

Multiple sialoliths and a sialolith of unusual size in the submandibular duct

A case report

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A 49-year-old man with multiple sialoliths in the submandibular duct is described. One of the sialoliths was of remarkable size. This report is of interest because of the unusual size and weight of this sialolith and because of the patient's symptoms, which were relatively mild and of short duration. (*Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1999;87:331-3)

Sialolithiasis is the most common disease of the salivary glands in middle-aged patients. It is estimated that sialolithiasis affects 12 of every 1000 patients in the adult population.¹ There is a slight male predominance.² More than 80% of salivary calculi occur in the submandibular gland or its duct.^{3,4} Multiple salivary calculi in the submandibular duct are rare.⁵ We report the case of a patient with multiple calculi in the right submandibular duct; one of these calculi was of unusual size.

CASE REPORT

The patient, a 49-year-old pediatrician, appeared for evaluation and treatment of intermittent, dull, aching pain and swelling in his right submandibular area; the symptoms had been present for 2 to 3 months. This phenomenon occurred 7 to 8 times per week, during meals. The patient noted that sour foods and chocolate were more likely to produce symptoms than were other types of food. His health history was unremarkable; however, 6 months earlier he had undergone a laparoscopic cholecystectomy for multiple cholesterol stones in the gallbladder.

On examination, he was found to have a firm mass 1 cm in diameter, with some tiny masses proximal to it, on the floor of his mouth, along the course of the right submandibular duct. The masses were slightly tender. The largest mass was bimanually palpable. Saliva was noted to flow from the orifices of the submandibular ducts on both sides when the glands were massaged. The right submandibular gland measured 1 cm by 2 cm; the left submandibular gland measured 0.8 cm by 1 cm. Both submandibular glands were nontender. The patient was

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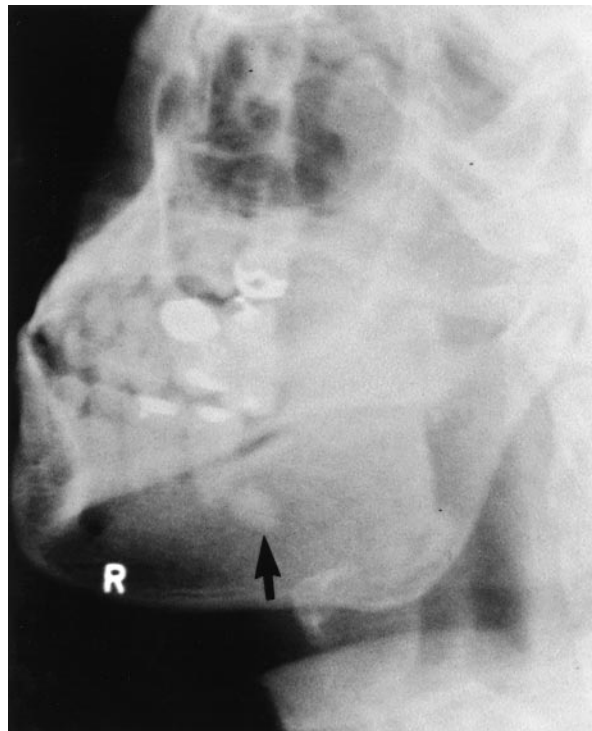


Fig 1. Radiograph shows large radiopaque calculus.

afebrile, and his vital signs were normal. The rest of the findings of the physical examination were unremarkable. On the basis of the history and physical findings, a clinical diagnosis of right submandibular sialolithiasis was made.

A plain radiograph of the right half of the mandible and floor of the mouth showed a large radiopaque calculus in the floor of the mouth (Fig 1). A right submandibular sialograph showed complete obstruction of the right submandibular duct by a radiopaque calculus 3 cm from the orifice of the duct (Fig. 2).

After induction of local anesthesia, an incision was made through the oral mucosa lateral to but along the course of the

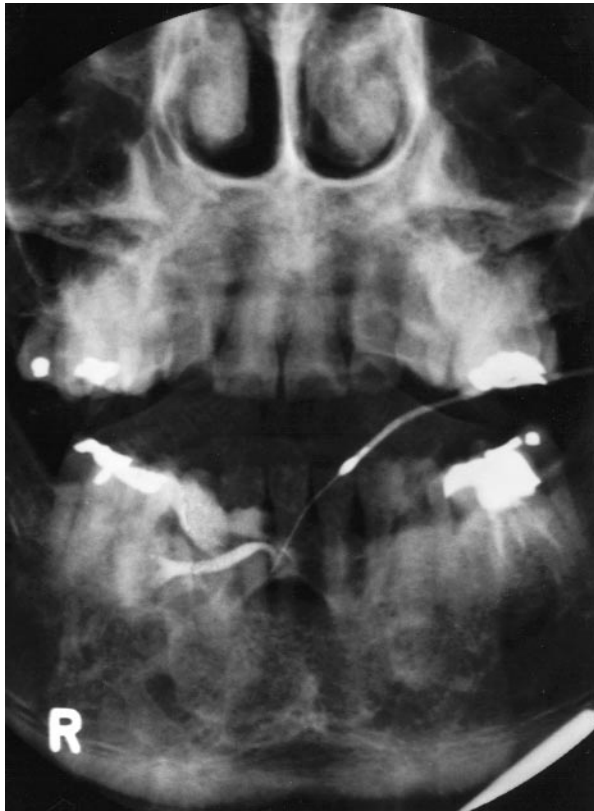


Fig 2. Sialograph shows complete obstruction of right submandibular duct by large radiopaque calculus.

