

Case Report

Post-Traumatic Right Parotid Sialocele Review of Literature with Report of a Case

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- Parotid gland trauma
- Salivary mucocele
- Salivary retention cyst

Abstract

Trauma involving the parotid gland is rare and is usually caused by penetrating injuries or fractures of the facial skeleton. Post-traumatic parotid sialocele is one of the more unusual causes of a facial swelling in the pre-auricular and buccal space. Ductal transection is relatively uncommon and seen only in 0.2% of such patients. It is typically develops 8 to 14 days after the injury. In our report we describe a 30-year-old male with past history of severe facial trauma and multiple facial bone fractures involving both orbits, fixation of fractures was done, after that, progressive marked facial swelling in the right parotid and buccal space is observed. Diagnosis of a parotid sialocele is based on a history of trauma. Clinically, a soft mobile painless swelling is evident extra orally involving the right buccal soft tissues. Aspiration of saliva from the cavity confirms the diagnosis Using text and images; we detail our case report diagnosis & management. This case report illustrates the relationship of trauma to sialocele formation. Post-traumatic parotid sialocele should be considered in the differential diagnosis for any post-traumatic facial or high neck swelling.

INTRODUCTION

Being well protected by a thick capsule, and situated behind the strong mandibular skeleton, the parotid gland can only usually be breached by a penetrating wound, or by a violent external force with fracture of the mandible, such as after a road traffic accident [1]. A sialocele is an accumulation of saliva surrounded by tissue reaction to the saliva. It is also called salivary mucocele or salivary retention cyst. The result is a fluid filled sac which can occur under the tongue (a ranula), in the neck or buccal regions, or adjacent the pharynx. A parotid sialocele, also called (parotid salivary mucocele, is a periductal accumulation of saliva resulting from a complete or partial disruption of the parotid duct. It is a pseudo cyst without a distinct epithelial lining. It usually becomes apparent 8-14 days after an injury but may be delayed [2-3], Hashmel. J et al., [4] reported one case in which the presentation of post traumatic sialocele delayed 8 months after facial trauma. Trauma to the parotid gland is fortunately rare [1]. Facial lacerations or an operative procedure such as a mandibular osteotomy are frequent initiating factors [2-3]. Fistula formation can also occur following ductal injury. Facial lacerations are common injuries However, parotid gland involvement and, in particular, ductal transection is relatively uncommon. Lewis and Knottenbelt [5] found only 0.2% of patients seen in a trauma unit over a 6-month period had a parotid gland injury [6,7]. Another cause for these accumulations of saliva is obstruction (usually caused by inflammation, sialolithiasis or a tumor) of the distal

end of a duct, which produces dilatation of the duct resulting in an epithelial-lined retention cyst. If untreated, the wall of chronic sialoceles can become mineralized, or undergo necrosis and slough into the cavity. It can become infected and form an abscess. Extra-oral fistula formation is a possibility, as is the secondary infection [4]. The main clinical manifestation of post traumatic sialocele is a slow developing soft to firm fluid-filled swelling under the tongue, in the neck, face or the pharyngeal region. It is usually not painful. Sometimes the swelling increases during eating and decreases in size when salivary secretion decreases. If the swelling is very large, it may interfere with eating and swallowing [3].

CASE REPORT

The patient was a 30-year-old male who was referred from emergency department (ER) for Computer tomography scan brain & facial bones after road traffic accident and severe multiple trauma. Upon admission patient was unresponsive, multiple facial cut wounds suturing was done at ER. Non contrast axial CT study was done with coronal and sagittal reformatted images as well as 3D reconstruction for facial bones, the study revealed multiple facial bone fractures with ruptured right eye globe, the fractures line including; comminuted fractures both maxillary sinuses, left pterygoid bone (Figure 1) left frontal bone, roof of left orbit, lateral wall of right orbit, floors of both orbits, right nasal bone, right greater wing of sphenoid, lamina paparaecea

