagnosis, Treatment, Facial Nerve Surgery.* Stuttgart: Georg Thieme Verlag, 1986:85-90
5. Patey, D.H. The clinical features and diagnosis of parotid calculi. *Practitioner* 1966; 197: 67
6. Pickrell K L, Trought W S, Shearin J C. The use of ultrasound to localize calculi within the parotid gland. *Annals of Plastic Surgery* 1978; 1:542
7. Suleiman S I, Thomson J P S and Hobsley M. Recurrent unilateral swelling of the parotid gland. *Gut* 1979; 2:1102-8
8. Seward GR. Anatomic surgery for salivary calculi, part VI. Calculi in the intraglandular part of the parotid gland. *Oral Surgery, Oral Medicine, oral pathology* 1968; 26:1
9. Fesharaki R, Baloochy M, Sonbolastan M and Fotuhi A. Parotid gland calculus-Report of a case. *Journal of laryngology and otology* 1979;93:737
10. Eddy H.H. Recurrent parotitis and associated calculus, cyst or tumour. *Medical Journal of Australia* 1966; 2:581
11. Kulkens C, Quetz JU, Lippert BM, et al. Ultrasound-guided piezoelectric extracorporeal shock wave lithotripsy of parotid gland calculi. *J Clin Ultrasound* 2001; 29:389-94
12. Ottaviani F, Capaccio P, Rivolta R, et al. Salivary gland stones US evaluation in shock wave lithotripsy. *Radiology* 1997; 204:437-41.