right submandibular duct. The duct was dissected to expose the large calculus. The calculus was freed with difficulty by blunt dissection and removed from the right submandibular duct. The small calculi were left inside the duct to be passed out by themselves. The wound was left to heal by secondary intention.

Postoperatively, the patient experienced swelling and sharp, colicky pain in the right submandibular region with almost every meal. He also had numbness on the right side of the tongue. He was given Tylenol with codeine number 3 at a dose of 1 tablet 4 times a day whenever necessary for pain and 40 mg of prednisone daily for 7 days to reduce the tissue edema resulting from the surgery.

On the sixth postoperative day, a small calculus was visualized at the orifice of the right submandibular duct; there were several small calculi proximal to it. Five of these small calculi, each approximately 2 mm in diameter, were milked out of the orifice of the right submandibular duct with a pair of forceps. The patient experienced instant relief of his pain. Two calculi, each measuring 2 mm in diameter, passed out spontaneously one hour later.

All 8 calculi were yellow in color. The largest measured 14 × 9 mm and weighed 0.48 g (Fig 3). Minute cracks were seen on the surface of this calculus. Chemical analysis showed it to be an admixed mass of microcrystalline hydroxyl and carbonate apatites, protein, and cryptocrystalline tricalcium phosphate.

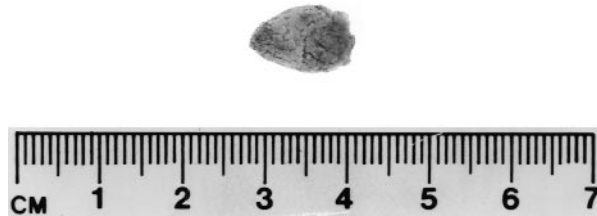


Fig 3. Large calculus removed from right submandibular duct.

DISCUSSION

It is believed that salivary calculi develop as a result of deposition of mineral salts around a nidus of bacteria, mucus, or desquamated cells.⁶ Salivary stagnation, increased alkalinity of the saliva, increased calcium content of the saliva, infection or inflammation of the salivary duct or gland, and physical trauma to the salivary duct or gland may predispose to calculus formation.^{2,7} The submandibular gland is most susceptible because its saliva is more alkaline, has a greater concentration of calcium and phosphate, and has a higher mucus content than the saliva of the parotid and sublingual glands.^{2,7} In addition, the submandibular duct is longer and has a kink at the rear of the floor of the mouth. The submandibular gland also has an antigravity flow.

Multiple salivary calculi in the submandibular duct are rare. Tepan and Rohiwal⁵ described a 12-year-old boy who had 6 calculi in the submandibular duct. In the present case, there were 8 calculi in the submandibular duct.

One of our patient's calculi was of unusual size and weight. It measured 14 × 9 mm and weighed 0.48 g. Although large sialoliths have occasionally been reported in the salivary gland,⁸⁻¹¹ they have rarely been reported in the salivary ducts.^{7,12-14} Mustard¹² removed a sialolith 2¼ inches by ½ inch in the left submandibular duct of a 42-year-old man. Rust and Messerly¹³ removed a sialolith 51 mm long that occupied the entire length of Stensen's duct in a 66-year-old man. Neither Mustard¹² nor Rust and Messerly¹³ mentioned the weight of the sialolith in their patient. Raksin et al⁷ removed a sialolith measuring 55 × 20 mm and weighing 9.5 g from the left submandibular duct of a 52-year-old man. Brusati and Fiamminghi¹⁴ removed 2 sialoliths from the left submandibular duct of a 55-year-old man; one of these sialoliths measured 8 × 6 mm and weighed 2.7 g, and the other measured 27 × 31 mm and weighed 15.2 g. In comparison with other salivary sialoliths reported in the literature, the weight of the sialolith in our case was exceptionally light when adjusted for size.^{7,11,13,14}

Sialolithiasis is often accompanied by recurrent bouts of pain and swelling in the involved salivary gland. The pain and swelling are usually associated with eating. Because salivary duct calculi are usually symptomatic, patients often seek medical attention long before their calculi become large. Judging from the size of the unusual calculus described in this report, we suspect that it must have been present for years. Our patient, a pediatrician, was an excellent historian; he reported that he had only intermittent, dull, aching pain and swelling in the right submandibular gland for 2 to 3 months. It is conceivable that the obstruction to the flow of saliva caused by the large calculus was never complete and that some saliva managed to seep through the cracks in the calculus.

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