

## Conservative Management of Chronic Sialadenitis at causa Sialolithiasis: A case report

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### Abstract

Sialadenitis or sialodentitis refers to inflammation of a salivary gland within either the gland or main duct. Sialadenitis is frequently involved with the submandibular gland. For many years, management of submandibular sialadenitis involved either minimal invasive surgery or more aggressive surgical intervention. The aim of this study is to report on the conservative management of chronic sialadenitis at causa sialolithiasis. A 55-year-old male patient, suffering from eating-related pain and swelling in his left submandibular region, was diagnosed with left submandibular gland sialadenitis and radiologically manifested sialolithiasis. The patient had a history of uncontrolled diabetes mellitus; and three times stones had spontaneously discharged into his mouth during mealtimes. The size of the stones were about 3.0x3.0mm; 5.0x4.0x2.0mm; and 10.0x7.0x3.0mm. Clinical examination showed a large painless and palpable swelling sized 10.0x6.0x0.3mm and weighing 0.4g, firm and non tender mass corresponding to the anatomic location of the submandibular salivary gland. Radiographic examination and chemical analyses of the sialoliths were also carried out. Conservative management included suggesting frequent intake of warm mineral water and sour drinks, routine light massaging around the swollen area of the submandibular gland, and analgesic and antibiotic prophylactics to control pain and swelling. Conservative management recommended for chronic sialadenitis causing sialolithiasis in the left submandibular gland for patient with uncontrolled diabetes mellitus.

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### Introduction

Many conditions affect the salivary glands and ducts including the minor salivary gland and duct. One of these conditions is sialadenitis (or sialoadentitis) can be divided into acute, chronic and recurrent forms.<sup>1</sup> Chronic sialadenitis, with or without sialolithiasis, is the predominant inflammatory disease of the major salivary glands.

Clinical symptoms include intermittent swelling, tenderness of the salivary glands, and altered salivary flow from the ductal orifice.<sup>1,2</sup> Regardless of etiology, the involved gland becomes enlarged and painful and disruption of salivary flow is a frequent phenomenon. Such

reduction in salivary flow may be noted by dehydration and subsequent debilitation.<sup>1</sup>

Sialadenitis most commonly occurs in middle-aged patients with a slight preponderance of males but can also occur in females and children.<sup>2,3</sup> The etiology of sialadenitis remains unclear. It may be related to trauma or local inflammation; chronic disease (stasis of saliva and change in composition); infection (virus or bacteria); dehydration; reduced food intake; or medications.<sup>2,4</sup>

Patient history and examination are important for the diagnosis of sialadenitis at causa sialolithiasis. Severe pain at meal times and swelling of the concerned gland is indicative. Extra oral examination should begin with the gland it self and the gland should be bimanually palpated to determine whether there is calculus inside the gland. Intraoral examination should examine the ductal opening for purulence. Bimanual palpation of the floor of the mouth, in

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a posterior to anterior direction, can reveal a palpable stone.<sup>3,5</sup>

Nowadays, diagnosis of sialadenitis uses many modern radiographic techniques (e.g. magnetic resonance sialography<sup>6</sup> and computed tomography scans).<sup>7</sup> A simple surgical treatment like gland excision<sup>4</sup> is used for stones near the duct opening or relatively simple sialoliths without complications.<sup>3,8</sup> A transoral approach is used to preserve a functional gland or when the duct needs opening to retrieve a stone.<sup>9,10</sup> A combined transoral or transcutaneous and sialendoscopy approach is used to remove parotid gland sialoliths.<sup>10</sup> Another invasive surgery, sialoendoscopy can be used for the diagnosis, treatment, and post-operative management of sialolithiasis and other salivary gland pathologies.<sup>11-13</sup>

However, there is no reported conservative treatment or management of chronic sialadenitis at causa sialolithiasis in patients with uncontrolled diabetes mellitus in order to avoid large wound areas and healing complications. The aim of this study is to report the conservative management of chronic sialadenitis at causa sialolithiasis.

