Management of the Difficult Papilla: Current Techniques and Review of Literature

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Abstract:

Objective: To develop an algorithm to manage dilation of the papilla that is one of the rate-limiting steps in sialendoscopy. Study design: Review of literature. Methods: A Pubmed literature search was performed with key words, “sialoendoscopy, duct dilation, sialendoscopy, salivary endoscopy, Seldinger technique”. Results: Currently, there are several described techniques that are used to dilate the papilla. Commonest techniques include serial duct dilation and the Seldinger’s technique. Other techniques include using arterial stents, staining techniques, sialochotomy preserving the papilla, and papillotomy. Conclusion: There is still no consensus on the best option for managing the salivary duct. Broadly, techniques can be divided into invasive and non-invasive. Technical points and an algorithm for management of the difficult papilla are proposed.

Introduction:

Sialendoscopy is a relatively new technology that helps visualize the lumen of the major salivary gland ductal system. It can be diagnostic and interventional and is dramatically changing the management protocols for non-neoplastic disorders of the major salivary glands. This option for a minimally invasive management of salivary gland disorders has significant patient benefits and consequently is being rapidly adopted at many centers across the United States. Most experts agree that one of the major rate-limiting steps and challenges of sialendoscopy is dilation of the papilla and/or gaining access to the duct. In preliminary experiences, this step can be a source of frustration and failure. Consequently, a thorough knowledge of current options of gaining access to the duct is instrumental in ensuring successful sialendoscopy outcomes.

Objective:

To review current techniques described for dilation of the papilla and develop an algorithm for management of the papilla.

Methods:

This was a collaborative study between the Departments of Otolaryngology Head Neck Surgery at the LSU Health Sciences Center, New Orleans, LA and the University of Pittsburgh, Pittsburgh, PA. A Pubmed literature search was performed with key words, “sialoendoscopy, duct dilation, sialendoscopy, salivary endoscopy, Seldinger technique”. A novel technique for duct dilation utilized at LSU Health Sciences Center is also proposed.

Discussion:

In general two broad approaches are described to gaining access to the salivary duct. The first involves a controlled serial dilation of the papilla (Fig 1). This is anatraumatic technique and has the advantage of being able to maintain a good mucosal seal around the endoscope thus preventing leakage of irrigation fluid and enabling maintenance of a good operative space and visual field. The disadvantage of this technique is that the dilation of the papilla, especially in earlier in the learning curve can be a significant hurdle to endoscopy. The second approach described involves an upfront papillotomy that allows relatively easy introduction of the endoscope (Fig 2). The disadvantages of this technique are leakage of irrigation fluid around the papilla and an increased risk of subsequent papillary stenosis.

In an effort to incorporate various options available for duct dilation and entry, the authors propose an clinical algorithm to duct dilation based on their experience and preference to attempt a serial dilation first.

The duct dilation can be stratified based on ability to see the papilla. In patients where the salivary duct papilla can be visualized, the methods used to enter the duct include serial dilation followed by a guide wire technique (Fig 3-5). In case of a papilla that shrinks rapidly or to maintain a port, the Solex soft lumen expander is an atraumatic option (Fig 5). If the papilla can be dilated to Marchal dilator No1 but not beyond; the conical dilator helps to progress between dilators 1/2 , 2/3 and so on. In addition, the authors have used a balloon catheter to reverse dilate the papilla to facilitate dilation beyond No.0/1 dilator (Fig 6). To maintain the duct open as a port, in addition to the Solex, arterial stents have been used in porcine experiments and have been found to be useful (Fig 7).

In patients where either the papilla cannot be seen or the atraumatic dilation techniques fail, an upfront papillotomy can be performed. The papillotomy can be made as a small incision at the papilla that is stented and presented by a dilator or by exploring and finding the duct in the floor mouth(Fig 2). An alternative proposed has been to explore the floor mouth and perform a proximal sialochotomy about 1cm from the papilla (keeping the papilla intact)(Fig 8). This incision allows endoscopy to be performed without disturbing the natural papilla, thus preventing stenosis at the papilla. Placement of a stent is an option but not well described to prevent a stricture at the sialochotomy site.

Prior to performing a papillotomy, all effort should be made to identify the papilla. Preoperative identification of the site of the papilla and documentation in the chart or photo-documentation is helpful. At the time of surgery, avoidance of anti-sialogogues, naso-tracheal intubation, injection of the site of the papilla, and good exposure are known to maximize chances of successful dilation. Methylene blue application to identify the papilla (Fig 9) and massaging the gland externally or the floor of mouth internally can help to identify the opening of the duct (Fig 10).

Conclusions:

There are several techniques that can be utilized to dilate the duct. These are broadly either non-invasive (attempt to avoid a papillotomy) versus invasive (involve papillotomy or sialochotomy). The ability to visualize the papilla defines the approach to duct dilation. A combination of techniques is often required to achieve successful dilation and endoscopy.

Bibliography: