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Short Report

Sialolithiasis (Salivary Stone)

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Sialolithiasis is the most common cause of salivary gland obstruction. It can be complete or partial and may show recurrence. The retained saliva applies retrograde pressure on the salivary gland, the chyma and the ductal system. Its accepted treatment is to postpone silalithectomy in the acute stage, particularly in those cases in which removal of the sialolith is surgically difficult. In such cases, antibiotic medication is essential until the swelling and pain subsides and surgery becomes possible (1-7).

However, it is preferable to perform immediate sialolithectomy even in the acute stage because this facilitates immediate relief of glandular pressure by draining the exudate and releasing the retained saliva (3,5). The current report is a sialolithiasis case in submandibular salivary gland.

Case Report

A 21-year-old Turkish man was seen at the Army Medical Center Dental Clinic on June 10, 1994 for an abnormal enlargement in the sublingual region (Fig. 1a). There were no significant findings in the patient's medical or dental history, including any trauma to this region. Palpation revealed a firm circumscribed, mobile mass approximately 1.5x1x0.5 cm in diameter.

Radiographic examination (computed tomography) revealed a well-circumscribed radiopaque, spherical mass that was apparently not attached to the mandibular bone (Fig. 2). After all these evaluations the preoperative clinical diagnosis was sialolithiasis (salivary stone).

The mass was surgically excised under local anesthesia (Fig. 1b). Postoperative evaluation of the patient revealed no pain or swelling and the salivary flow became normal. Cephalosporin (2 g/day) was administered for ten days postoperatively (Fig. 1cd). No postoperative complications were seen, and there was no recurrence following removal (Fig.1e).

Salivary calculi develop due to pathologic formations of calcareous deposits in salivary ducts or glands, whereby minerals form around an organic matrix. Many theories have been put forward to explain salivary calculi formation, such as calcification around foreign bodies, desquamated epithelial cells and microorganisms in the duct. Sialolithiasis may be explained by the pH, mucin content and high Ca^{++} concentration in this gland.

Sialolithiasis or the formation of sialoliths or salivary stones, typically occurs in the ducts of the submandibular and parotid glands of middle-aged adults (7), as described in our study. The low incidence in the 3^{rd} to 6^{th} decades is similar to the results in most reports. A male/female ratio of 1/1 is reported by Seldin et al. (8), while male predominance ranging from 5/5, 4/5 to 7/3 is reported in most other studies.

A stone should always be removed. If the blockage of a duct persists for a long period, fibrosis of the gland and even chronic sialoadenitis may occur. Acute obstructive sialoadenitis is the prolonged blockage of a salivary gland duct resulting in bacterial infection. Consequently, the gland enlarges and is acutely tender to palpation. Pain is constant and in addition, a milky white exudate may be