A 55-year-old male patient was referred to the oral-maxillofacial teaching hospital at the Faculty of Dentistry, Universitas Indonesia, for an opinion on intermittent aching pain and

swelling in his left submandibular gland area. The patient had a history of swelling surrounding the left submandibular gland area. The latest symptoms had been present for four to five months, especially during mealtimes. He noted that spicy sour food was more likely to produce symptoms than other types of food. The patient had a history of uncontrolled diabetes mellitus.

The patient's clinical history included swelling and severe pain throughout the entire mouth, especially surrounding his left submandibular region during mealtimes. Sometimes, he also experienced numbness on the left side of his tongue. He noticed that about one year ago a yellowish mass, as small as a red chili seed sized 3.0 x 3.0mm spontaneously discharged into his mouth during mealtime. Five months later, another yellowish mass, as big as a green peanut seed sized 5.0 x 4.0 x 2.0mm again spontaneously discharged into his mouth. One month ago, when he was suffering from severe pain surrounding his mouth and neck, he gently massaged the swollen area of the left submandibular gland and another stone sized 10.0 x 7.0 x 3.0mm spontaneously discharged from under his tongue. This was a firm yellowish ovoid-shaped calculus with a rough irregular surface measuring 10.0 x 6.0 x 0.3mm and weighing 0.4g (Figure 1A).



Fig. A Yellowish stone, 13 x 7 x 3 mm after pushed out by hand massage. Fig. B Occlusal radiograph showed a calculus in the left mandibular molar area of the submandibular gland. Fig. C Postero-anterior radiograph showed a calculus under second left mandibular molar root area.

## Case Report

Clinical examination showed a large, firm, painless, palpable swelling, sized 10.0x 6.0 x 0.3mm, weighing 0.4g, and a non-tender mass corresponding to the anatomic location of the submandibular salivary gland. Extra oral examination showed a large, firm, palpable swelling, sized about 18.0 x 13.0mm, painless and non-tender mass corresponding to the anatomic location of submandibular salivary gland. An occlusal radiographic examination of the left half of the mandible showed one large radiopaque stone in the floor of the mouth, surrounding the left second mandibular molar area (Figure 1B). A posteroanterior radiographic examination showed a stone around the apex of the second left mandibular molar area (Figure 1C).

Chemical analyses showed that it consisted of carbonate, calcium, phosphate, chloride acid, and uric acid. To date, two other calculi have not yet been chemically analyzed. The patient did not realize it was a stone from the submandibular duct that had caused the swelling of submandibular area.

Classic or conservative management includes peroral analgesic and antibiotic prophylactics for relief of pain and inflammation (in the hope of a spontaneous stone discharge through the submandibular orifice) accompanied with frequent intake of mineral water and sour juice, chewing of gum, and routine light massaging surrounding the swollen area of the submandibular gland.

## Discussion

Many conditions can affect the salivary glands, especially the submandibular gland, because of its size and location.<sup>14</sup> If an acute inflammatory process is occur, swelling of the affected gland, overlying pain, gland tenderness, and fever can be present. Often the pain is intensified with eating because food ingestion stimulates saliva flow, which typically causes the gland to swell and thus exacerbate the preexisting symptoms. For chronic gland disorders, the symptoms are similar, although much less intense.<sup>14</sup>

The 55-year-old male patient experienced severe pain, often while eating spicy and sour meals, with swelling surrounding

the left submandibular area but no pain, and swelling on the floor of the mouth. Previous studies report aching pain,<sup>8,14</sup> especially during mealtime,<sup>6,14</sup> edema, and swelling surrounding the submandibular region.<sup>9,14</sup>

However, sometimes asymptomatic painless swelling occurs in the floor of the mouth.<sup>3,14</sup> The patient had a history of uncontrolled diabetes mellitus. It was assumed that uncontrolled diabetes mellitus could cause bacterial infection of the oral cavity. A study reported a variety of factors affecting the susceptibility of the different salivary glands to bacterial infection and among these the most important were the rates of saliva flow and the composition of the saliva.<sup>14</sup> Another study reported a 24 year old female with diabetes insipidus who developed sialadenosis of the major salivary gland.<sup>15</sup>

