Abstract

Objective: To demonstrate that an algorithm involving multiple techniques for salivary duct access in sialendoscopy results in excellent success rates and acceptable operative times.

Methods: 61 patients underwent sialendoscopy of the parotid or submandibular gland for a total of 65 cases (31 parotid, 34 submandibular) with 7 different trainees utilizing a standard protocol for duct access. The time interval from the case start to endoscopic visualization of the ductal lumen was measured. Average values for time to duct access were then calculated.

Results: The papilla was identified in all but one case without difficulty. Five cases required sialodochotomy for access. The average time to duct access was 4.2 ± 4.7 min (range: 0.67 – 25 min). Exclusion of 4 difficult cases with access times over 15 min yielded an average access time of 3.2 ± 2.2 min.

Conclusion: This standardized protocol demonstrates high rates of success for salivary duct access via the papilla in a short time interval with infrequent need for sialodochotomy, even in the hands of novice sialendoscopists.

Introduction

Sialendoscopy is a relatively new technology that has enabled otolaryngologists to access obstructive salivary duct lesions while minimizing trauma to the ductal system. It has diagnostic and therapeutic applications that have dramatically altered the management of inflammatory diseases of the major salivary glands resulting in significantly less morbidity for patients.

Dilation of the salivary gland papilla for access is well-recognized as one of the major rate-limiting steps to sialendoscopy and has been shown to be a major challenge for new trainees. Novices have a difficult time identifying the papilla in 20–30% of cases, and may fail to access the papilla in up to 20% of cases. Failure to access the papilla may terminate the case, resulting in needless anesthesia and unnecessary pain for the patient.

Multiple techniques have been described for identification and dilation of the papilla including methylene blue staining, serial dilation, the Seldinger technique over a guidewire, papillotomy, and sialodochotomy with preservation of the papilla. The ability for a surgeon to apply multiple different access techniques is necessary in the event that any given one fails. Here we describe a step-wise approach to papilla identification, dilation, and duct access that allows even novice sialendoscopists to quickly and successfully overcome this technically difficult portion of the procedure.

Methods and Materials

This was a collaborative study between the Departments of Otolaryngology Head Neck Surgery at the University of Pittsburgh Medical Center, Pittsburgh, PA and the LSU Health Sciences Center, New Orleans, LA.

An algorithm for salivary duct identification and access was developed (Figure 1). Papilla identification was initially performed using primary visualization. If the papilla was not located, digital manipulation to milk saliva from the gland was performed, and if this failed, methylene blue staining was used for identification. Once identified, papillary dilation was accomplished using serial dilation with the Schaitkin dilator system (Karl Storz, Tuttingen, Germany), the Marchal dilator system (Karl Storz), or the Seldinger technique described by Chossegros et al involving serial dilation over a titanium guide wire (Karl Storz), or the Kolenda salivary duct access system (Cook Medical, Bloomington, Indiana). Duct access was achieved with a limited distal sialodochotomy (described by Chang et al) if papillary identification or dilation failed at any step.

Salivary duct access was completed in 65 consecutive cases (8 at LSU, 57 at UPMC) by one of seven surgical trainees in the fourth year of otolaryngology training. Six surgical cases were completed by an attending surgeon (MBS or RRW). The time interval from the case start to visualization of the salivary duct lumen using a 1.3 mm salivary endoscope (Karl Storz) was recorded using the operating room clock.

Discussions

Previous research has shown that novice sialendoscopists continue to show improvement in case duration through their first 50 cases. Luers et al found that two areas where trainees made significant improvement were the time needed to access the salivary duct as well as the overall surgical case duration after access had been achieved. Quick success in duct cannulation is critical as the remainder of the case is dependent upon it. The longer the papilla is manipulated prior to achieving endoscopic access, the greater the chance that edema of the surrounding mucosa will force the case to be aborted. Our work has shown that duct access can be achieved by novices often within 5 minutes.

Papillary entrance failure is reported to occur in up to 20% of cases for beginners, but our experience has shown that with multiple techniques the need for sialodochotomy is low (7.7%) and there is no failure in duct access.

Results

The average patient age was 46 years old. Procedures were completed on 31 parotid and 34 submandibular glands.

The salivary gland papilla was identified in all but one case without difficulty. Five cases (7%) required sialodochotomy for access, including the case where no papilla was identified.

The average time to duct access was 4.2 ± 4.7 min (range: 0.67 – 25 min). Exclusion of 4 difficult cases with access times over 15 min yielded an average access time of 3.2 ± 2.2 min.

Conclusion

Sialendoscopy has rapidly altered the management of inflammatory salivary gland diseases and significantly reduced the morbidity of surgical therapy. Accessing the papilla is considered to be one of the most challenging elements of the case, but with the surgical algorithm described here access to the duct can be achieved by novices quickly, inexpensively, safely, and with a high degree of success.