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Case Report

Dentistry Section

Ultrasound-Guided Extraoral Removal of Extraparenchymal Sialoliths Caused by Acute Parotitis

TOSHINORI IWAI[1], SATOMI SUGIYAMA[2], YUICHIRO HAYASHI[3], MAKOTO HIROTA[4], KENJI MITSUDO[5]

ABSTRACT

Migration of sialoliths is extremely rare and is presumed to be a consequence of abscess formation. We report a minimally invasive, ultrasound-guided, extraoral approach for the removal of extraparenchymal sialoliths caused by acute parotitis. A 57-year-old man with left buccal swelling and pain had two parotid sialoliths. Buccal undulation was present after administration of antibiotics, and ultrasound showed extraparenchymal sialoliths. The migrated sialoliths from the parotid gland could be identified easily under ultrasound guidance and removed completely with long mosquito forceps via the small skin incision.

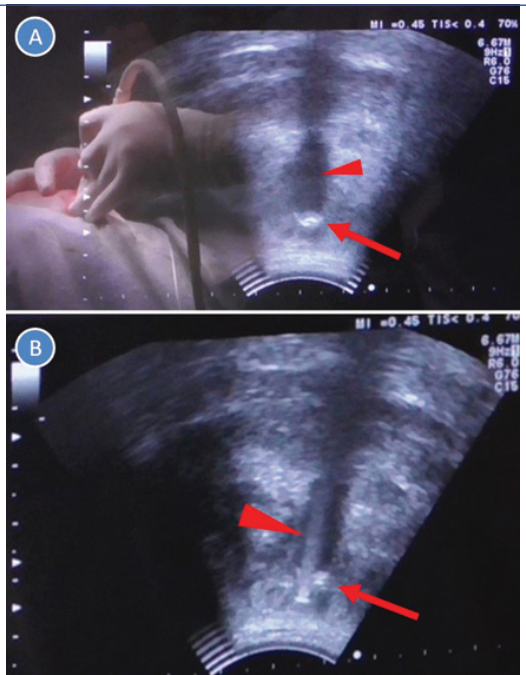
Keywords: Extraoral approach, Parotid gland, Ultrasonography

CASE REPORT

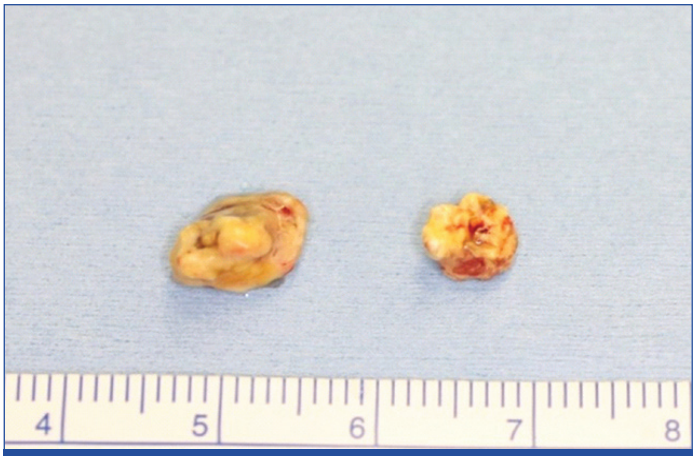
A 57-year-old man with swelling and pain in left buccal region since three days was admitted to a private otolaryngology clinic. After diagnosis of left parotitis and sialolith, he was referred to our hospital for endoscopic removal. Pus discharge from the left parotid papilla was present. Computed Tomography (CT) revealed two sialoliths in the parotid gland [Table/Fig-1], 9.8×6.3×5.2 mm and 5.0×4.8×4.6 mm in size, respectively. He was started on oral antibiotics but returned to our hospital four days later with severe swelling and pain of the left parotid region. CT showed abscess formation around the sialoliths [Table/Fig-2] and he was immediately hospitalised for pain control. Buccal induration was present four days after the intravenous administration, and ultrasonography showed extraparenchymal sialoliths after acute parotitis. He underwent removal of the parotid sialoliths under general anaesthesia. A 15 mm skin incision was made on the swollen cheek above the abscess and pus was discharged. The superficial sialolith could be removed easily, but the deep sialolith could not be identified via the blind approach through the small skin incision. Intraoperative ultrasonography subsequently revealed the abscess and deep sialolith [Table/Fig-3a]. Under ultrasound guidance, this sialolith was grasped with long mosquito forceps [Table/Fig-3b] and removed [Table/Fig-4]. The post-operative course was uneventful, and there were no complications such as facial nerve paralysis or salivary fistula. Left buccal swelling and induration were completely resolved two months after surgery, and there was good salivary flow from the left parotid papilla.

[Table/Fig-1]: Computed tomography reveals two sialoliths (arrows) in the parotid gland.

[Table/Fig-2]: Computed tomography shows abscess formation (arrow) around the sialoliths in the parotid gland.