The patient's history included three stones of different sizes that had spontaneously discharged into his mouth either during mealtime or after gentle probing. The sizes of the stones were about 3.0 x 3.0mm; 5.0 x 4.0 x 2.0mm; and 10.0 x 7.0 x 3.0mm and they were firm, ovoid-shaped yellowish calculus, and had rough and irregular surfaces. Clinical examination showed a large painless and palpable swelling of 10.0 x 6.0 x 0.3mm, 0.4 g in weight, firm, and non-tender mass corresponding to the anatomic location of the submandibular salivary gland. The majority of sialoliths are sized between 1-10 mm. Previous literature has reported ovoid- or round-shaped, smooth or rough, yellowish colored sialoliths measuring more than 15<sup>3</sup>, 25, and 35 mm long, and 37 x 16 mm.<sup>5</sup> A giant sialolith measured over 15-27 mm.

Previous literature reported sialolithiasis as a common condition both in salivary glands<sup>8</sup> and the salivary duct of the submandibular gland,<sup>2,3,8</sup> and they have occasionally been reported in the salivary gland,<sup>3,8</sup> especially in the submandibular duct.<sup>2,3,8,9</sup> Studies state that a stone might partially or completely block the gland or its duct causing pain and swelling in the affected gland or duct, especially when eating. Stones can be caused by stasis of saliva, leading to bacterial ascent into the parenchyma of the glands, and therefore infection, pain, and swelling of the glands.<sup>6,9</sup>

The clinical and radiological methods for diagnosis of sialolithiasis are various. Imaging

studies are very useful for diagnosing sialolithiasis (panoramic, occlusal, and posteroanterior). Occlusal radiographs are useful for imaging radiopaque stones.<sup>2</sup>

Sialography, however, is contraindicated in acute infection or in significant patient contrast allergy because sialography involves injecting dye into the salivary duct openings in the mouth to identify non-radiopaque stones and strictures in the ducts.<sup>5</sup>

In the current study, a chemical analysis of the patient's calculus consisted of carbonate, calcium, phosphate, chloride acid, and uric acid. Previous study reported calculus consisting of calcium phosphate, magnesium, and citric acid.<sup>5</sup> The submandibular gland is the most susceptible gland because its saliva is more alkaline, and it has a greater concentration of calcium and phosphate which promotes stone formation.<sup>9</sup>

Classic or conservative management includes peroral analgesic and antibiotic prophylactics<sup>14,15</sup> for relief of pain and inflammation in the hope of spontaneous stone discharged through the submandibular orifice, with the suggestion of frequent intake of mineral water, especially sour juice, and massaging the surrounding swollen area of the submandibular gland.<sup>15</sup> Treatment of sialadenitis usually includes conservative management or surgical treatment.<sup>15</sup>

Because the patient had uncontrolled diabetes mellitus, and to avoid improper healing of the wound, it was suggested that the patient massaged the swollen area of the submandibular gland, drink lots of mineral water and especially sour juice to stimulate saliva flow, and was prescribed Non Steroid Anti-Inflammation Drug (NSAIDs). Acute cases can be managed with conservative therapies such as hydration, analgesic, sialogogues to stimulate saliva secretion, and regular, gentle gland massage.<sup>2,3,14,15</sup> Other alternatives include gels fluoride gels, saliva-stimulating lozenges or chewing gum, mouth washes, prescription-strength toothpaste, and sipping water or sugar free liquids.<sup>15</sup>

A simple surgical treatment is used for stones near the duct opening or relatively simple sialoliths without complications.<sup>3</sup> An intraoral approach is undertaken to preserve the functional gland or when the duct needs opening to retrieve the stone.<sup>9</sup>

Minimally invasive approaches for the treatment of sialolithiasis is extracorporeal shock wave lithotripsy (ESWL), which utilized ultrasound to break-up the stone.<sup>11,13</sup>

Other uses of sialoendoscopy are diagnosis, treatment, and post-operative management of sialolithiasis and other salivary gland pathologies.<sup>11,12</sup>

## Conclusion

Conservative management recommended for chronic sialadenitis causing sialolithiasis in the left submandibular gland for patient with uncontrolled diabetes mellitus

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