Sialolithiasis in an 8-year-old child: case report

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Abstract

Sialolithiasis rarely occurs in children; it is observed more commonly in adults. Various treatment modalities for sialolithiasis have been reported in the world dental and medical literature; most rely upon surgical intervention. This case report demonstrates that surgical intervention is not always indicated. We describe an 8-year-old child with a sialolith in the posterior third of Wharton's duct which spontaneously passed from the duct. Clinical findings, etiology and treatment of sialolithiasis are reviewed. (Pediatr Dent 13:231–33, 1991)

Introduction

Sialoliths are calcareous concretions that may be found in the ducts of the major or minor salivary glands or within the glands themselves. They are thought to form by deposition of calcium salts around a central nidus which may consist of desquamated epithelial cells, bacteria, products of bacterial decomposition, or foreign bodies (Shafer 1983). The disease entity is known as sialolithiasis and is a rare occurrence in children (Doku and Berkman 1967). The condition is found more commonly in middle-aged adults. The salivary gland most commonly affected is the submandibular gland (Blatt 1962).

Literature Review

In surveying the dental literature between 1916 and 1966, Doku and Berkman (1967) found 11 cases of submandibular sialoliths in children younger than 15 years and described one case of their own. Reuther and Hausamen's survey (1976) of the dental literature between 1898 and 1973 documented 21 pediatric cases. Additional cases were described by Feldman (1970, Canada) and by Longhurst (1973, England). Timosca et al. (1976) from France reviewed 267 reports of sialolithiasis through 1976, of which five cases were in the 5–15 year old range.

Over a period of 30 years, Kaban studied patients treated for sialadenitis (Kaban et al. 1978) and documented seven cases of pediatric sialolithiasis. More recently, Volkova (1978, Russia) described nine cases and Bullock (1980, England) reported another case. Bodner and Azaz (1982, Israel) reported nine cases of pediatric sialolithiasis while Tepan and Rohiwal (1985, India) and Grunebaum and Mankuta (1985) each reported a case of their own in 1985.

Since the majority of the reported cases of sialolithiasis in children were treated by surgical means, this case report is presented to illustrate that conservative treatment may be successful and should be instituted before surgical intervention.

Case Report

An 8-year-old black female presented to the oral and maxillofacial surgery clinic at the University of Illinois College of Dentistry with the chief complaint of pain and swelling in the right submandibular region for three days. The mother stated that the child had a decreased appetite during this period and that the discomfort was exacerbated at meal time. The patient had no previous history of facial trauma, carious teeth, abnormal eating habits, or sialoliths.

The patient's past medical history was unremarkable. There was no report of any allergy to medication or food. (At presentation, the child was not taking any medication).

On general examination, the patient was normal height and weight for her age. She was in no acute distress, but minor dysphagia was noted. Her oral temperature was 100.2°F, pulse was 100 beats per min, and blood pressure 102/74 mm Hg.

Clinical examination revealed mild right submandibular swelling with no visually distinct localized mass. On bidigital palpation, the right submandibular gland was tender. Lymph nodes were palpable in the right submandibular region, but absent in the cervical portion of the neck. Trismus was not noted but when the patient responded verbally to questions, she spoke in a manner to limit lip movement. The remaining extraoral examination was unremarkable.

Intraorally, there were no grossly carious teeth. Bilateral Stenson's ducts were patent with clear salivary flow produced on gentle palpation. Wharton's duct on the left side was patent with free salivary flow, while the right Wharton's duct produced minimal to no salivary secretion on gentle manipulation. The punctum of the right Wharton's duct was noted to be erythematous and edematous, but nontender. The remaining intraoral examination was unremarkable as there were no other distinct masses or lesions in the oral cavity. The floor of the mouth was soft and nontender and the tongue was

not elevated, since the sublingual space was not involved.

Radiographic examination (Fig 1) revealed a curved, elliptical, radiopaque mass about 10 mm long and 3–4 mm in diameter. The mass was located between the apical portion of unerupted tooth #31 and the inferior border of the right mandible.

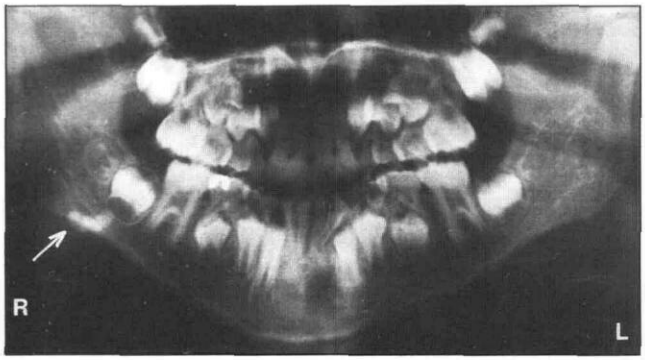

Fig 1. Panoramic projection of 8-year-old patient demonstrating a sialolith in the right posterior portion of the submandibular duct.

Following clinical and radiographic examination, a diagnosis of right submandibular sialadenitis as a result of sialolithiasis was made. The patient was placed on penicillin (250 mg) and aspirin (325 mg) ad lib. The patient was instructed to use lemon or orange drop candy to stimulate salivary flow, drink fluids, and apply moist heat to the right submandibular region. A follow-up appointment was given for five days.