right side of hard palate and right side of the superior alveolar margin. Totally hyper dense ruptured right eye globe is observed denoting intraocular hemorrhage. Bilateral both orbits pre-septal edema (Figure 2). High density fluid [hem sinus] is seen inside both maxillary, left frontal sinuses and ethmoidal air cells (Figure 1,2). Non contrast CT chest, pre and post CT abdomen and pelvis were also done and revealed bilateral lung contusion more at right side, with fracture left transverse process of L3, L4 and L5 lumbar vertebrae. Facio- maxillary surgery was done including right eye globe repair and internal fixation of both orbital fractures (ORIF). After about 18 days, the patient was referred again to the radiology department for CT brain as part of the workup for progressive right cheek facial swelling. He was presented with marked swelling of the right side of his face and vague pain during oral intake. On physical examination, there was marked right pre-auricular fluctuated cystic facial swelling. This was not tender, not hot and not indurated. The cranial nerves and in particular the facial nerves were functioning normally. The patient was not feverish and there were no symptoms or signs of airway compression. Possibility of parotid gland laceration and parotid duct transection was considered. A computed tomography (CT) scan without contrast medium injection was performed. Images through the parotid and submandibular region showed a large well-defined fluid-filled cystic uni-loculated mass lesion in the subcutaneous soft tissues of the right cheek anterior to right parotid gland and extending to the surface of right mandible (Figure 3a, 3b). It measures 3 x 3 x 3 cm in length, width and AP dimensions respectively. The mass was intimately applied to the superficial lobe of the right parotid gland and appeared to be arising from it. There was a peripheral thin wall around the cystic lesion. It is displaying smooth well defined margins. The content of the mass lesion was homogeneous and its density is slightly greater than water, suggestive of saliva. There was no edema of the overlying subcutaneous fat with maintain clarity of the facial planes. There was no evidence of hematoma seen. The findings on CT reinforced the preliminary diagnosis of a post-traumatic right parotid sialoceles. Right parotid sialography to confirm the communication between the facial fluid-filled space and the parotid duct could not be done because of patient condition that interfere the procedure [multiple facial bones fractures]. Aspiration of fluid from the right parotid sialoceles was done,

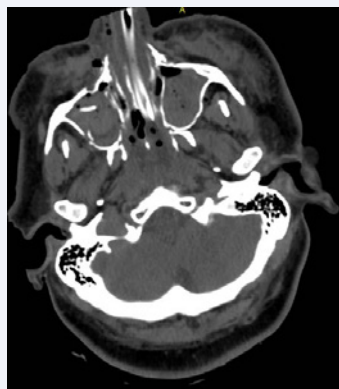


Figure 1 Axial non contrast CT brain bone window showing multiple comminuted fractures both maxillary sinuses, left pterygoid bone with both maxillary hemispheres and face edema.



Figure 2 Axial non contrast CT brain soft tissue window showing hyper dense ruptured right eye globe denoting intraocular hemorrhage.

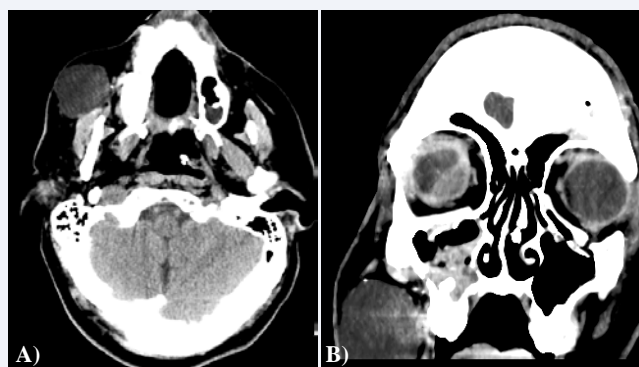


Figure 3 Axial and coronal soft tissue window non-contrast CT images through the parotid and sub mandibular regions. A low attenuation cystic mass lesion (3 x 3 cm) is seen anterior to the right parotid gland, extending on the surface of the mandible. The lesion's density is of fluid (9 HU). The fat planes around this abnormality are not interrupted. The adjacent gland parenchyma appears normal.

and this yielded approximately 20mL of viscous fluid consistent with saliva. This immediately decompressed the facial swelling. A drain was fixed using block silk sutures. Aspirated fluid was sent for cytology that confirms the diagnosis.

