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Transposition of Stensen's duct in severe salivary duct stenosis – a case report

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Summary

This case report presents interventional sialendoscopy treatment in a patient with chronic parotitis based on sialolithiasis and later Stensen's duct stenosis. After sialendoscopic sialolith removal, stricture of Stensen's duct in the distal part developed, with megaduct formation. On MRI, the parotid gland parenchyma was without present pathology. A transoral approach was chosen. Stensen's duct dissection, transposition, sialendoscopy of the proximal duct, and stenting were performed. After surgery, the patient's state improved, no more episodes of swelling were experienced. The stent was removed after 3 weeks. Six weeks after surgery, the neostoma stays functional with clear saliva secretion.

Key words

sialendoscopy – chronic parotitis – megaduct – sialolithiasis

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Introduction

Salivary duct stenosis is the second most common cause of obstructive sialadenitis after salivary stones that presents with symptoms of obstructive sialadenitis like recurrent, painful swelling of involved salivary glands especially during food intake [1,2]. Stenosis can be accompanied by chronic inflammation of the affected gland with acute exacerbations. Salivary duct stenosis is caused mostly by ductal injury, or inflammation due to calculi, recurrent infection, trauma or autoimmune diseases or radioiodine exposure [3].

According to Koch [4,5], the stenosis is divided into three types and four grades by severity and tissue alteration (Scheme 1). Based on typing and grading, the best therapeutical protocol can be chosen, varying from conservative treatment through interventional sialendoscopy to conservative parotidectomy [4–6].

However, prognostic factors for predicting clinical outcome after sialendoscopy in salivary duct stenosis have not been described [7]. There are studies where interventional sialendoscopy achieved good results [7–9].

Case description

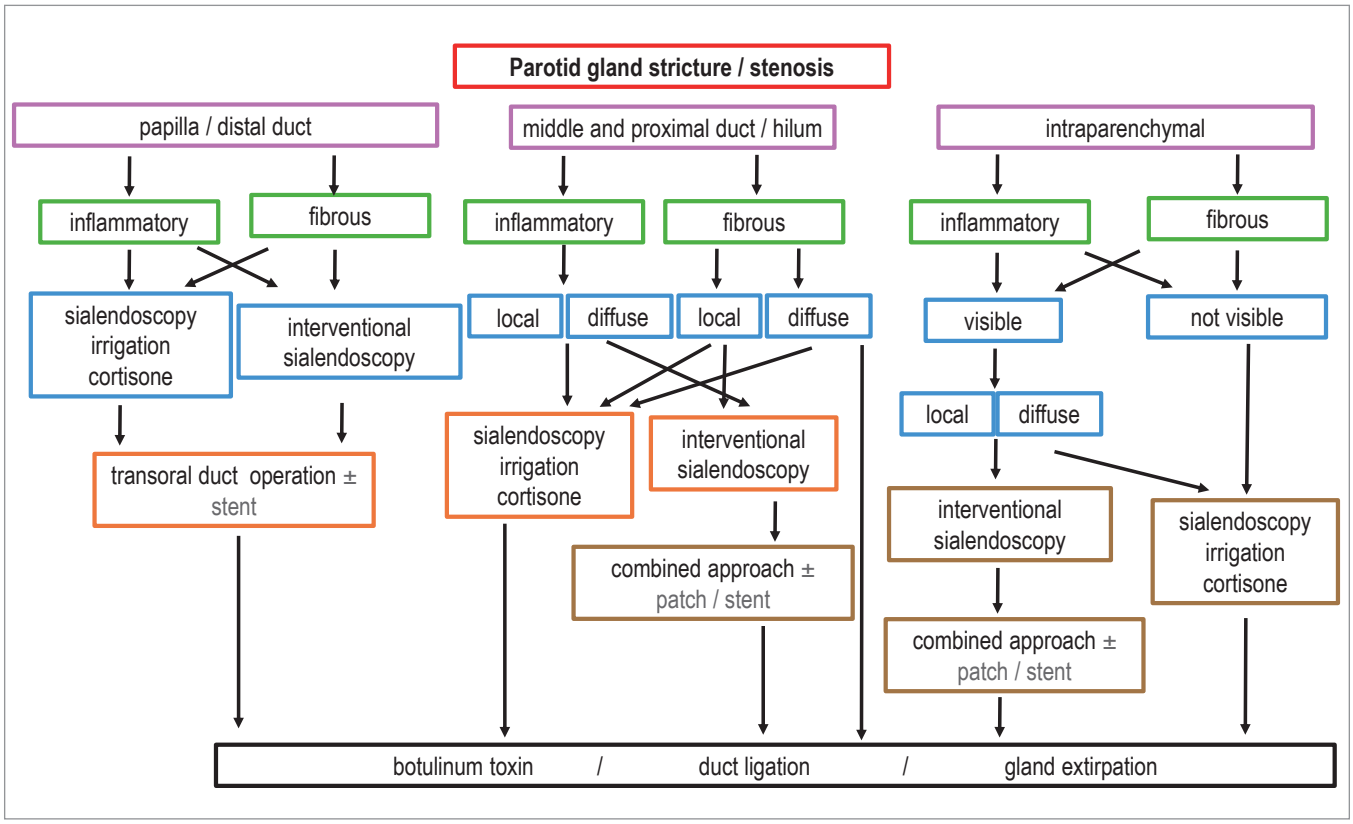
A 25-year-old female was admitted to the authors' department in August 2023 with a diagnosis of chronic parotitis and sialolithiasis in the right Stensen's duct – there were two sialoliths present, 3 mm and 4,8mm in diameter (Fig. 1). The patient had suffered from repeated episodes of swelling in the parotid region prior to eating, with a following spontaneous improvement.

