

# CASE REPORT: Laser-Assisted Treatment of Sialolithiasis

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## I. INTRODUCTION

Sialolithiasis is the most common disease of the salivary glands. Many cases are asymptomatic, and therefore it is difficult to determine the true prevalence of sialolithiasis [2]. Sialoliths are calcareous deposits in the ducts or the parenchyma of salivary glands. The most common sialoliths are of the submandibular gland (about 80%), followed by the parotid gland (19%), sublingual glands and minor salivary glands (1%) [3]. The higher rate of sialolith formation in the submandibular gland is due to the torturous course of Warthon's duct and the position of the glands, which leave them prone to stasis.

The etiology of sialolith formation is still unknown. However, there are several factors that contribute to stone formation. Inflammation, irregularities in the duct system, local irritants, and anticholinergic medications may cause pooling of saliva within the duct, which is thought to promote stone formation [1].

Clinically, it presents like an acute, painful, and intermittent swelling of the gland, especially during a meal, when the saliva flow is increased. The degree of symptoms is dependent on the extent of salivary duct obstruction and the presence of a secondary infection. The stone may totally or partially block the flow of saliva, causing salivary pooling within the duct and gland body. The enlargement of the gland consequently causes pain [2]. The involved gland is usually enlarged and tender, pus may be seen draining from the duct and signs of systemic infection may be present. Stasis of the saliva may lead to infection, fibrosis and gland atrophy. Possible complications that

may arise from sialoliths are acute sialadenitis, ductal stricture, ductal dilatation, and bacterial infections [4]. If the calculus is large, it can be palpated and sometimes even seen at the duct orifice.

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## II. TREATMENT

The mode of therapy depends on the size of the stone, the location, and number of stones and whether the stone is impacted or mobile. Stones at or near the orifice of the duct can often be removed transorally, while the deeper stones require surgery. If the stone lies more posterior, in the intraglandular portion of the duct, the entire gland must be removed.

A twenty-two-year-old female patient developed a sialolith at the left submandibular duct. The first choice of treatment was surgical removal. In this particular case the option for treatment was the less invasive Er:YAG laser-assisted surgical treatment (AT Fidelis, Fotona, Ljubljana, Slovenia). The parameters were set to 60 - 90 mJ, 30 Hz, SP, spray 2/2, handpiece R14-C, with Varian fiber tip of 400 µm diameter.

The sialolith could be seen through the opening of the duct and the sialolith was removed under local anesthesia (Figs. 1, 2). The healing was uneventful and without complications, and no medication was needed.



Fig. 1: Clinical presentation of a sialolith in left Warthon's duct (a) occlusal radiograph (b) and ligation of salivary duct to limit sialolith movement (c).

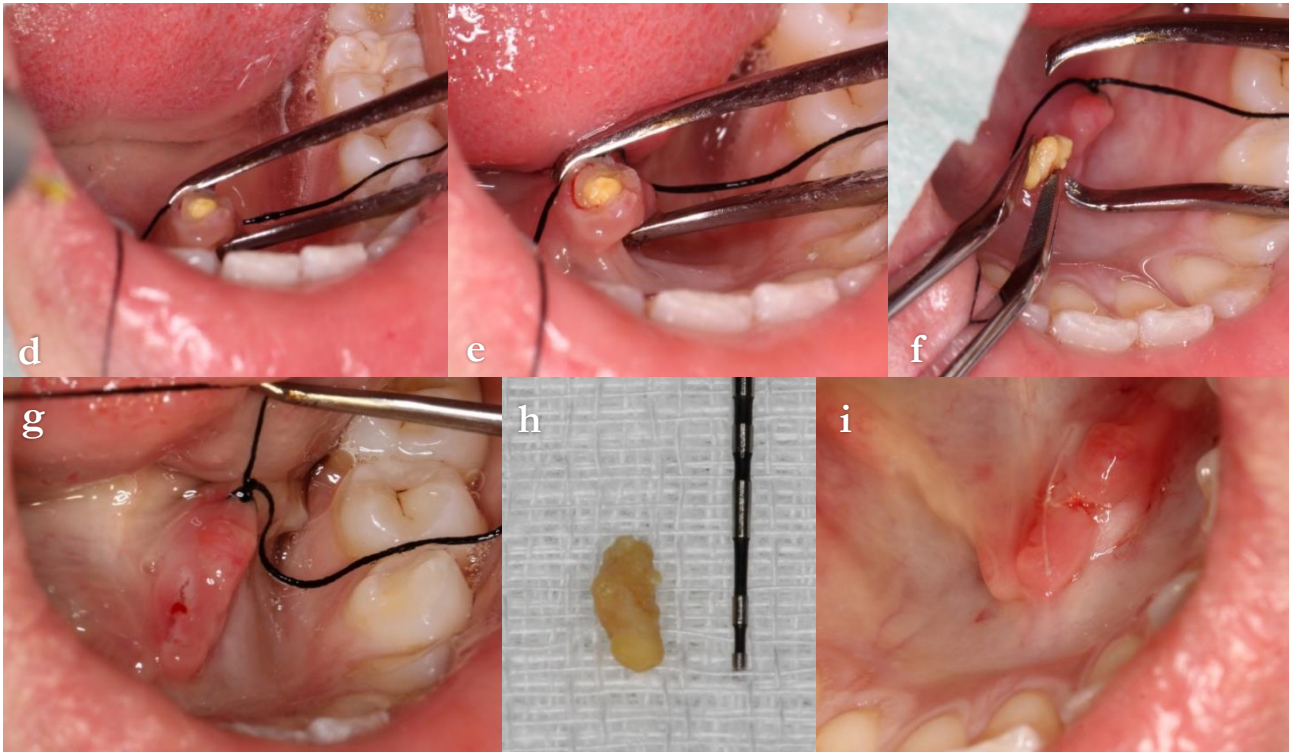


Fig. 2: Minimally invasive laser assisted opening of the Warthon's duct orifice (d-g), resulted in removal of 5 mm long sialolith (h). The duct was sutured with resorbable suture (i).

### III. CONCLUSIONS

There are various methods available for the management of salivary stones, depending on the gland affected and stone location. Minimally invasive Er:YAG laser-assisted surgical treatment offers a good alternative to conventional surgical salivary stone removal.

### REFERENCES

1. Harrison, J. D. (2009). Causes, natural history, and incidence of salivary stones and obstructions. *Otolaryngol Clin North Am*, 42(6), 927-947, Table of Contents. doi: 10.1016/j.otc.2009.08.012.
2. Lustmann, J., Regev, E., & Melamed, Y. (1990). Sialolithiasis. A survey on 245 patients and a review of the literature. *Int J Oral Maxillofac Surg*, 19(3), 135-138.
3. Nahlieli, O., Eliav, E., Hasson, O., Zagury, A., & Baruchin, A. M. (2000). Pediatric sialolithiasis. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*, 90(6), 709-712. doi: 10.1067/moe.2000.109075a.
4. Stanley, M. W., Bardales, R. H., Beneke, J., Korourian, S., & Stern, S. J. (1996). Sialolithiasis. Differential diagnostic problems in fine-needle aspiration cytology. *Am J Clin Pathol*, 106(2), 229-233.

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