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ORIGINAL ARTICLE

Sialendoscopy: A new diagnostic and therapeutic tool

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KEYWORDS
Sialendoscopy;
Learning curve;
Sialolithiasis;
Stenosis

Summary
Background: Sialendoscopy is a recently developed minimally invasive diagnostic and therapeutic procedure for the management of obstructive diseases of the salivary glands. This report describes our early experience with this new tool and compares our results with the literature data.
Material and methods: This was a retrospective analysis of the 33 first cases treated at a teaching hospital from October 2009 to June 2011.
Results: The success rate for diagnostic sialendoscopy was 94%. Sialolithiasis was found in 19 cases and salivary duct stenosis in 11; no canal anomaly was found in two cases. The success rate for stone removal was 79%, while treatment of strictures failed in four cases. Longer surgical experience led to shorter operating times and improved indications as well as better therapeutic outcomes. There were no complications.
Conclusion: Sialendoscopy is a safe technique that can easily be learned by surgeons familiar with endoscopic surgery. However, practical experience is needed to reduce operating times, lower failure rates and determine its precise indications.

Introduction

Sialendoscopy is a recently developed technique allowing diagnosis and treatment during the same procedure. Several studies have demonstrated its safety and usefulness [1,2]. Described for the first time in the early 1990s by Katz [3], sialendoscopy uses semi-rigid or rigid miniaturized endoscopes with optical fibers providing high-quality images to explore the parotid and submaxillary salivary ducts. For diagnostic purposes, sialendoscopy is superior to imaging for obstructive pathologies [4]. The radiolucent stones, stenosis, polyps, mucosal plugs and foreign bodies often missed by imaging methods, can be visualized by this technique.

When used for therapeutic purposes, sialendoscopy is a minimally invasive and non-traumatic surgical technique enabling endoscopic stone removal, stricture dilatation and salivary gland lavage. In most cases, submaxillectomy can be avoided with its risk of injury to the hypoglossal nerve, lingual nerve, marginal mandibular branch of the facial nerve, as can parotidectomy with its risk of injury to the facial nerve. This conservative attitude is possible because gland function remains satisfactory after sialendoscopy for obstructive disease [5].

The only contraindication reported in the literature is acute salivary gland infection due to the increased risk of perforation of inflammatory ducts [1,6].

The purpose of the present study was to describe the implementation of this new technique in our initial cohort

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of patients and to report the difficulties encountered. This retrospective study included the first 33 patients who underwent sialendoscopic surgery in the otorhinolaryngology and head and neck surgery department of the Rouen University Hospital.

Materials and methods

Materials

The analysis involved the first 33 consecutive patients who underwent sialendoscopy from October 1, 2009, when the technique was first used in the department, to June 30, 2011. There were 16 men and 17 women, mean age 44 years (range 11—83). Parotid glands were explored in 15 patients and submaxillary glands in 18. One surgeon, who had trained with an experienced colleague on the first two patients, performed most of the procedures (27 out of 33). Another surgeon with 6 months of training at another specialized center performed one procedure, while two surgeons trained in the department performed four and one procedures, respectively.

Indications for sialendoscopy were mainly acute conditions (swelling, pain). There were also a few cases of chronic inflammation affecting the parotid or submaxillary glands, and several cases seen late after acute infection of a salivary gland with an imaging diagnosis of lithiasis.

Preoperative imaging included ultrasound, computed tomography and, on rare occasions, sialography in all patients. Postoperative efficacy of the therapeutic procedure was based on the resolution of pain and/or swelling. In cases of doubt over complete stone extraction, a repeat ultrasound of the salivary glands was performed. Postoperative treatment included analgesics, mouthwashes and antibiotics and corticosteroids as necessary, depending on the inflammatory state of the ductal system as assessed intraoperatively.

The following data were collected for each patient: age; gender; indication; imaging findings; date and duration of the procedure; diagnosis; treatment; problems encountered; and outcome and complications.

Three sialendoscopes were used: a Marchal all-in-one sialendoscope; and two miniaturized sialendoscopes with outer sheaths. Additional instruments were dilatation probes, a Dormia basket, grasping forceps and a dilatation balloon (Fig. 1).

Technique

All procedures were performed in the operating room under general anesthesia for better operative comfort. The same technique was used for both the submaxillary and parotid glands in spite of the difference in duct diameter (on average, 3 mm and 2 mm, respectively) [7]. With the patient in supine position, a mouth prop was inserted on the side opposite to the gland explored, and a cheek retractor was used to explore the submaxillary gland.

Once identified, the orifice of the duct was progressively dilated with dilatation probes (sizes 0000, 000 and 00) to match the diameter of the endoscope (6 mm); dilatation was completed with a conic dilator if necessary. For Wharton's duct, the papilla was lifted from the frenulum with dissecting forceps; for Stenon's canal, the cheek was retracted anteriorly to pass the curvature above the masseter muscle.

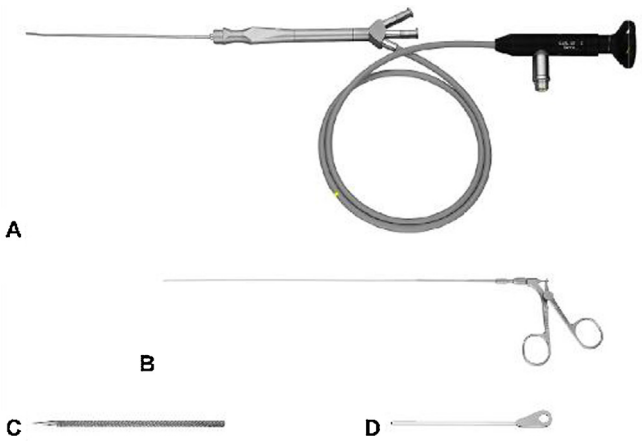

Figure 1 Sialendoscopy instruments. A. All-in-one sialendoscope. B. Grasping forceps. C. Dilator. D. Dilating probe.

The endoscope was introduced within a fine diagnostic sheath with an operator channel connected to a foot-controlled automatic irrigation system to dilate and wash out the gland. The ductal system was explored as far as the third division.

If an anomaly was encountered, the diagnostic sheath was replaced by a therapeutic sheath with two operator channels, one connected to the irrigation system and the other for instruments. Lithiases (Fig. 2) were removed with a Dormia basket or grasping forceps. Strictures (Fig. 3) within the main duct were dilated with dilatation probes, while those within the duct ramifications were dilated with a balloon probe.

At the end of the procedure, the entire ductal system was reexamined. A 0.75 mm diameter catheter was then inserted to prevent retractile strictures during the healing process.

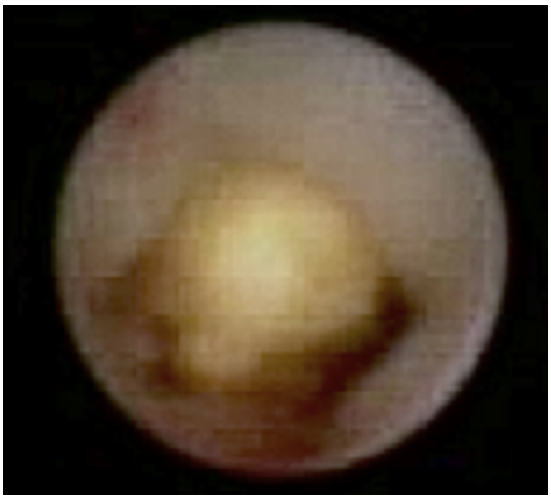

Figure 2 Sialendoscopic view of a stone in Wharton's duct.