Interventional sialendoscopy was performed, both sialoliths were removed endoscopically using a basket with the required terminal papillotomy due the size of one of the larger calculi. Dilation and rinsing of Stensen's duct were performed, 2 mL of 8 mg dexametasone was administered intraluminally at the end of the procedure. The edges of the duct were sutured in a neostoma.

After sialolith removal, the patient reported temporary symptom improvement. However, after 6 weeks, the patient started to experience swelling and pain in the right parotid region during food intake. Dexametasone was administered intraductally, with symptom improvement. After the next 4 weeks, the patient reported a formation of linear swelling in her right buccal region which was stationary and did not improve even after a longer period. Opening of the right Stensen's duct ceased to be visible and could not be cannulated with the salivary probe anymore.

MRI showed a hyperdense formation visible in T2 – a stenotic Stensen's duct with significant salivary collection – a megaduct (Fig. 2). According to Koch's stenosis classification, a type 2, segment 1, grade 4 stenosis was present [4].

Considering the age of the patient and the fact that the parotid gland was not yet structurally altered according to the MRI, the patient was indicated for interventional sialendoscopy with Stensen's duct transposition, neostoma and stenting.



Scheme 1. Classification and therapy of parotid gland stricture/stenosis according to Koch et al. [5].

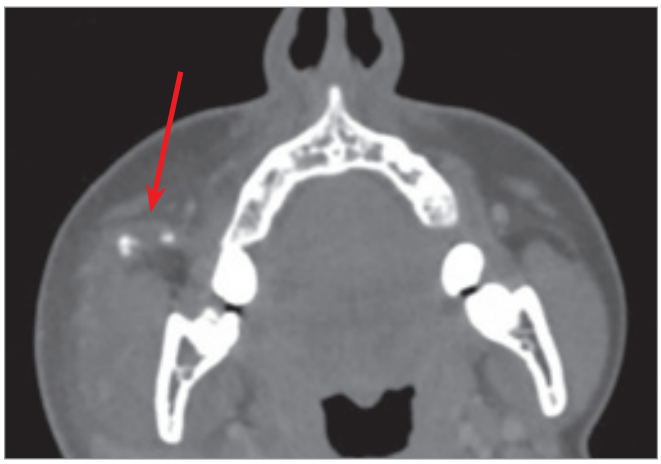


Fig. 1. CT showing two sialoliths in the Stensen's duct.

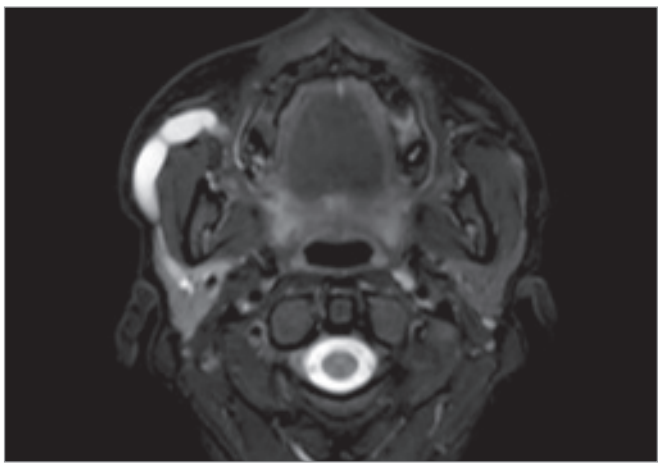


Fig. 2. MRI showing liquid collection in the right Stensen's duct, with three stenotic lesions.

Because of the location of the stricture in the distal part of the Stensen's duct, the authors decided for a transoral approach. A semilunar incision by design of Folletti [9–11] was performed medial to the papilla Stenoni. Afterwards, a megaduct was identified and dissected, secured by Ethiloop (Fig. 3). After being safely visible, the megaduct was incised and modular interventional sialendoscope was inserted, with evacuation of significant amount of white-greyish saliva (Fig. 4). Sialendoscopy was performed, without finding any other obvious pathology. The duct was rinsed with saline. A guide wire was inserted via sialendoscope (Fig. 5). The endoscope was removed, and an intravenous cannula (with the diameter 2.2 mm and the length 50 mm) as a catheter or a stent was inserted in the duct, fixed by suture to the mucosa to prevent restricture (Fig. 6, 7). The edges of Stensen's duct incision were sutured to neighbouring mucosa, forming a neostoma. At the end of procedure, the stent was rinsed with saline solution. The saliva was secernating

Fig. 3. Dissected megaduct.