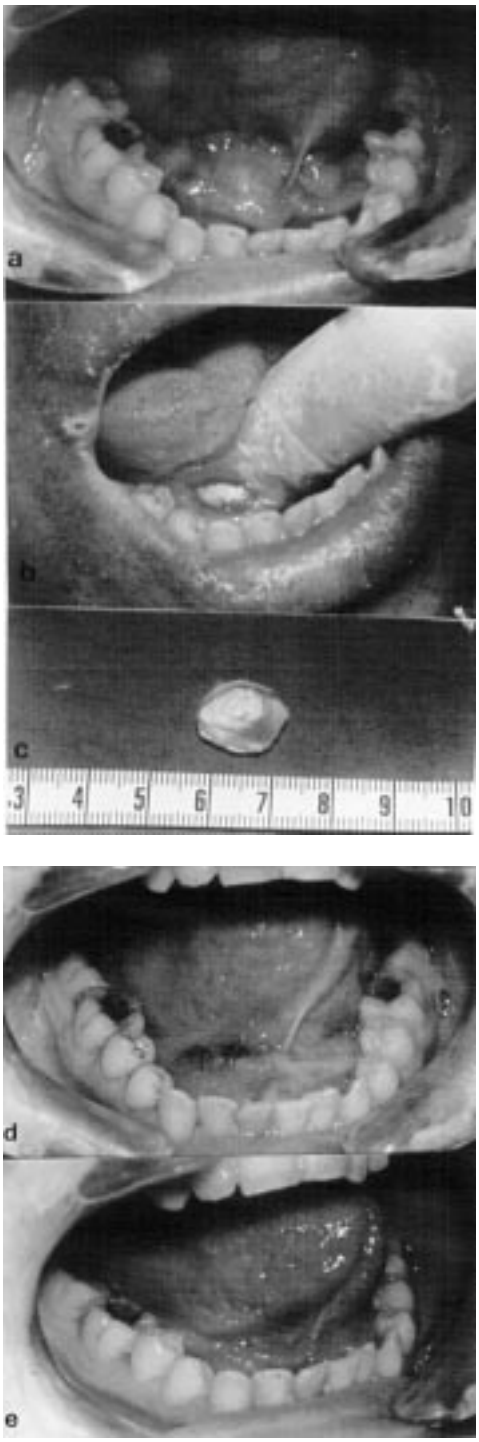

Figure 1. Photographs of the case report.

a. Right submandibular sialolithiasis in Warton's duct.
b. Surgical removal of sialolithiasis.
c. Sialolithiasis.
d. Postoperative photograph.
e. Photograph taken, 1 year postoperatively

exposed from the gland when it is manipulated. However, with sialolithiasis no exudate is present, the gland is not acutely tender to palpation and the pain occurs only with salivation.

There are many symptoms of sialolithiasis. Pain and swelling are often among the first signs and symptoms. The clinical and radiological methods for diagnosis of sialolithiasis are numerous. The conventional diagnostic methods for detecting obstructions in the salivary ductal system are routine (occlusal and panoramic) radiographs, sialography, ultrasound, xeroradiography, scintigraphy (2) and computed tomography. These techniques, although indirect, provide partial information either concerning the presence of calculi or regarding glandular status. The accelerated use of endoscopy in various surgical fields, such as in the renal and biliary ducts, has enhanced the adoption and application of such techniques to major salivary glands (1). Katz (9) first introduced a flexible mini-endoscope into the ductal system of the major salivary glands. Nahlieli and Baruchin (1) reported the usage of a rigid mini-endoscope for the same purpose. Sialoendoscopy is a minimally invasive technique for removal of calculi from salivary glands as well as an excellent diagnostic procedure (1).

Kanigsberger et al. (4) and Yoshizaki et al. (10) reported that endoscopically controlled intracorporeal lithotripsy of salivary stones can be effectively used as a noninvasive therapy for sialolithiasis.

Azaz et al. (3) and Lustman et al. (6) reported that treatment with CO_2 laser yields excellent results, with almost no bleeding, minimal scarring, clear vision of the operating site, noncontact surgery, carried out during acute stages, without spreading of infection, minimal post operative pain and edema, and little discomfort through healing period.

However, Tro et al. (11,12) reported that extracorporeal piezoelectric shock wave therapy seems likely to be a safe, comfortable and effective minimally invasive nonsurgical treatment for salivary stones.

Harring (5) reported that a salivary stone should always removed. Lustman et al. (6) also reported the treatment of the obstructing stone by an intraoral surgical approach. The present case was surgically excised under local anesthesia.

In some cases, excision of the entire gland is required to prevent multiple recurrent episodes. If the gland is

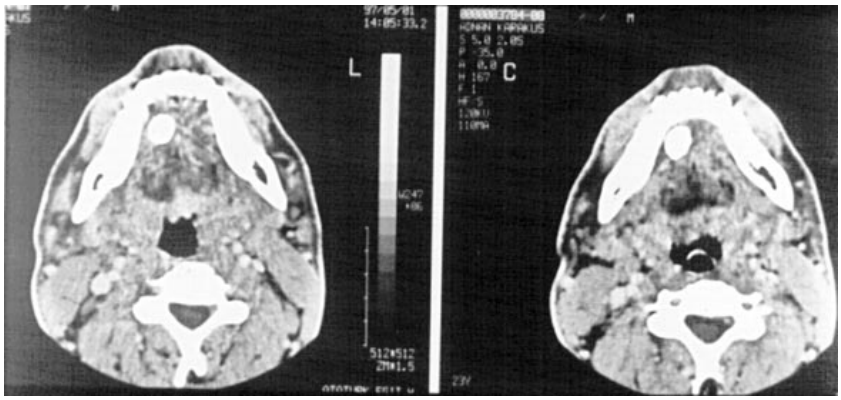

Figure 2. Computed tomography scan showing a well-circumscribed radiopaque, spherical mass that was apparently not attached to the mandibular bone.

infected, the infection should be eliminated with antibiotics before surgical removal (5). In the current case a cephalosporin (2 g/day) was administered for ten days postoperatively.

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