

INTRAORAL RADIOGRAPHS IN MANAGEMENT OF SIALOLITHIASIS

V Cugadasan

SYNOPSIS

Deposition of calcium salts other than in the formation of bone and teeth is considered a pathologic process. Formation of calculus in the salivary glands and ducts is not an uncommon occurrence amongst persons of middle age. Calculi present in the sublingual, submandibular glands and ducts are best demonstrated by use of intraoral occlusal films plus extraoral films. Those that are located in the parotid duct can often be demonstrated clearly on a standard dental film that is placed against the inside of the cheek and extended upward. Roentgenograms made with a short exposure often reveal stones that are not clearly discernible otherwise.

INTRODUCTION

Calculus formation leading to obstruction within lumens of the duct can be seen in many organs of the human body most often in the urinary tract, gall bladder and salivary glands or in their ducts. They consist mainly of calcium carbonate and calcium phosphate. It is felt that they are formed around bacteria in the gland or desquamated epithelial cells that act as a nidus and then pass forward in the duct. Obstruction associated with calculi is more common in the submandibular gland than in the parotid gland. New and Harper (1) in a review of seventy cases of salivary calculi noted that 92.9 percent of stones occurred in the submandibular gland. It was also observed that 20 percent of submandibular stones are non opaque and the percentage is undoubtedly higher in the parotid salivary gland. The most common location of the salivary calculi is the Wharton's duct or gland while parotid duct is the second most frequent location. While salivary calculi may be shown by the extraoral radiographs, it is very difficult to visualize the small sialoliths in extraoral films due to the superimposition over hard tissues like bone and teeth (2). The most certain diagnostic x-ray is the intraoral dental film.

Department of Oral Surgery
Faculty of Dentistry
National University of Singapore
Outram Road
Singapore 0316

V Cugadasan, FDSRCS
Senior Lecturer

MATERIALS AND METHODS

A 34 year old Malay man was referred to the Department of Oral Surgery, Faculty of Dentistry complaining of painful periodic swelling on the right side of the face. He had first noticed the swelling three months earlier immediately after brushing his teeth in the morning. The swelling and pain recurred twice and subsided following treatment with antibiotics prescribed by his medical practitioner. Typical history of the swelling appearing in relation to meals was not given by the patient. The patient's medical and dental histories were not significant. Extraoral examination revealed a tender generalised swelling of the right parotid region with lifting of the lobe of the ear on the affected side (Fig. 1). Examination of the oral cavity showed the right parotid papilla inflamed with a purulent discharge at the orifice (Fig. 2). Salivary flow on the left side was normal and clear. Bimanual palpation did not provide useful information possibly due to the presence of marked inflammatory products and oedema in the affected region. Provisional diagnosis of secondary infection of parotid gland following obstruction was made.



Fig. 1 Facial swelling in parotid sialolithiasis



Fig. 2 Mucopurulent discharge from the orifice of Stenson's duct.

Extraoral radiographs of the affected area like the postero anterior and lateral oblique views failed to show any abnormalities. Intraoral dental radiographs with the film in the inside of the cheek against the soft tissues revealed a radiopaque mass (Fig. 3). Efforts

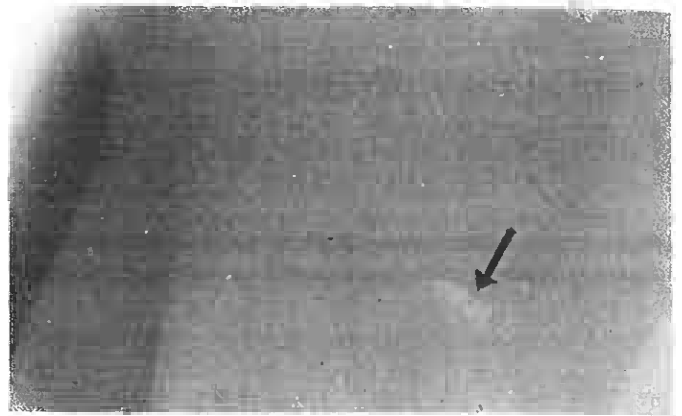


Fig. 3 Dental film showing the sialolith

were made to localise the sialolith in relation to the position of the opening of the duct. A metal probe lubricated with mineral oil was inserted into the orifice of the Stenson's duct situated opposite the upper second molar tooth in the buccal mucosa and a radiograph was taken (Fig. 4). In view of the small size of

