

## NOTES

**CASE 15 – TRANSECTION OF STENSEN’S DUCT****Robert T. Adelson, MD**

*A 35 year-old male is brought to the ED for evaluation of injuries sustained during an aggravated assault. After the patient has been stabilized, the trauma surgeons decide that a deep facial laceration would benefit from a specialist’s ability to provide an aesthetically-pleasing closure. The otolaryngology service is consulted to manage this cheek laceration.*

**HPI: state that you would:**

- Obtain a detailed medical history beginning with a history of the present illness

**What additional historical information would you seek?**

- How long ago did the assault occur and what was the mechanism of injury?
- What are the patient’s symptoms?
- Does he have trismus, malocclusion, diplopia or unusual changes?

*The patient reports an attack by a single assailant approximately 3 hours prior to arrival in the emergency department. The patient was struck with fists as well as an unseen sharp object. The most obvious injury is a laceration involving the patient’s left cheek. He complains of bilateral facial pain and swelling, no trismus, no malocclusion, no visual changes.*

*PMH: None*

*PSH: None*

*Allergies: NKDA*

*Medications: None*

*FH: HTN*

*SH: (-) Tobacco, social ETOH, attorney*

*ROS: A standard trauma ROS establishes a normal level of consciousness, no symptoms referable to regions outside the head and neck, and a last meal 6 hours prior to presentation*

**What would you look for on PE? State that you would:**

- Perform a complete head and neck PE including vital signs, otoscopy, and appropriate evaluation and management of the acute facial laceration

**PE:**

*Vitals: Temp: 98.4 F, BP: 135/85, HR: 100, RR: 20*

*GA: WDWM, appropriately distressed given recent trauma and associated pain*

*Ears: TM (bilaterally) are normal in shape, no MEE, no perforations, no hemotympanum. The EAC (bilaterally) are normal, no lacerations*

*Nose: The bony nasal pyramid is non-mobile, no septal hematoma, no epistaxis*

*OC/OP: Normal examination, no lesions. Class I occlusion*

*Neck: No lymphadenopathy. No traumatic injuries*

*Face: The facial skeleton is intact. No palpable fractures, step-offs, or other deformities. The left cheek has a 5 cm vertical laceration that extends inferiorly from the left zygomatic arch toward the mandible, located approximately 2 cm anterior to the tragus. The wound is no longer bleeding, as the patient has been applying constant pressure with a gauze sponge. The patient's facial nerve exam is graded at a 1/6 House-Brackman scale (normal). The left upper lip does not droop at rest, and upper lip elevator muscles appear normal*

*Given the location of the left cheek laceration, examination of the parotid gland duct system is achieved by gentle massage of the left parotid gland, which results in the production of saliva into the wound.*

### **What is your differential diagnosis?**

This patient has suffered a complex laceration of the left cheek with injury to the parotid drainage system. This system has been interrupted at either the level of the gland parenchyma or along the length of the parotid duct

### **What diagnostics would you request? State that:**

- No imaging studies are needed in the management of this patient's injury

*Radiologic imaging of parotid trauma should be dictated by the risks to surrounding structures. The patient's facial skeleton is intact, and therefore a facial CT scan is not indicated. The laceration extends into the parotid; however, it is not deep enough to require MRA or angiographic evaluation of the underlying ICA or internal jugular vein. A sialogram of Stensen's duct can confirm the integrity of the parotid duct system; however, in the presence of a penetrating injury which requires operative exploration, this study is superfluous.*

### **Diagnosis:**

*The parotid gland drainage system has been interrupted by a penetrating injury. Open exploration of the wound will allow the exact site of injury to be identified and repaired appropriately.*

### **What are the treatment options and their complications?**

- The limited differential diagnosis mandates operative exploration of the parotid gland drainage system. Broad spectrum pre-operative antibiotics should be employed empirically against oral flora

## NOTES

**Surgical techniques**

- The traumatic laceration itself often provides adequate access for wound exploration and duct repair
- Pre- and peri-operative antibiotics should broadly cover oral flora, with particular attention to organisms typically implicated in parotitis (*Staph aureus*).
  - Suggested: Clindamycin (900 mg IV q8h for 24 hours) or Unasyn (3 gm IV q6h for 24 hours), with conversion thereafter to the oral route (Clindamycin or Augmentin, as detailed below) for 7 days
- Devitalized tissue should be removed and the wound thoroughly irrigated
- The cornerstone of this procedure is correct identification of the parotid duct injury. This goal can be achieved by intraoral cannulation of the parotid duct with a 20 gauge silastic catheter followed by injection of a small bolus of saline or methylene blue dye

