

## Large and Multiple Submandibular Salivary Stones in a Young Female Patient

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### Abstract

Salivary stones or Sialoliths usually affect submandibular gland, which could occur at any age, but most patients are in the third to sixth decade of life. Here, we report a 11-year-old female patient suffering from large and multiple submandibular salivary stones.

### Introduction

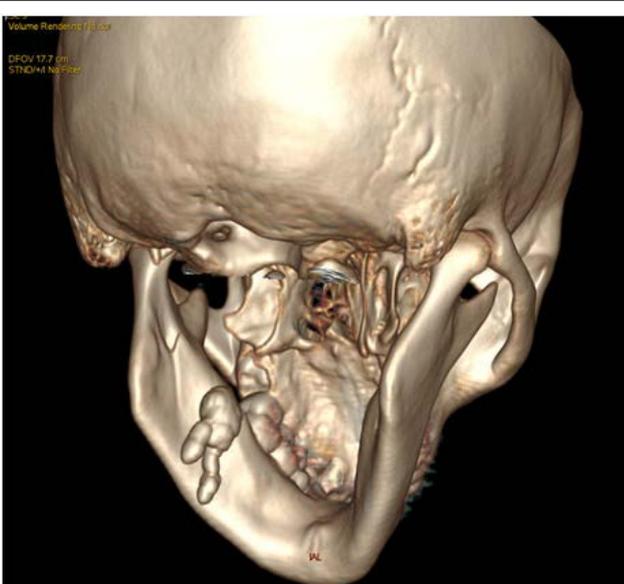
Salivary stones or Sialoliths are formation of calcareous deposits located in the parenchyma or ductal system of the salivary glands. Because of viscosity of the saliva and the long twisting course of the duct, most of them occur in the submandibular gland (80-90%). Submandibular stones are usually located in the duct (80-90%), of which 57% is located in the hilum and 34% is located in the distal duct. Ten percent of them are located in the gland itself [1, 2]. Approximately 59% of the stones range from 2.1 mm to 10 mm in diameter and 7.6% are larger than 15 mm [3]. Sialoliths can occur at any age, but most patients are in the third to sixth decade of life. Because the formation of stones requires a long time, salivary flow is faster in children and phosphate/calcium concentration is low in childhood, it is usually rarely reported in children [4, 5].

### Report of Case

A 11-year-old female patient came to orthodontic clinic for poorly aligned teeth. A dental panoramic radiograph revealed that there were a mass irregular high-density images adjacent to the left angle of mandible (Figure 1). No fistula was formed at the left bottom of oral cavity. A uniformly firm and hard gland and some palpable stones after the last molar tooth were detected by bimanual palpation of the left floor of the mouth in a posterior to anterior direction, then a little amount of sticky and turbid saliva was noticed. After referral for oral and maxillofacial department, the medical history of the patient was carefully elicited. The girl complained of sometimes slightly pain and swelling of the left submandibular region after meals for 2 years, which was usually asymptomatic. The ultrasonography revealed multiple sialoliths in the salivary duct and gland, while no gallstone and liver and kidney stone were detected. The maxillofacial three-dimensional reconstruction CT (Figure 2) revealed a large number of irregular stones in the left submandibular gland region and arranged in an inverted "V" shape. Blood pressure and pulse rate were within normal limits. Chest radiograms, electrocardiography, total blood count, urine sediment, calcium and phosphorus metabolism, liver and kidney function test were also not abnormal. Due to the multiple and large sialoliths' location, a surgical resection of the left submandibular gland was performed under general anesthesia through an extra-oral approach.



**Figure 1:** A mass irregular high-density images adjacent to the left angle of mandible was detected by the panoramic radiograph.



**Figure 2:** A mass irregular high-density images adjacent to the left angle of mandible was detected by the panoramic radiograph.



**Figure 3:** Eleven brown stones were collected form the duct and gland were resected from the duct and gland after operation.

Totally, 11 brown stones (Figure 3) range from 15 mm to 4 mm in diameter were collected form the duct and gland, which were irregular and unsmooth. No injury to lingual or hypoglossal nerve occurred. Dissected submandibular salivary gland showed peri-ductal and interlobular fibrosis, lymphocytic infiltration and atrophy of the acinar cells. Post-operative course was good, and the patient was discharged five days after operation. During the post-operation follow up, the patient complained with no adverse discomfort.

## Discussion

The cause of sialoliths formation is still largely unexplained. First, the submandibular excretory duct is wider and longer. Second, the saliva secreted by the submandibular gland contains more alkaline and mucin protein content than that of the other salivary glands. Third, the calcium and phosphate content in submandibular gland saliva is usually high. Finally, the saliva in the submandibular gland flows against gravity. The shape of a salivary stone depends on the location from where the stone originates. Giant salivary stones are usually located in the glandular parenchyma [6]. However, the multiple and large submandibular stones in such a young girl was scarcely reported. As for the cause of the young patient, abnormal or defective development of submandibular duct system may be concerned. Due to the serious adhesion between the gland and the surrounding tissue, attention should be paid to protecting the sublingual nerve and the lingual nerve during the operation, especially for the young patients.

## Conflicts of Interest

The authors declared no conflict of interest.

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