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Giant Sialolith: Case Report and Review of the Literature

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Sialolithiasis is the most common disease of the salivary glands. Its estimated frequency is 1.2% in the adult population, with a slight male predominance.[1] More than 80% of the salivary gland calculi appear in the submandibular gland, but they can also be located in the glandular parenchyma and more frequently in the excretory duct.

Commonly, sialoliths measure from 1 mm to less than 1 cm. They rarely measure more than 1.5 cm. Giant sialoliths are rare; a search of the literature found that 16 cases measuring 3.5 cm or more, including the case reported herein, have been published (Table 1).[2-16]

The aim of this article is to present a case of a giant sialolith and to communicate the results of a search of the literature on giant sialoliths (3.5 cm or larger).

Report of a Case

A 34-year-old Mexican mestizo man was seen in the Outpatient Clinic of the División de Estudios de Posgrado e Investigación (Facultad de Odontología, Universidad Nacional Autónoma de México). His main complaint was a painful tumor located in the right side of the floor of the mouth of 12 years' duration. No other abnormal data were found in his clinical history. Intraoral examination revealed the presence of a soft, edematous, tender swelling with no color changes of the surrounding mucosa, painful with pressure, with a whitish, nonfetid, insipid material obtained under slight pressure (Fig 1). A long radiopaque mineralized body located within the Wharton's duct was seen with occlusal radiograph (Fig 2). Clinical history revealed that the patient was in good health; no other signs, symptoms, or abnormalities were found. Under regional anesthesia the sialolith was carefully dissected and a cylindrical, hard, yellow, 3.6 cm-long specimen was obtained. The sialolith weighed 12 g, and the surface showed multiple nodules of different size, some of them coalescent combined with few wrinkled zones and smooth areas (Fig 3). The submandibular salivary gland was not resected.

Three years after the surgical excision of the sialolith, the patient has no signs or symptoms of sialadenitis or xerostomia and he has a normal, undisturbed salivary gland flow.

Discussion

Sialolithiasis is an uncommon disease. Males are more frequently affected than females and children are rarely involved.[14] Submandibular salivary glands are more commonly affected than parotids. The sublingual or minor salivary glands are involved in only 1% to 2% of the cases. This disease can occur at any age, but it appears more frequently in patients in the third to sixth decades of life. Sialolithiasis in children is considered rare.[17-19]

Giant sialoliths are a rare finding in clinical oral pathology, as can be seen in Table 1; their sizes vary from approximately 3.5 cm to 7 cm, and every one of them occurred in male patients. All the cases except ours (34-year-old male) were patients older than 42 years. With the exception of 1 case, all the giant sialoliths were located in the submandibular gland (94.4%) and only an isolated case was found within the Stensen's duct of the parotid salivary gland.[2-14] Other cases of large calculi cited by Zakaria[15] and Brusati and Fiamminghi[16] are known by their weight only: Thorowgood (93 g), Tawse (52 g), Powder (44 g), and Haydar (20 g). Weight of the giant sialo-

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Table 1. GIANT SIALOLITHS REPORTED IN THE LITERATURE

	Study	Gender	Age	Gland	Location	Size*	Weight†
1	Meyers, 1942[2]	Male	50	SM	Duct	50	NR
2	Mustard, 1945[3]	Male	42	SM	Duct	56	NR
3	Allen, 1956[4]	Male	49	SM	Duct	35	NR
4	Cavina & Santoli, 1965[5]	Male	59	SM	Duct	70‡	18
5	Cavina & Santoli, 1965[5]	Male	53	SM	Both	60	33
6	Hoggins, 1968[6]	Male	52	SM	Paren	50	NR
7	Rust & Messerly, 1969[7]	Male	66	PAR	Duct	51	NR
8	Rust & Messerly, 1969[7]	Male	58	NR	Paren	35	NR
9	Raksin et al, 1975[8]	Male	52	SM	Duct	55	9.5
10	Isacsson & Nils-Erik, 1982[9]	Male	48	SM	Duct	36	NR
11	Tinsley, 1989[10]	Male	48	SM	Paren	50	23.5
12	Hubar et al, 1990[11]	Male	65	SM	Duct	52	17.5
13	Akin & Esmer,1991[12]	Male	45	SM	Paren	45	NR
14	Paul & Chauhan, 1995[13]	Male	45	SM	Duct	45	4.2
15	Bodner, 2002[14]	Male	50	SM	Duct	50	NR
16	This Case	Male	34	SM	Duct	36	12

Abbreviations: SM, submandibular gland; PAR, parotid gland; PAREN, parenchymal; NR, not reported.
*Size in mm.
†Weight in grams.
‡This case was described as having a "hen's egg" size.

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liths was not communicated in all these previously reported cases, but according to the reported data, they can be very light specimens (12 g) or they can reach a heavy weight (93 g), as demonstrated in the present case.

Several factors seem to be involved in development and growth of salivary calculi in the submandibular salivary gland tissues:

1) The submandibular excretory duct is wider in diameter and longer than the Stensen's duct.
2) The salivary flow in the submandibular gland is against gravity.
3) The submandibular salivary secretion is more alkaline compared with pH of the parotid saliva.
4) The submandibular saliva contains a higher quantity of mucin proteins, whereas parotid saliva is entirely serous.
5) Calcium and phosphate content in submandibular saliva are higher than in other glands.[8]

Also, several local, chemical, and mechanical factors in the precipitation of the mineral salts are in-

FIGURE 1. Intraoral view showing a soft, elevated lesion located in the floor of the mouth. A soft, whitish material is also seen in the left side of the photograph.

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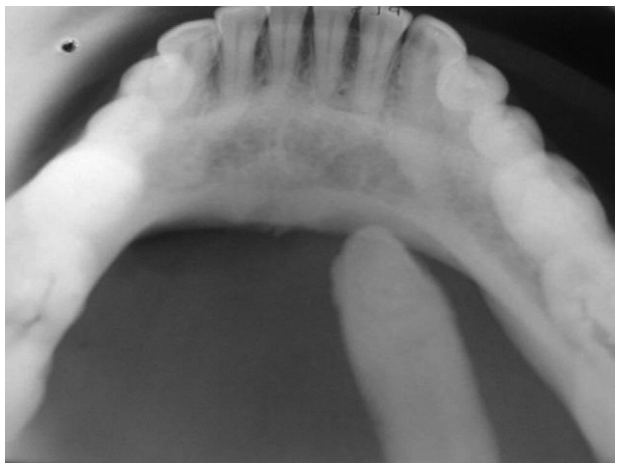

FIGURE 2. Radiograph showing a radiopaque, cylindrical, mineralized sialolith within the Wharton's duct.

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FIGURE 3. Macroscopic view of the surgically obtained specimen.

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volved. Infection, inflammation, salivary stagnation, physical trauma, introduction of foreign bodies, and the presence of desquamated epithelial cells seem to be the initial events for the formation of a nidus that later will be the site for the precipitation of mineral salts contained in the salivary secretion. The presence of salivary proteins plays an important role in the initial formation of these phenomena. In the late 1950s, Harril et al[20] proposed that salivary mucins coalesce forming gels that eventually form more or less denser particles suitable for mineralization. Recently, Sherman and McGurk[21] showed that water hardness is not significantly associated with the incidence of salivary calculi.

Based on 120 submandibular gland sialendoscopy studies, Marchal et al[22,23] observed the presence of a sphincter system in the first 3 cm of the Wharton's duct in 90% of their studied cases, and suggested that variation of such sphincter-like mechanism within the salivary ducts could be responsible for easier retrograde migration of oral materials.

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