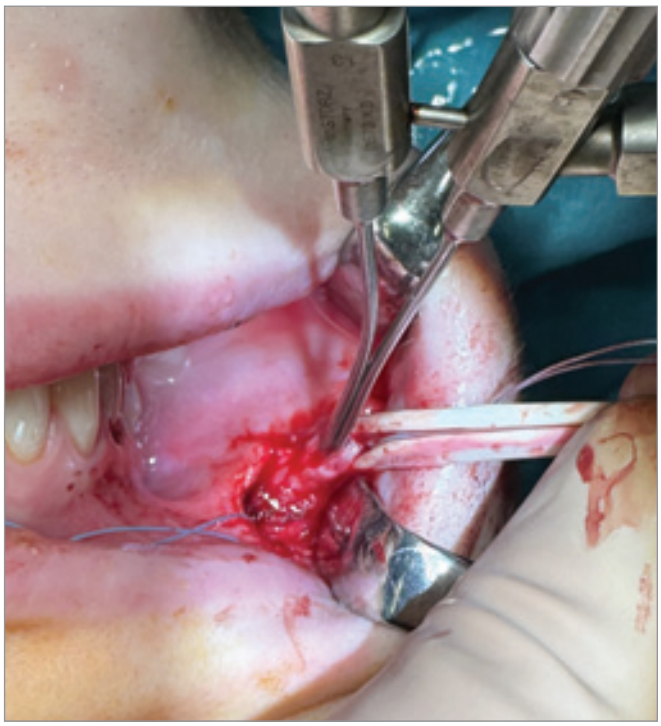


Fig. 4. Insertion of a modular sialendoscope after incision of the megaduct.

Fig. 5. Insertion of a guide wire.

Fig. 6. Insertion of a stent – intravenous cannula.

Fig. 7. Stent sutured in place along with transposition of the Stensen's duct.

Fig. 8. Stent sutured in place along with transposition of the Stensen's duct, 1 week after second surgery.

Fig. 9. The Stensen's duct 1 month after second surgery.

normally though the inserted stent. The patient was administrated intravenous antibiotics during the procedure, followed by a 7-day antibiotic therapy. The patient was instructed to increase fluid intake and oral hygiene and perform gentle massage of the parotid gland to support salivary flow through the stent.

On follow-up, the patient reported significant symptom improvement. Linear swelling of the buccal area caused by megaduct formation was not present anymore. The stent was removed after 3 weeks. Clear saliva is exiting normally from the duct (Fig. 8,9).

Discussion

Gland excision (sialadenectomy) is a standard treatment for salivary duct stenoses with chronic sialadenitis. This procedure is accompanied by possible peroperative and postoperative complications. That is why it is needed to decide for less invasive and safer methods to treat salivary duct strictures.

Once a duct or papilla is damaged or cut, the risk of developing papilla stenosis and secondary iatrogenic obstruction is increased [12]. In such circumstances, a stent may be necessary to prevent restenosis and maintain the salivary duct open after complete sialendoscopy. Stent placements may also be helpful in the regeneration of ductal defects and in keeping a wide luminal diameter after the duct walls are primarily closed after incision [13]. Although there are no clear guidelines for stent insertion, it is generally agreed that stenting is necessary after stricture dilation or if significant ductal trauma is encountered during stone removal [14].

Interventional sialendoscopy alone is effective for type I inflammatory stenoses, while sialendoscopy-assisted transoral and transfacial duct rehabilitation for type II or type III stenoses are associated a higher risk of recurrence and therefore of multiple salivary procedures [15].

Even though stenting of salivary duct strictures is currently considered a safe mini-invasive method that can improve symptoms of obstructive sialadenitis, some patients still report persistent symptoms after surgery [16,17]. That is why there is a need of more studies to assess the long-term results of treatment of salivary duct strictures.

Conclusion

The patient described in this case report remained symptom-free from obstructive sialadenitis at the time of submission, highlighting the potential utility of sialendoscopy and sialodochoplasty in the management of salivary duct strictures. However, further studies with larger cohorts and longer follow-up periods are warranted to fully establish the efficacy and long-term outcomes of these approaches.

Roles of the authors

MV and BD wrote the manuscript and performed both operations, all authors reviewed the manuscript.

Disclosure

There are no conflicts of interest to disclose. The authors declare that this study has received no financial support. All procedures performed in this study were in accordance with ethical standards of the institutional research committee and with the Helsinki declaration and its later amendments or comparable ethical standards.

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