[Table/Fig-3]: a) Intraoperative ultrasonography shows a deep sialolith (arrow) and abscess (arrow head); b) The intraoperative view was reflected on the ultrasound monitor. Intraoperative ultrasonography shows a deep sialolith (arrow) grasped by long mosquito hemostatic forceps (arrow head).



[Table/Fig-4]: Both completely removed sialoliths in this case.

DISCUSSION

Sialoliths of the parotid gland are relatively rare [1], and traditional extraoral approaches for sialolith removal are highly invasive. Over the last 20 years, various conservative and minimally invasive methods have been developed, including Extra-Corporeal Shockwave Lithotripsy (ESWL) [2] and sialendoscopy [3]; however, depending on their location and size, sialoliths can be difficult to remove via such methods.

Parotid sialolithiasis is a relatively uncommon condition that can cause pain and recurrent infection [4]. Although symptomatic sialoliths of the parotid gland should be removed, conservative management may be appropriate in patients who wish to avoid invasive surgery, which carries the possibility of facial nerve paralysis. Minimally invasive approaches, including sialendoscopy, have now been developed; however, endoscopic treatment is not always successful and is limited by factors including stone size, shape, orientation, and location [5]. Occasionally, remaining sialoliths may migrate into adjacent tissue as a consequence of abscess formation caused by acute inflammation [4,6]. Drage NA et al., reported a 39-year-old man with a parotid sialolith that tracked to the skin surface [6]. A small fragment of the sialolith had extruded spontaneously through the skin and the sinus had healed; the remaining part of the extraductal sialolith was not treated because the patient failed to attend further appointments. Brown K et al., reported parotid gland sialolithiasis in a 63-year-old woman with recurrent episodes of parotitis and facial pain, which resolved through spontaneous extrusion of the 11 mm sialolith through a cutaneous fistula while she awaited surgery [4]. In the present case, parotid sialoliths migrated from the parotid gland to the abscess cavity in the setting of acute inflammation and were removed surgically.

Despite advances in minimally invasive techniques such as sialendoscopy and ESWL, refractory sialoliths remain in 5% to 10% of all cases of parotid gland sialolithiasis [7,8]. To mitigate the limitations of sialendoscopy for large sialoliths and gland preservation, a combined approach has been applied where sialoliths are localised with sialendoscopic transillumination during sialolithotomy through a preauricular or direct transcutaneous approach [7-12]. However, the effectiveness of this combined approach is limited for proximal or intraparenchymal sialoliths that are not effectively visualised using the sialendoscope.

As an alternative approach, ultrasound-guided extraoral removal of parotid sialoliths has been applied [5,13,14]. For patients in whom sialendoscopic treatment failed, Joshi AS and Sood AJ and Carroll WW et al., performed ultrasound-guided needle localisation and open parotid sialolithotomy through a preauricular or modified Blair incision [5,13]; this technique was useful, especially for larger sialoliths (>4 mm) that are not amenable to sialendoscopic removal [5]. Nahlieli O et al., reported ultrasound-guided extraoral removal of parotid sialoliths via a 1 cm skin incision [14]. The indications were: 1) a sialolith in the posterior third of Stensen's duct where the anterior duct is prohibitively narrow; 2) obstruction of the posterior or middle third of Stensen's duct leading to the sialolith; 3) a large sialolith (>5 mm) in the middle or posterior part of the duct that cannot be dilated for intraductal removal; and 4) an intraparenchymal sialolith. However, the rhytidectomy approach is recommended for a deep sialolith (>6 mm below the skin surface) or close to a large blood vessel [14]. In our case, sialendoscopy could not be performed because the parotid sialoliths had migrated to the abscess cavity in the setting of acute inflammation, but the migrated sialoliths could be identified easily under ultrasound guidance and both were removed completely via the small skin incision.

CONCLUSION

Minimally invasive, ultrasound-guided, extraoral removal of parotid sialoliths is an alternative to parotidectomy when sialendoscopy or ESWL is not available, is contraindicated, or has not been effective.

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PARTICULARS OF CONTRIBUTORS:
1. Assistant Professor, Department of Oral and Maxillofacial Surgery, Yokohama City University Hospital, Yokohama, Kanagawa, Japan.
2. Clinical Fellow, Department of Oral and Maxillofacial Surgery, Yokohama City University Hospital, Yokohama, Kanagawa, Japan.
3. Clinical Fellow, Department of Oral and Maxillofacial Surgery, Yokohama City University Hospital, Yokohama, Kanagawa, Japan.
4. Associate Professor, Department of Oral and Maxillofacial Surgery, Yokohama City University Graduate School of Medicine, Yokohama, Kanagawa, Japan.
5. Professor, Department of Oral and Maxillofacial Surgery, Yokohama City University Hospital, Yokohama, Kanagawa, Japan.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Dr. Toshinori Iwai,
3-9 Fukuura Kanazawa-ku, Yokohama, Kanagawa, Japan.
E-mail: iwai104oams@yahoo.co.jp

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