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Technical Note

Femoral Arterial Catheter for Cannulation of Injured Parotid Duct in Trauma: A Technical Note

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Abstract

Parotid duct trauma is uncommon but can cause significant morbidity if not promptly managed, with complications including sialoceles and salivary fistula. Standard management involves duct repair over a stent, yet access to specialized stenting materials may be limited in resource-constrained or emergency settings. We describe the novel use of a femoral arterial catheter as an effective, readily available alternative for parotid duct stenting following traumatic injury. Using a Seldinger technique, a guidewire was advanced through the ductal papilla and across the injured duct, followed by placement of a trimmed femoral arterial catheter to bridge the lacerated ends. The catheter was secured intraorally and maintained ductal patency during healing. Compared with more commonly described options—such as feeding tubes, central venous catheters, or silicone stents—the femoral arterial catheter offers advantages of small caliber, rigidity, and availability. This technique may provide a reliable solution for surgeons managing complex duct injuries, particularly in low-resource settings.

Keywords: plastic surgery; parotid gland; trauma; surgical technique; arterial catheter

Introduction

Parotid duct or gland trauma can be difficult to diagnose and manage owing to their complex, small caliber anatomy and variable presentations. Inadequate or delayed treatment may result in complications such as sialoceles formation or persistent salivary fistula. Standard management of parotid duct lacerations involves early repair of the duct over a stent whenever feasible.[1] Various techniques with innovative use of widely available commercial consumables for repair of the parotid duct injuries provide surgeons with more options to manage these presentations. Various materials have been used as stents to realign duct ends, ranging from silicon tubes to epidural catheters, venous central line catheters and feeding catheters to more novel options, each aimed at being readily available and biocompatible.[2] In this technical note, the authors describe the Seldinger technique used for successful cannulation of an injured parotid duct with a femoral arterial catheter in a patient who sustained a gunshot wound to the face. The use of femoral arterial catheters for this purpose has not been described in previous literature, to the best knowledge of the authors and may provide treating surgeons with more options for managing parotid duct injuries.

Methods

The first step is to identify the parotid duct opening on the inner cheek, opposite the second upper molar (maxillary second molar). The second step is to identify an appropriate material that can be used for stenting of the duct.

The authors considered the use of a widely commercially available femoral arterial catheter (18 gauge, 16cm length with a .025 inch/0.06mm diameter spring-wire guide). This material was considered as it fulfils requirements for stenting the parotid duct. The catheter is biocompatible, rigid,

non-collapsible and durable, but still flexible. It can also be resized by cutting it according to the length of the patient's parotid duct. The size of the material is also suitable for stenting the average parotid gland (which in some studies is reported as having an average length of 4-6cm and diameters of 2-2.5mm). [3]

In keeping with the Seldinger technique, the guidewire was passed into the parotid duct opening in the inner cheek and through the distal and proximal ends of the injured parotid duct. The arterial catheter was cut to the ideal length and then passed over the guidewire to stent the lumens of both ends of the parotid duct. The portion of the arterial catheter with the luer-lock ports was cut off and removed. Finally, the guidewire was removed and the end of the arterial catheter at the parotid duct opening was sutured to the inner cheek using a non-dissolvable suture.

In our approach, the arterial catheter is gently advanced from the buccal papilla into the duct, bridging the lacerated ends under direct vision. This serves as an indwelling stent to guide precise microsurgical duct repair and to maintain lumen patency during healing.

Discussion

The Seldinger technique for stenting injured parotid ducts is well established, and various cost-effective materials such as feeding tubes, epidural catheters, double J catheters, central venous lines, or silicone tubing have been reported. We describe the successful use of a femoral arterial catheter in a patient who sustained a gunshot wound to the face. Arterial catheters are biocompatible, non-collapsible, durable, widely available, and cost-effective, with a smaller caliber than many Foley's or central venous catheters. These properties make them particularly suitable for duct stenting where precise alignment is required. Potential limitations include risk of clogging, displacement, and infection due to its intraoral position, which can be mitigated by securing the catheter, ensuring hydration, and using prophylactic antibiotics. Although our report is limited to a single case, the technique demonstrates feasibility and highlights the importance of repurposing readily available materials in resource-limited environments. Larger case series and longer follow-up are needed to confirm durability, complication rates, and long-term ductal function.

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Conflict of Interest: The authors declare no conflicts of interest.

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