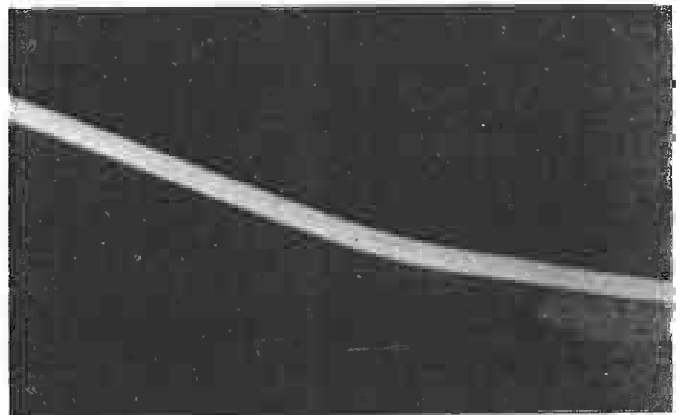


Fig. 4 Metal probe in parotid duct with the sialolith

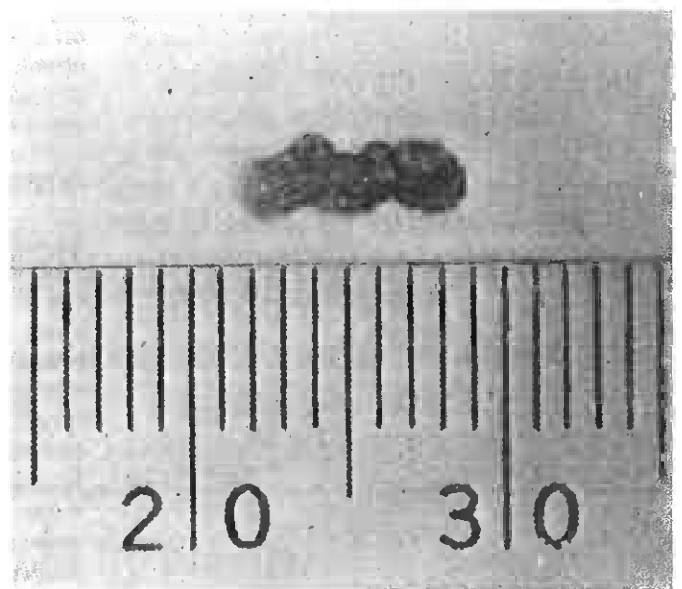


Fig. 5 Salivary calculus

the stone, it was decided to dilate the ductal orifice with graded dilators. The blunt tip of the probe served as a dilator and probe (3). Lubricated probes were inserted gently until the stone was contacted. Each

succeeding larger size was allowed to remain in position for about 3 minutes. The patient was given antibiotics and was asked to report in three days. During his subsequent visit, he produced the offending stone wrapped in a piece of tissue paper and on questioning he stated that he made attempts on his own to milk the stone out of the duct (Fig. 5).

Submandibular Calculus

Sialolithiasis of the submandibular salivary gland can give rise to intermittent transient swelling of the involved gland, accompanied by moderate discomfort (Fig. 6). Concern about the recurrent swelling moti-



Fig. 6 Swelling of right submandibular salivary gland

vates the patient to seek medical advice. In all cases in which the possibility of a sialolith in the submandibular duct or the gland exists from the history and clinical findings, an intraoral radiographic examination of the affected area should be made with occlusal and periapical dental films (Fig. 7). The occlusal

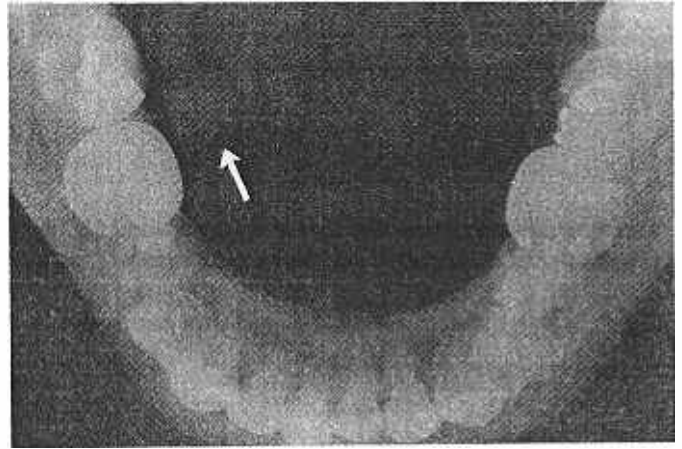


Fig. 7 Standard occlusal view showing a sialolith in Wharton's duct.

film is positioned as far posteriorly over the floor of the mouth as possible keeping the tongue forward beneath the film. The head is positioned so that the central beam will strike the beam at right angles. The exposure time is reduced and several films with varying exposure times obtained. Extraoral or panoramic films are not satisfactory for the diagnosis of the calculus in the submandibular or sublingual ducts because of the superimposition on the mandible. When superimposed, the radiopaque calculi may be interpreted as an exostosis or sclerotic bone within the bone.

CONCLUSION

Radiopaque calculi situated in the submandibular duct and parotid duct may be best demonstrated by utilising various intraoral films. Importance of plain film radiography prior to other procedures like sialography is emphasised. If the standard radiographic examination is negative a sialographic examination should be performed to rule out a radiolucent or other blockage phenomenon. Non-opaque stones will be demonstrated as filling defects in the salivary ducts.

ACKNOWLEDGEMENT

I wish to thank Miss Linda Lee for her secretarial help, Mr Stephen Yap and Mr B Joseph for preparing the photographic illustrations and Mrs Chua for her help in obtaining the radiographs.

REFERENCES

1. New GB, Harper FR: Chronic inflammation of salivary glands with or without calculi. *International Journal Orthodontia* 1931; 17: 1193-9.
2. Seward GR: Anatomic surgery for salivary calculi. *Oral Surgery, Oral Medicine, Oral Pathology* 1968; 26: 1-7.
3. Archer Harry W: *Oral and Maxillofacial Surgery*, Philadelphia W.B. Saunders 1975: 925-74.