**Highlights and pitfalls:**

- Methylene blue should be used in small quantities and with caution, as the dye can stain surrounding tissues and make further exploration more difficult
- The ductal injury is repaired (as detailed below)
- Layered closure of the wound, with an active suction, closed system drain placed near the salivary gland injury. Meticulous closure of the facial skin
- A pressure dressing applied to the parotid gland will encourage salivary flow in the typical direction
- Pre- and post-operative antibiotics to cover *Staph aureus* and typical oral flora

**How does the recommended method of repair differ for the various regions of the parotid gland drainage system?**

- Injuries occur in 1 of 3 general regions of the ductal system. Each is amenable to a particular type of repair
- Parotid gland or proximal duct injury is best treated by suture repair of the parotid capsule or duct
- Interruption of the duct as it courses across the masseter muscle is most commonly repaired with microsurgical techniques allowing direct end-to-end repair of the duct over the silastic catheter. The proximal and distal ends of the duct are located and debrided. The duct is mobilized as much as is possible, to allow for a tension-free repair. Most authors agree that 9-0 or 10-0 monofilament (nylon or proline) sutures in an interrupted or running fashion will provide an adequate closure. The silastic catheter allows salivary flow through the recently traumatized duct and helps the surgeon avoid inadvertent placement of stitches into the back wall of the duct. Stents can be sewn to the buccal mucosa, as they should remain in place for 7–14 days
- Sectioning of the distal portion of the duct, as it courses around the anterior border of the masseter and pierces the buccinator muscle, results in a distal remnant which may not be amenable to primary repair. Stensen's duct may be re-implanted directly into the buccal mucosa in a more posterior location, and stented for 7–14 days, as described above

A segmental loss of Stensen's duct prohibits primary end-to-end repair. There are 4 proposed solutions to this difficult surgical problem. More proximally located losses can be treated with ligation of the duct, followed by a painful period of parotid swelling and later, by atrophy of the gland. A total parotidectomy will eliminate difficulties in management of severe duct injuries; however, this approach introduces those risks of facial nerve injury, cosmetic deformity and gustatory sweating associated with total parotidectomy. Attempts can be made to re-implant the duct in the OC, provided enough of a remnant is available to the surgeon. Finally, interposition vein grafting has been successfully employed in the repair of segmental duct loss, though this procedure requires harvesting of a vein as well as a total of 2 microsurgical anastomoses.

### **What are the potential complications of parotid duct injury and operative repair?**

- State that a sialocele is one of the more common post-operative/post-traumatic complications. This collection of saliva in the soft tissues of the face may result from unrecognized or poorly repaired parotid parenchyma or duct injuries
- How can you diagnose a sialocele? Aspiration of fluid and laboratory assay finding amylase levels > 10,000 units/L will confirm the diagnosis
- What is the management of a sialocele? Repeated aspiration, pressure dressings, eliminating PO diet, and antisialagogue medications are the first step in medical management of a post-traumatic sialocele. Recently, authors are reporting successful medical management of sialoceles with Botox injections into the offending lesion. Surgical treatment of a sialocele may involve questionably effective procedures, such as a tympanic neurectomy, or a more successful total parotidectomy, which is made increasingly risky by the surrounding bed of saliva and inflammatory tissue. Conservative measures are strongly favored in the treatment of sialoceles
- A more unusual complication is a salivary fistula. The external drainage of saliva through the skin can result from INAD duct repair or from rupture of a longstanding sialocele
- What is the treatment for salivary fistulas? Fistulas that present early in the post-operative course should be re-explored with revision of a faulty duct repair and/or identification of an initially unnoticed ductal or parenchymal injury. The options for management of a salivary fistula are similar to those described for management of a sialocele, with glandular sources having a better prognosis than ductal sources, and conservative measures favored over surgery

### **How would you follow this individual? State that:**

- The patient should be evaluated in the office setting between POD 5 and 7 to allow timely suture removal and assessment for early complications of duct repair (sialocele or wound infection). The parotid duct stent is removed between POD 7 and 14, as this decision is guided by the PE findings. The absence of undue parotid swelling and early surgical complications in conjunction with visual confirmation of salivary flow through the repaired duct should prompt removal of the stent

**NOTES**

- Post-operative antibiotics should be continued for 1 week (amoxicillin 500mg po bid or Clindamycin 300 mg po qid); however, there is no clear consensus on this issue
- The patient is followed closely in the immediate post-operative period for development of clinically apparent complications, such as wound infection, sialocele, or salivary fistula. Patient education regarding the signs and symptoms of infection is the best sentinel for early identification of surgical complications. After the initial 2 office visits, the uncomplicated patient could be seen in 6 months to assess the final aesthetic and functional result of this facial trauma
- Attention is paid to appropriate rehabilitation of the facial wound. Dermabrasion and other methods of scar revision are tailored to the patient's needs

**References:**

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