DISCUSSION

Trauma to the parotid gland is fortunately rare. It is usually the result of a penetrating wound [1]. Parotid sialoceles may be a complication of trauma with a penetrating salivary gland injury or may be a complication of surgical procedures involving salivary glands [2]. Parotid gland involvement in facial lacerations and, in particular, ductal- transection is relatively uncommon [2-8,9]. The mechanism of injury responsible for the extravasation is often minor and not always recalled by the patient [9]. Trauma to the salivary glands in the absence of a penetrating injury is particularly rare. The force required is considerable, and there is usually an associated skeletal injury, to the mandible or temporomandibular joint [1]. The diagnosis of a sialocele is made by a thorough history and clinical assessment of the patient. A sialocele typically develops 8 to 14 days after the injury but in sialocele formation may be delayed was delayed to 8 months

after trauma [4]. Diagnostic imaging includes; ultrasonography, CT scan and sialography. Ultrasonography is a useful examination to use for diseases of the salivary glands and for confirming the cystic nature and precise location of a sialocele. Ultrasound scanning commonly demonstrates a complex fluid collection sometime with septation and debris [10]. CT scan will reveal a single or multiloculated cyst-like mass with less density than the surrounding tissues with smooth margins [11]. The walls of the mass are usually not visible in the early period. The sialocele may be soft and conform to the adjacent structures. CT with contrast may show enhancing borders after a few weeks because of capsule development. Cases earlier than 2 weeks since the occurrence showed no enhancement because of the absence of a well developed capsule [12]. Sialography can play a significant role in diagnosis by indicating the extent of parotid duct injury, and communication to the parotid duct. Magnetic resonance imaging usually is not needed for diagnosis, and demonstrates similar findings, with low signal on T1-weighted images and high signal on T2-weighted images, the findings expected for a cystic mass. The location of the mass is characteristic [4]. In uncertain cases, a needle aspirate may be obtained. Parotid secretion will have a high amylase content that usually exceeds 10,000units/L thus confirming the diagnosis [7]. The differential diagnosis of sialocele would include retention cyst, sialodochitis, branchial cleft cysts, and lympho-epithelial cysts. However, history of facial trauma or surgery is the key point to the correct diagnosis of sialocele [11]. Other conditions of the neck and face that can cause cervical or facial swelling include abscess, aneurysm, hematoma, tumors and lymphadenopathy [4]. Abscesses usually have thicker walls than a sialocele. In a sialocele, unless secondarily infected, there is absence of pain, fever, chills, or erythema of the skin [11,12]. Aneurysms usually show marked enhancement in a CT with contrast medium and may be an obvious communication with vascular components. Hematoma may mimic a sialocele and even show cystic appearance in ultrasound and CT exams but there is no communication to the parotid duct in Sialography [11]. Most tumors are more solid. Dermoid cysts and lipomas may contain fat. Hemangiomas are higher in density and may have calcifications. Lymphadenopathy is usually not cystic [4]. There are numerous methods described for post traumatic sialocele treatment [13]. Asha R et al., [14] reported that injuries to parotid gland and duct must be treated surgically in acute phase. However, after 72 hours, management should be conservative and aimed at limiting or treating complications. Surgical modalities usually involve an operation with possible facial nerve injury, with the risk of a general anesthetic, and with prolonged hospitalization to be considered [13]. Acute surgical repair of damaged ducts can no longer be recommended, since conservative management of parotid duct trauma is both safe and effective [13-15]. A conservative management policy using antibiotics and anticholinergics was effective, with complete resolution of symptoms in cases with gland parenchyma injury with or without duct system injury [1-5]. A suitable surgical solution is outlined for more persistent cases [15]. In selected patients, low-dose radiation therapy offers a solution to persistent salivary flow refractory to surgical management [16]. Simple surgical procedures exist for the management of the rare long-term disorders [13]. Repeated aspirations [17] pressure dressings and antisialogogic agents are often successful [2-15].

Botulinum toxin therapy has recently been described as a highly effective, safe, and noninvasive method of treatment in the management of parotid sialoceles [18-20]. Some authors reported the application of transdermal scopolamine resulted in resolution of a post-rhytidectomy sialocele within 6 days [2]. Some new modifications in facial surgical procedures are recommended for avoiding parotid sialocele or fistula formation [21].

CONCLUSION

Trauma to the parotid gland is rare. Post-traumatic parotid sialocele should be considered in the differential diagnosis for any post-traumatic facial or high neck swelling. The diagnosis of sialocele is made by a history and clinical assessment of the patient. Diagnostic imaging includes; ultrasonography, CT scan and sialography. In uncertain cases, a needle aspirate may be obtained. It should be treated surgically in acute phase. However, after 72 hours, treatment should be conservative.

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