

Summary of: Salivary stones: symptoms, aetiology, biochemical composition and treatment

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VERIFIABLE CPD PAPER

FULL PAPER DETAILS

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Salivary stones, also known as sialoliths, are calcified concretions in the salivary glands. Sialoliths are more frequently located in the submandibular gland (84%), than in the parotid gland (13%). The majority of the submandibular stones are located in Wharton's duct (90%), whereas parotid stones are more often located in the gland itself. Salivary stones consist of an amorphous mineralised nucleus, surrounded by concentric laminated layers of organic and inorganic substances. The organic components of salivary stones include collagen, glycoproteins, amino acids and carbohydrates. The major inorganic components are hydroxyapatite, carbonate apatite, whitlockite and brushite. The management of salivary stones is focused on removing the salivary stones and preservation of salivary gland function which depends on the size and location of the stone. Conservative management of salivary stones consists of salivary gland massage and the use of sialogogues. Other therapeutic options include removal of the stone or in some cases surgical removal of the whole salivary gland.

EDITOR'S SUMMARY

Funnily enough 'sialolithiasis' is a word frequently heard in the *BDJ* editorial office. This is because one of the Journal's most 'Googled' papers is on that very topic: *Sialolithiasis: an unusually large submandibular salivary stone*.¹ There are likely many complicated reasons relating to search engine algorithms and keyword incidence as to why this is the case but what it does show is that lots of people are searching for this topic online – most likely patients suffering symptoms or recently diagnosed; additionally medical professionals or maybe even the odd robot. However, if you search for 'salivary gland stones' using Google there is a surprising lack of the usual suspects in the top results. For example, NHS Choices is nowhere to be seen. Indeed, the sixth result on the first page is a *Daily Mail* article entitled: 'Blocked saliva made my jaw swell up to the size of a tennis ball'.

What is great about this particular article by Henk Brand and co-authors is that it is a 'one-stop shop' on the topic of salivary stones. Most importantly, and unlike the vast majority of the websites for patients on the topic, it is evidence-based through and through. The authors meticulously review the literature on this

topic distilling it all down into a quick summary of the what, when, how and why of salivary stones. So, here's the what, when, how and why of you should take the time to read this article:

- **What?** Salivary stones can be very painful and unpleasant for the patient so it's not an insignificant problem. This review indicates that the mean incidence of hospital admission for patients with symptomatic sialolithiasis in the UK each year is 27.5 per million.
- **When?** Sialolithiasis is much more prevalent in older patients and as such, considering that people are living longer, it is likely to be a condition that will increase in prevalence in the future. That makes this an apposite time to refresh your memory on this topic.
- **How?** This review of the research succinctly summarises the current proposed models for the formation of salivary stones, though the exact aetiology is not completely understood.
- **Why?** There are lots of theories, and in some cases myths, around the causes of salivary stones. Here the authors present the current evidence relating to systemic and predispos-

ing factors; invaluable when trying to explain the reasons to questioning patients.

Really I am providing you with a long-winded summary of a succinct, eminently digestible review. In short this is a comprehensive, practical review of salivary stones, with associated verifiable CPD – no need to say any more!

The full paper can be accessed from the *BDJ* website (www.bdj.co.uk), under 'Research' in the table of contents for Volume 217 issue 11.

Ruth Doherty
Managing Editor

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1. Siddiqui S J. Sialolithiasis: an unusually large submandibular salivary stone. *Br Dent J* 2002; 193: 89-91.

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IN BRIEF

- Salivary stones or sialoliths are calcified concretions in the salivary glands, most frequently located in Wharton's duct of the submandibular gland.
- Salivary stones consist of a mineralised nucleus, surrounded by laminated layers of organic and inorganic substances.
- The management of salivary stones depends on the size and location of the stone.

COMMENTARY

As salivary calculi is a relatively common disorder which is likely to present to a dental practitioner, this paper serves as a timely overview and refresher on this important topic.

With their amorphous mineralised matrices and laminated organic and inorganic substance, salivary calculi account for approximately one third of salivary gland disorders.

This paper reviews the literature on salivary calculi, bringing together a plethora of work to present the varying composition, aetiology, current diagnostic tools and treatment options for the diagnosis of sialolithiasis. Its careful consideration of the aetiology, particularly the acknowledgement of the conditions' phasic nature is useful, especially whilst relating back to the composition of such calculi. The link of salivary calculi with systemic factors carries forward the holistic approach of the authors, commenting that 26% of patients have one or more comorbidities. The study rightly points out that opinion is divided as to the exact link between cholelithiasis and nephrolithiasis to salivary calculi, but what is interesting is their comment that gout is apparently the only condition systemic condition which predisposes to sialolith formation, where the stones are predominantly composed of uric acid.

What is particularly interesting in the paper is the aetiology, structure and biochemical composition of the calculi, where the authors comment on the great variation in their composition.

Rightly, the authors focus management strategy on the objective of preserving gland function, combining this with keeping the level of patient complications to a minimum.

This article therefore acts as a valuable and comprehensive resource for clinical guidance and knowledge around the topic of sialolithiasis.

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AUTHOR QUESTIONS AND ANSWERS**1. Why did you undertake this research?**

Suffering from a salivary stone is an unpleasant and painful experience. Although salivary stones are considered relatively rare, our department of oral and maxillofacial surgery is confronted several times per year with a patient suffering from a salivary stone. Several hypotheses have been put forward about the cause of salivary stones. Some investigators assume that microscopically small concretions, which normally develop in healthy salivary glands, sometimes clump together, causing obstruction. Others suggest that anatomical abnormalities of the salivary ducts or an altered biochemical composition of saliva are the underlying causes. Considering our long-standing collaboration with the department of oral biochemistry, we wanted to explore the possible role of saliva in the development of salivary stones in detail. Before we started with our own experiments, we did an extensive review of publications about the aetiology and biochemical composition of salivary stones.

2. What would you like to do next in this area to follow on from this work?

We have established a collaboration with several other oral and maxillofacial surgery departments in the Netherlands. Patients with a salivary stone requiring surgical removal have been asked to donate their stone for research purposes. Most patients have already agreed, and we have already collected a number of salivary stones derived from both submandibular and parotid glands. The aim is to analyse the protein and mineral composition of these stones with biochemical techniques like SDS-PAGE, Western Blot and capillary electrophoresis. It is expected that this knowledge will give us more insight in the role played by salivary proteins and minerals in the development of salivary stones.