ORIGINAL ARTICLE

SIALOENDOSCOPY- OUR PREMILINARY EXPERIENCE IN A PILOT STUDY

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ABSTRACT:

Obstructive sialadenitis is the most common non-neoplastic disease of major salivary glands. Previously many of these patients were undiagnosed cases of recurrent sialoadenitis and underwent unnecessary gland excision. In recent time with technical advancement sialendoscopy is increasingly used in both diagnosis and treatment of Salivary gland obstructive pathology. In this case series we are doing the retrospective study of our patients, in which sialendoscopy was done in last one year. Of 12 patients, 10 patients were having disease in submandibular gland, and 2 patients in parotid gland. All the patients were having obstructive pathology. In 5 patients stone removal was done by Dornia basket, and 3 patients required doing the papillotomy for stone removal. In 3 patients stone removal was not possible, due to large size of stone and required gland removal, and one patient was having stricture of submandibular duct, stenting failed, so gland removal was done. Obstructive sialadenitis can be managed purely endoscopically or in a combined modality, with success, which may avoid the gland removal

INTRODUCTION:

Obstructive sialadenitis is the most commonnon -neoplastic disease of the salivary glands. [1]Submandibular gland obstruction accounts for 80% to 90% of cases followed by obstruction of the parotid (5%-10%) and sublingual (<1%) glands.[2]Sialadenitis secondary to obstructive pathologies including sialoliths, strictures and ductal polyps, remains the most common disorder of the salivary glands.[3] The management of salivary obstruction has changed dramatically over the past 20 years. [4] Introduction of sialendoscope has brought in a paradigm shift in the management of these pathologies. [5] Katz[6] pioneered the first flexible sialendoscope in 1993, and Nahlieli et al,[7] the rigid sialendoscope in 1994. Sialendoscopy has emerged as a preferred diagnostic as well as therapeutic tool for management of salivary gland pathologies and has helped significantly reduce the morbidity, loss of work hours and hospital stay. Though a lot of research is still going on in this field, but a set of indications and techniques have evolved over a period of time. [5] In this study, we are discussing our experience with this new technology domain.

MATERIAL AND METHODS:

The present study is based on retrospective analysis of patients at Pankaj Ent hospital, Lucknow, who were dealt with this new technique in last one year October 2016 to October

2017. In last one year 12 patients were treated by sialendoscopy for obstructive pathology like salivary duct stones, or duct stenosis. Data collected includes details of patients, history and clinical presentation, management and outcome of procedure. All of our patients underwent ultrasound of salivary gland. MRI was done in patients, who were not having any obvious pathology on USG.

Equipments used (Figures)- Patients underwent diagnostic and therapeutic sialendoscopy, by Karl Storz® sialendoscope. Semirigidsialendoscope with only an irrigation channel of 0.25 mm and an outer diameter of 0.9 mm was used for confirmation of diagnosis. The operative endoscopes with outer diameters of 1.6 mm and operative channels of 0.4 and 0.8 mm, respectively was used for pathology correction. Accessaries include Dornia basket of different wire numbers for removal of stones. Hand drill to break the larger stone in pieces. Forcep to take biopsies and dilatation balloon for dilation of strictures and Stents for long termstenting after dilatation.

Figure 1- Sialoendoscopy instruments used in our study.

The procedure was done in local or general anaesthesia, depending on patient's cooperation. Stone removal was done by Dormia basket, by introducing it by 0.4 mm operative channel in operative endoscope. For bigger stones hand drill was used to break the stone, and removed it pieces. For duct stricture dilation was attempted by balloon angiocatheter. Results were analysed and compared with previous studies.

Figure 2 - Sialendoscopic picture bifurcation submandibular gland duct

Figure 3 - Sialendoscopic picture of submandibular stone.

RESULTS:

In last one year 12 patients had undergone sialendoscopy for obstructive sialadinitis.In these 8 (66.6%) patients were male and 4 (33.3%) were female, with mean age of 46. Preoperatively on the basis of Ultrasound finding 10 patients were having stone size ranging from 3.2mm to 16mm, 6 in submandibular gland duct and 4 in parotid duct. Rest 2 underwent MRI, 1 patient was having stone of size 2.4mm near papillae of submandibular gland, and 1 was having stenosis in parotid gland duct just proximal to papillae. Diagnostic and therapeutic sialendoscopy was performed in all these patients, in local or general anaesthesia depending upon the patient's cooperation.

Patients	Numbers
Sex	
Male	8
Female	4
Average age	46 (0-99)
Preoperative diagnosis	
Salivary stones	11 (91.6%)
Stenosis	1 (8.4%)
Sialendoscopy performed	12 (100%)
Successfully performed	8 (66.6%)
Unsuccessfully performed	4 (33.3%)

Table 1- demographic and clinical data

Salivary glands (parotid and submandibular)	
Salivary stones	11 (91.6%)
Duct stenosis	2 (16.6%)
Parotid gland	
Salivary stones	3 (25%)
Duct stenosis	1 (8.3%)
Submandibular gland	
Salivary stones	8 (66.6%)
Duct stenosis	1 (8.3%)

Table 2- sialendoscopic finding.

On doing the diagnostic sialendoscopy 1 patient was having duct stenosis along with stone in submandibular gland. Therapeutic sialendoscopy was done in all these patients. We were successfully able to remove salivary stones from 8 patients out of 11 patients having salivary stone. In these 8 patients 5 were removed from submandibular gland and 3 from parotid gland duct.

