Management of a Unique Parotid Duct Obstruction
Nathan Schularick, MD1; Michael M. Reed, MD1; Jack C. Kademian, DDS MD2; Martin W. Schularick, MD3; Henry T. Hoffman, MD1
1Department of Otolaryngology, University of Iowa Hospitals and Clinics
2Department of Radiology, University of Iowa Hospitals and Clinics
3Consulting Radiologists Ltd, Plymouth, Minnesota

Abstract

Objectives: We report the value of sialography in the management of a unique case of parotid sialadenitis, secondary to obstructive shrapnel following a welding injury to the face.

Study Design: Illustrative case report and literature review

Methods: A 75 year old male presented with delayed parotid swelling after a work accident involving metal shrapnel to his cheek. CT scans identified a periparotid metallic density. A sialogram and sialendoscopy were performed.

Results: The sialogram identified a metallic object in the parotid duct that moved from the hilum to the narrowed duct orifice. Post-obstructive changes were present. Subsequent sialendoscopy permitted basket retrieval of a mass identified as consistent with welding slag. Dilation of the duct orifice with stenting permitted normal salivary flow and resolution of symptoms. Follow-up one year later identified no further salivary swelling or pain.

Conclusions: Sialography is a valuable tool for use in selective cases of salivary swelling. Sialendoscopy permits successful organ-function-preserving management of selective salivary disorders that previously would have required sialadenectomy.

Introduction

Interventional sialendoscopy greatly altered the management of obstructive salivary gland disease. Algorithms for workup and treatment of sialadenitis inducing obstructions are well discussed, but focus on organic (grass seeds) or endogenous (sialoliths) causes.[1-5] Literature highlighting the management of metallic foreign body obstructions assign a limited role to sialography.[6] We report on the diagnosis and management of an unusual case of parotid obstruction caused by metal shrapnel, with a focus on the benefits of sialography.

Case Report

A 75-year-old male welder presented for evaluation of recurrent left sided facial pain, swelling, and purulent drainage from the left Stensen’s duct. Previous episodes over the preceding year also involved postprandial swelling, and required antibiotic therapy for resolution.

The patient’s past medical history was significant only for hypertension and hyperlipidemia. He also reported a shrapnel accident 2 years ago, where a metal fragment entered his face through the left cheek just lateral to the oral commissure and was never removed. He was a non-smoker and infrequent user of alcohol.

Physical examination was remarkable only for a small firm submucosal object palpable near the puncta of the left Stensen’s duct. No other abnormalities were noted on examination, and clear saliva was expressed from Stensen’s duct bilaterally.

A CT and sialogram of the left parotid gland revealed a hyperdense obstruction, with distal post-inflammatory stricture and post-obstructive dilation of the proximal duct (figs. 2 and 3).

The patient was taken to the operating room for sialendoscopy, removal of the foreign body followed by ductoplasty with stent placement and Kenalog infusion. The stricture was progressively dilated over a 0.018 inch guidewire ultimately permitting removal of the metallic foreign body (fig. 3) via 4-wire basket. A 1cm length of 8 Fr pediatric feeding tube was placed within the duct and sutured in place to act as a stent (fig. 4). 3cc of contrast was injected and the patient reported no difficulties with swallowing or pain in his parotid gland. The duct orifice was noted to be widely patent, and clear saliva was expressed.

At a two week follow-up, the patient was noted to be healing appropriately. Clear saliva was expressed from the left parotid gland. The stent was removed without difficulty. He returned again for a two month postoperative visit at which time the patient reported no difficulties with swelling or pain in his parotid gland. The duct orifice was noted to be widely patent, and clear saliva was expressed.

References


Discussion

Endoscopic Management of Shrapnel Induced Parotid Duct Obstruction

The majority of salivary gland obstructions are endogenous, being strictures or sialoliths. Reports on management of foreign body salivary obstructions secondary to facial trauma are rare.

Drs. Michael Fritsch and Michael Koch have authored several papers providing algorithms for the treatment of salivary gland obstructions in similar cases.[2, 3] Their guidelines directly address the complicating factors we faced, being: 1) inflammatory stricture of the duct, 2) a 5mm obstructing object within Stensen’s duct. The authors relied heavily on these excellent recommendations, however metallic objects are not mentioned, and conventional fluoroscopic sialography is underutilized.

To our knowledge, this is the first report to describe both the unique imaging choices, and endoscopic procedure for successful management of shrapnel-induced parotid duct obstruction.

Unique Diagnostic and Therapeutic Benefits of Sialography

Sialography is the standard for pre-therapeutic diagnosis of sialadenitis, however some algorithms favor ultrasound first. This case report illustrates the unique benefits of conventional sialography.

Koch’s algorithms suggest high-resolution ultrasound as the primary diagnostic imaging modality of choice, preferential to the standard of conventional sialography.[3] Exposure to ionizing radiation and the invasive nature of sialography have been cited as criticisms of the modality.[2] The author’s institution continues to favor sialography above ultrasound for several reasons:

While both ultrasound and sialography are dynamic and “4D”, sialography delineates the entire ductal system (second, third branching). Ultrasound provides more focused, “segmental” information on the location surrounding the probe, and is restricted to superficial lobes in the parotid. Expanded visual mapping is very helpful for pre-surgical planning and intervention of ductal obstruction. In the previously presented case, the sialographic information revealed 1) the object’s location within the duct, 2) the mobile nature of the obstruction, and 3) delineated the anterior/posterior limits of movement.

Sialogram contrast provides more data than ultrasound concerning the salivary gland and solid duct obstructions. Echogenic calculi / intraluminal ‘sludge’ can obscure the relationship between the obstructing objects and the ductal lumen. Sonography is also restricted to imaging the superficial lobes.[8] Fluoroscopic imaging does not suffer the same limitations. Sialography also provides superior resolution of gland architecture proximal to the obstruction. The state of the gland can be important in decisions for more invasive procedures (sialadenectomy).

Sialography can be therapeutic. In this case, dilution of a proximal stenosis occurred twice - first during introduction of the contrast catheter for the sialogram, then again during the sialendoscopy. The contrast injection can expel small stones and intraductal ‘sludge’ as well.

Conclusion

Conventional sialography paired with minimally invasive sialendoscopic technique were successful in the treatment of a patient suffering shrapnel-induced obstructive sialadenitis of the parotid gland. Sialography is preferential to ultrasound for this and similar cases of obstructive sialadenitis because 1) sialography reveals obstructions in the context of the entire ductal tree; 2) fluoroscopic imaging in sialography has greater resolution of intraductal obstructions and glandular architecture; 3) sialography can be therapeutic as well as diagnostic.