The Journal of Laryngology and Otology
March 1999, Vol. **113**, pp. 266–267

Parotid sialolithiasis

LIPA BODNER, D.M.D.

Abstract
This report documents an unusual case of buccal mucosa swelling due to a giant (25 × 13 mm), parotid duct sialolith. Review of the literature disclosed that this is the largest parotid sialolith ever reported. Diagnostic imaging and treatment are described.

Key words: Parotid gland; Calculi; Sialadenitis

Introduction

Sialolithiasis, the formation of salivary calculi, is a common disease of the salivary glands. It is characterized by obstruction of salivary secretion by a calculus, associated with swelling, pain and infection of the affected gland (Lustman *et al.*, 1990; Haring, 1991; Bodner, 1993). Most salivary calculi occur in the submandibular gland (80 to 95 per cent), whereas five to 20 per cent are found in the parotid gland. The sublingual gland and the minor salivary glands are rarely affected. Calculi can occur at any age, but there is a peak incidence between the fourth and sixth decades. Male predilection is reported. The right and left sides are equally affected, whereas bilateral sialolithiasis is rare (Blitzer, 1987; Lustman *et al.*, 1990).

The composition of calculi is mostly of calcium phosphate (hydroxyapatite), with traces of magnesium, carbonate and ammonia. There is also an organic matrix consisting of carbohydrate and amino acids (Blitzer, 1987; Bodner, 1993). The exact mechanism involved in the formation of salivary calculi is still poorly understood.

The high incidence of submandibular stones can be explained by the pH, mucin content and high Ca++ concentration of this salivary gland. The length and route of the Wharton's duct and the secretion against gravity can also contribute (Lustman *et al.*, 1990; Bodner, 1993).

When parotid glands are involved, calculi are most often unilateral, single and located within the ductal system; intra-parenchymal sialoliths are rare (Seifert *et al.*, 1986; Ottaviani *et al.*, 1997). The size of salivary calculi may vary from less than one mm up to three cm (Levy *et al.*, 1962). Most (79 per cent) of the calculi are less than 10 mm in size, whereas only 7.6 per cent are larger than 15 mm (Lustman *et al.*, 1990). Parotid gland calculi are usually smaller in size as compared to the submandibular counterparts (Raymond and Bastakis, 1992). The present article is a report on an unusually large parotid calculus, its diagnosis and management.

Case report

An 81-year-old man was referred to the Department of Oral and Maxillofacial Surgery, Soroka Medical Centre, with a swelling of the left buccal mucosa of six months' duration. He reported intermittent episodes of moderate to severe pain and swelling. Despite his age, he had no major medical problem and was not taking medication.

Upon inspection, the face and parotid area appeared symmetric. Oral examination revealed swelling at the left buccal mucosa (Figure 1). A rock-hard, well-defined mass was palpable in the anterior portion of the Stenson's duct. The mass could not be digitally pushed out of the duct orifice. A small amount of exudate was discharged from the orifice.

A panoramic radiograph (Figure 2) revealed a large radiopaque area at the clinically palpated mass, consistent with the diagnosis of sialolithiasis in Stenson's duct of the left parotid gland. Under local anaesthesia, and an incision near the duct orifice, the calculus was removed. The sialolith (Figure 3) was yellowish and white with a rough surface and measured 25 × 13 mm. The recovery was uneventful.

FIG. 1
Swelling of the left buccal mucosa.

From the Department of Oral and Maxillofacial Surgery, Soroka Medical Centre, Ben-Gurion University of the Negev, Beer-Sheva, Israel.
Accepted for publication: 8 January 1999.

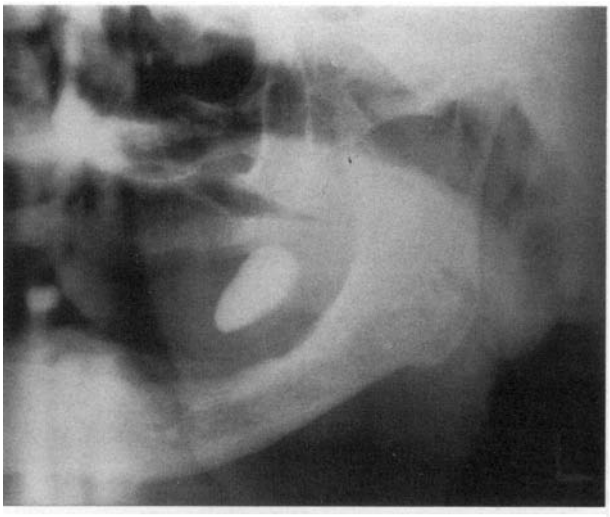

FIG. 2
Panoramic radiograph showing a large radiopaque mass, consistent with sialolith in the Stenson's duct.

Discussion

Parotid calculi are considered rare as compared to those of the submandibular gland both in children and adults (Fesharaki *et al.*, 1979; Lustman *et al.*, 1990; Haring, 1991; Bodner and Fliss, 1995; Horie *et al.*, 1995). The exact mechanism of lithogenesis is unclear, however the presence of microcalculi in 80 per cent of normal submandibular and only in 10 per cent of normal parotid glands (Scott, 1978; Epivatianos and Harrison, 1989) corresponds well to overt incidence of calculi in these two glands.

The higher incidence of sialolithiasis as the patients grow older (Lustman *et al.*, 1990) can be due to reduced secretory activity, alterations of electrolyte concentrations and impairment of glycoprotein synthesis of the salivary glands; all of which could result from structural deterioration of cell membranes during aging (Bodner and Gorsky, 1996).

The case presented, is an exacerbation of a longstanding chronic parotid sialolithiasis. The enormous size (25 × 13 mm) of the recovered sialolith indicates a very long formative period. This is the largest parotid sialolith ever reported (Levy *et al.*, 1962; Yoel, 1975; Fesharaki *et al.*, 1979; Seifert *et al.*, 1986; Lustman *et al.*, 1990; Haring, 1991; Bodner, 1993; Bodner and Fliss, 1995; Horie *et al.*, 1995; Ottaviani *et al.*, 1997).

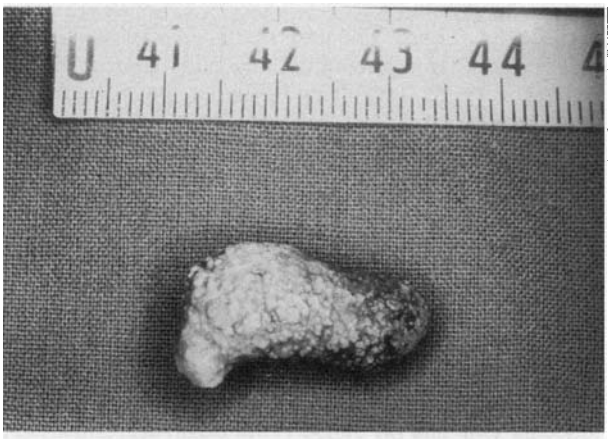

FIG. 3
The sialolith, measuring 25 × 13 mm.

Imaging methods currently available include: plain radiography, sialography, CT, ultrasound and scintigraphy (Bodner, 1993). The role of radiographs in diagnosis of sialolithiasis is well-recognized with an 80–90 per cent discovery rate (Levy *et al.*, 1962; Lustman *et al.*, 1990). Poorly calcified sialoliths (radiolucent calculi) might not be disclosed on plain radiographs, thus making the diagnosis more complicated.

The treatment objective is to restore normal parotid function. The calculus must be removed or bypassed, using the most appropriate technique, which may include milking or dilating the duct, incision of the duct or ultrasound lithotripsy. Intraglandular sialoliths require partial parotidectomy.

References

Blizter, A. (1987) Inflammatory and obstructive disorders of salivary glands. *Journal of Dental Research* **66:** 675–679.

Bodner, L. (1993) Salivary gland calculi: Diagnostic imaging and surgical management. *Compendium Continuing Education Dentistry* **14:** 572–584.

Bodner, L., Fliss, D. M. (1995) Parotid and submandibular calculi in children. *International Journal of Pediatric Otorhinolaryngology* **31:** 35–42.

Bodner, L., Gorsky, M. (1996) Parotid gland secretion of the aging rat. *Archives of Gerontology and Geriatrics* **22:** 63–69.

Epivatianos, A., Harrison, J. D. (1989) The presence of microcalculi in normal human submandibular and parotid salivary glands. *Archives of Oral Biology* **34:** 261–265.

Fesharaki, R., Baloochy, M., Sonbolastan, M., Fotuhi, A. (1979) Parotid gland calculus: Report of a case. *Journal of Laryngology and Otology* **93:** 737–739.

Haring, J. I. (1991) Diagnosing salivary stones. *Journal of American Dental Association* **122:** 75–76.

Horie, N., Shimoyama, T., Tanebayoshi, Y., Ide, F. (1995) Parotid sialolithiasis in a child. *Journal of Clinical Pediatric Dentistry* **20:** 61–62.

Levy, D. M., ReMine, W. H., Devine, K. D. (1962) Salivary gland calculi. *Journal of American Medical Association* **181:** 1115–1119.

Lustman, J., Regev, E., Melamed, Y. (1990) Sialolithiasis: a survey on 245 patients and review of the literature. *International Journal of Oral and Maxillofacial Surgery* **19:** 135–138.

Ottaviani, F., Galli, A., Lucia, M. B., Ventura, G. (1997) Bilateral parotid sialolithiasis in patients with acquired immunodeficiency syndrome and immunoglobulin G multiple myeloma. *Oral Surgery, Oral Medicine and Oral Pathology* **83:** 552–554.

Raymond, A., Bastakis, J. G. (1992) Angiolithiasis and sialolithiasis in the head and neck. *Annals of Otology, Rhinology and Laryngology* **101:** 455–457.

Scott, J. (1978) The prevalence of consolidated salivary deposits in the small ducts of human submandibular glands. *Journal of Oral Pathology* **7:** 28–37.

Seifert, G., Miehlke, A., Hanbrich, J., Chilla, R. (1986) *Diseases of the salivary glands: pathology, diagnosis, treatment, facial nerve surgery.* George Thieme Verlag: Stuttgart, Germany, pp 85–90.

Yoel, J. (1975) *Pathology and Surgery of the Salivary Glands.* Charles C. Thomas: Springfield, IL. pp 364–383, 854–901, 1148.

Address for correspondence:
Professor Lipa Bodner,
Department of OMF Surgery,
Soroka Medical Centre,
P.O. Box 151,
Beer-Sheva 84101,
Israel.

Fax: 972-7-6483366

https://doi.org/10.1017/S0022215100143750 Published online by Cambridge University Press