In submandibular gland out of 5, 2 patients required papillotomy for stone removal, on the other hand in parotid duct 1 patient required papillotomy out of 3 patients. We were not able to remove 3 salivary stones 2 from submandibular gland and 1 from parotid gland duct.

Successful sialendosopic stone removal	
Submandibular gland	5 (2 required papillotomy)
Parotid gland	3 (1 required papillotomy)
Unsuccessful sialendosopic stone removal	
Submandibular gland	2 (18.1%)
Parotid gland	1 (9%)
Stricture dilation	
successful	1 (50%)
unsuccessful	1 (50%)

Table 3- sialendoscopy result

In these 2 unsuccessful sialendoscopy for submandibular gland 1 was having duct stenosis also, proximal to stone, making it a failure, even after attempting the dilation of the duct. In one patient diagnosed as having duct stenosis on the basis of MRI finding, duct dilation was done, and patient was asymptomatic for last 5 months. For obstructive sialadenitis in 2 patients submandibular gland removal was done, in which sialendoscopy was not successful. In unsuccessful sialendoscopy parotid gland patient refused to undergo further (open) intervention.

DISCUSSION :

At the beginning, stones of size more than 4 mm in diameter represented the boundaries of an endoscopic approach, but the association with extracorporeal or intracorporeal lithotripsy allowed the removal of bigger stones.[8] The crucial question is whether this new diagnostic and therapeutic approach to the treatment of the salivary glands is changing the routine in terms of reducing the need for classic surgery of the salivary glands. Here in this study, we have experienced a reduced rate of salivary gland excision due to the use of interventional sialoendoscopy . In a nationwide review of data from Denmark, a study showed that there was a 26% reduction in the number of gland excisions for benign salivary gland disease after the introduction of sialendoscopy in 2004 compared to the 5 years prior.

While doing submandibular sialoendoscopy, we have difficulty in locating papilla of submandibular duct initially. This may be due to abnormal position, stenosis or may be due to its stricture. French authors described precisely the histological features of a submandibular papillary stricture: significant deposition of collagen fibers with abundance of inflammatory cells and absence of mucosal folds [10] Submandibular papillary stricture is becoming recognized as a separate clinical entity and some respective surgical solutions have been described by few authors in recent years [10,11,12].

CONCLUSION:

Sialoendoscope is a fantastic tool for diagnosis and treatment for obstructive major salivary gland pathologies and recurrent sialadenitis. It is ideal for stone size less than or equal to 4mm and floating. There are few restrictions encountered while doing sialoendoscopy. First, Stones which are larger in size and impacted needs Extracorporeal Lithotripsy which is rarely available in India and are difficult to remove. Second being inability to canulate the salivary papilla, sometimes due to stenosed papilla or due to its shape. Otherwise it is a new tool to investigate and treat Salivary gland obstructive diseases. The patients who needed gland excision unnecessary are now treated conservatively. There is still scope to innovate the instrument and its accessories to overcome its shortcomings.

References

1. Bodner L. Salivary gland calculi: diagnostic imaging and surgical management. Compendium 1993; 14:572,574-6, 578 passim.
2. Bodner L. Salivary gland calculi: diagnostic imaging and surgical management. Compendium. 1993;14(5):572, 574-576, 578PubMed
3. Zenk J, Koch M, Klintworth N, König B, Konz K, Gillespie MB, Iro H (2012) Sialendoscopy in the diagnosis and treatment of sialolithiasis: a study on more than 1000 patients. Otolaryngol Head Neck Surg. doi:10.1177/0194599812452837
4. McGurk M, Brown J. Alternatives for the treatment of salivary duct obstruction. OtolaryngolClin North Am 2009; 42:1073-85.
5. Singh P P, Gupta V, Sialendoscopy: Introduction, Indications and Technique. Indian J Otolaryngol Head Neck Surg(Jan –Mar 2014) 66(1):74–78; DOI 10.1007/s12070-013-0675-1
6. Katz P. New treatment method for salivary lithiasis. *Rev LaryngolOtolRhinol (Bord)*. 1993;114(5):379-382PubMed
7. Nahlieli O, Neder A, Baruchin AM. Salivary gland endoscopy. *J Oral Maxillofac Surg*. 1994;52(12):1240-1242PubMedCrossref
8. Sionis S, Caria RA, Trucas M, et al. *Sialendoscopy with and without holmium:YAG laser-assisted lithotripsy in the management of obstructive sialadenitis of major salivary glands.* Br J Oral MaxillofacSurg 2014; 52:58-62.
9. Rasmussen ER, Lykke E, Wagner N, Nielsen T, Waersted S, Arndal H. The introduction of sialendoscopy has significantly contributed to a decreased number of excised salivary glands in Denmark. Eur Arch Otorhinolaryngol 2016 Aug; 273:2223–2230. doi: 10.1007/s00405-015-3755-x.
10. Lopez Jean-Michel. How to recognize a submandibular papillary stricture: when and how to perform marsupialization? In: Marchal Francis (editor). Sialendoscopy, the hands-on book. Tuttlingen: Karl Storz, 2016, pp. 160–161.
11. Aničin A, Urbančič J. Sialendoscope introduction via a floor of the mouth incision: a case report. In: Marchal Francis (editor). Sialendoscopy, the hands-on book. Tuttlingen: Karl Storz, 2016, pp.296–297.
12. Chang JL, Eisele DW. Limited distal sialodochotomy to facilitate sialendoscopy of the submandibular duct. Laryngoscope 2013; 123: 1163–7.