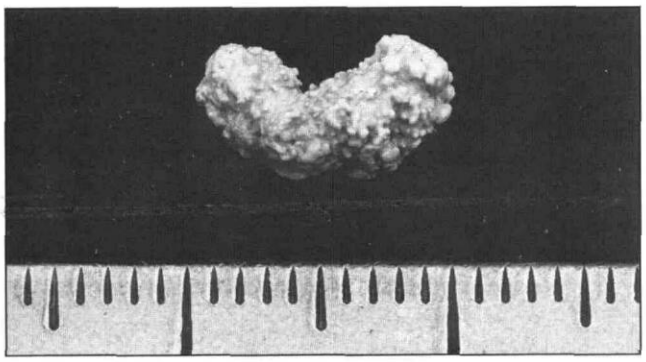

Fig 2. A 1.0 cm sialolith of 8-year-old patient that had spontaneously migrated out of the right submandibular duct (each increment equals one millimeter).

On the third day after clinical examination, the mother was called to inquire about her daughter's progress. She stated that the previous night her daughter felt a hard mass in her mouth, and an immediate discomfort. The mother was instructed to bring the mass to the oral and maxillofacial surgery clinic for examination. The mass proved to be a sialolith, 10 mm long and 4 mm in diameter. The yellowish-white granular sialolith had a curved, elliptical shape that corresponded to its radiographic appearance (Fig 2).

Clinically, the right submandibular swelling had resolved, and was nontender. Intraoral examination demonstrated that the right Wharton's duct was patent and nonedematous, with free-flowing saliva.

Home care instructions included hydration, massage to the submandibular gland and use of lemon drop candy. On follow-up examination 22 months later, the patient remained asymptomatic without recurrence of sialoliths.

Discussion

Acute sialadenitis of the submandibular gland is the most common form of inflammation to the major salivary glands. Obstruction of the salivary duct due to sialolithiasis is the most frequent etiology (Kaban 1990).

Children who present to the clinician's office are usually healthy, without systemic illness. Their chief complaint is intermittent, unilateral pain and swelling in the submandibular region associated with eating. Patients characteristically report that the swelling subsides between meals, only to recur with their next meal. The child also may complain of malaise and fever (Kaban 1990).

In the early stages of an obstructed submandibular gland, the gland is usually soft and nontender to palpation. At some point after the onset of obstructive symptoms, secondary infection of the gland occurs. Infection produces a gland that is enlarged and tender to palpation, with the overlying skin often erythematous. Intraorally, the submandibular duct is edematous, and tender to digital palpation. If the sialolith is located in the anterior third of the submandibular duct, digital palpation may reveal its exact location and size. Determination of the amount and character of saliva should be noted. In most instances of an obstructed salivary duct, there is decreased or absent salivary flow. Purulence in the saliva commonly is observed, indicating a bacterial infection (Hall 1969).

Panoramic and mandibular occlusal radiographs often will reveal the radiopaque salivary calculus. However, 20% of salivary calculi are radiolucent and can be detected only by sialography. Visualization of the sialolith in relation to the submandibular gland and its duct utilizing sialography is a more accurate method of diagnosis, compared to routine radiography, but should be performed only after the acute infection has resolved (Blatt, 1962).

The treatment of submandibular sialolithiasis is surgical removal of the calculus or complete excision of the submandibular gland. However, initial management

consists of antibiotic therapy to reduce or eliminate the acute infection. The drug of choice is penicillin (250 mg–500 mg orally, every 6 hr). For children allergic to penicillin, erythromycin, 250 mg–500 mg, or clindamycin, 150 mg–300 mg every 6 hr is the alternate drug. The child is also instructed to suck on sour lemon or orange candy to stimulate salivary flow (Blatt 1962; Kaban 1990).

Review of the dental literature (Reuther and Hausamen 1976) revealed two consistent findings: 1) the majority of salivary calculi found were in the middle or posterior portion of the duct; and 2) the majority of cases were treated surgically either by sialolithotomy (removal of the salivary stone from the duct) or sialoadenectomy (excision of the salivary gland).

Specific surgical management depends on the location of the sialolith in relation to the salivary gland and its duct. If it is located in the anterior third or middle portion of the duct, dilation of the duct and/or sialolithotomy is usually the treatment of choice (Timosca et al. 1976). If the calculus is located in the posterior third of the duct or in the gland, treatment consists of sialolithotomy or sialoadenectomy (Reuther and Hausamen 1976; Timosca et al. 1976). Attempts to remove a salivary stone located this posterior in the duct or in the hilus of the gland may be difficult and cause damage to the gland. Damage to the gland could result in a progressive obstructive disorder of the gland. Once the gland undergoes irreversible changes, its function is impaired and sialoadenectomy is indicated.

This case illustrates all the classic signs and symptoms of salivary gland or duct obstruction as a result of a salivary calculus and its management. The salivary stone was located posterior, near the hilus of the submandibular gland. In most instances, a salivary stone anatomically located this far posterior would not be able to course along the entire length of the duct and pass spontaneously from the duct. With no progress of anterior migration of the sialolith, excision of the submandibular gland is indicated, since swelling, pain, and salivary stasis become chronic. In addition, a submandibular space infection may develop. Three days following initial clinical examination and diagnosis, there was spontaneous passage of the sialolith, with immediate relief of discomfort. Unlike the majority of reported pediatric cases of sialolithiasis located in the posterior one-third of the submandibular duct, surgery (excision of the gland) was not elected as the treatment of choice. Instead, the patient was observed and treated conservatively, enabling the sialolith to spontaneously pass out of the submandibular duct.

Conclusion

Sialolithiasis is not commonly observed in children, but should be considered in the differential diagnosis in patients who present with submandibular swelling and pain. Establishing a diagnosis of sialolithiasis requires a thorough history and physical examination along with routine radiographs. The accepted treatment of sialolithiasis is surgical intervention, either removal of the sialolith or complete excision of the gland.

This case report demonstrates that nonsurgical treatment in resolution of the obstruction may lead to full recovery and normal function of the salivary gland. This spares the child an unnecessary surgical procedure which requires several days of hospitalization.

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