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Canine Fossa Abscess-Induced Bullae Formation: A Case Report

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Abstract

Introduction: Canine fossa abscess is an odontogenic infection originating from the upper jaw teeth, specifically from the premolar or canine. This abscess needs to be treated properly because it can be life-threatening. Canine fossa abscess that induces the formation of bullae is rare.

Case Report: A 55-year-old male complained of a lump under his eye that contain clear fluid after previously undergoing abscess drainage through intraoral access and teeth extraction that caused the canine fossa abscess. The lump was in the form of a ruptured bullae lesion and reappeared. The treatment performed was incision through extraoral access, postoperative bandage, and antibiotic medication. The result showed that the bullae disappeared. The prognosis, in this case, is ad bonam.

Conclusion: Canine fossa abscess cases can be life-threatening. Complications that arise, such as bullae, are rare but it is important to know the causes, treatment, and management. It is crucial for dentists to be aware so that they can determine the treatment when such cases occur.

Keywords: Fossa Canine Abscess, Drainage, Bullae

Introduction

Canine fossa abscess, located in the small space between the levator labii superior and levator anguli ori muscles, can occur due to infection from the premolar and canine teeth in the upper jaw. Fossa canina abscess can be characterized by the formation of localized edema in the infraorbital region and can spread to the medial canthus of the eye, lower eyelid, and side of the nose.[3]

Although rarely reported in the literature, canine fossa abscess is an odontogenic infection that can be life-threatening.[2] In canine fossa abscess, the formation of pus can spread to the cranial region, leading to further complications such as airway obstruction, periorbital abscess, and intracranial abscess. Infection in the canine space can also enter the infraorbital vein or inferior ophthalmic vein (via the sinus), reach the superior orbital fissure, and go to the cavernous sinus. The result is septic cavernous sinus thrombosis, a rare but life-threatening condition for the patient.[4] Therefore, when faced with a canine fossa abscess, early recognition, determination of the etiologic factors, and good medical and surgical management are required to achieve success.[2]

Treatment of fossa canine abscesses can be managed with an intraoral approach, taking into consideration the patient's aesthetic factors. An incision is made in the maxillary labial sulcus to reach the periosteum, followed by blunt dissection in a superior direction and drainage of the abscess. Other treatment options like apicoectomy, curettage of purulent granulation tissue from the root defect, pulp extirpation, and tooth extraction also need to be considered.[15]

Bullae are defined as an oval or round protrusion within or beneath the outer layer of the skin with a diameter of more than half an inch. Bullae can occur directly due to bacteria, viruses, and fungal infections, or as a reactive phenomenon from an infection. When originating from the epidermis, bullae tend to be flaccid and easily rupture, while those originating from the subepidermal layer tend to be harder, have good structural integrity, and are less prone to rupture.

Bullae occur as a result of disturbances in the binding of the epidermis or basement membrane, leading to the creation of space and the accumulation of fluid leaking from blood vessels. The fluid can contain serous or lymphatic fluid, serum protein, antigen-antibody complexes, and inflammatory mediators. The fluid is usually sterile and provides tissue protection. If there is redness, swelling, increased temperature, increased pain, or foul-smelling drainage with non-clear fluid, then infected bullae are likely present.[7,14]

Bullous skin diseases are generally life-threatening skin diseases. After rupture, erosions form can cause increased water loss, electrolyte imbalance, and infection.[9] Some bullae develop due to autoantibodies attacking the epidermis and basement membrane (autoimmune bullous disorders), while others may develop due to defects in the skin structure (congenital blistering disorders).[5] In autoimmune bullae, pathogenic autoantibodies can be detected in the circulation and in skin lesions, where genetic factors have a more significant role in the pathogenesis of non-immune bullous skin diseases.[9]

Case Report

A 55-year-old male patient came to Panti Nirmala Hospital in Malang, East Java with complaints of a lump in the under-eye area that appeared after undergoing drainage in the canine fossa abscess via intraoral approach. From the anamnesis, it was found that there was a clear fluid-filled blister that appeared and lasted for several days before finally bursting (figure 1). Then another new blister appeared later (figure 2). Ten days before, the patient had received abscess drainage treatment with an incision via intraoral approach followed by the placement of a drain and the extraction of teeth 12 and 13. Afterward, the patient was given cefixime 200 mg antibiotic therapy for 5 days.

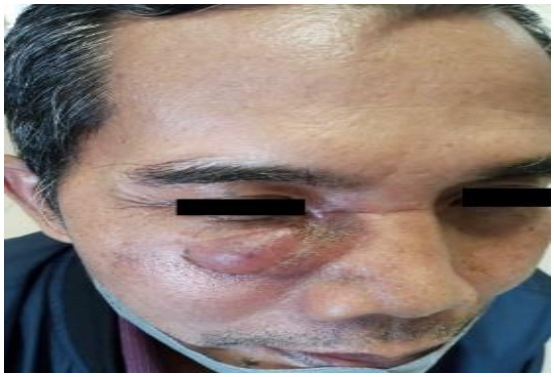

Figure 1: Facial view of first bullae formation before rupture

Based on clinical examination, an extraoral bullous lesion with a diameter of 4 cm was found in the lower right area of the patient's eye, at the same location as the previous fossa canine abscess. The lesion was clear in color and the patient did not report any pain. The patient had no history of bullous skin disease, systemic disease, or allergies, and did not report scratching the location. Intraoral examination showed swelling in the mucobuccal fold of the 12th and 13th region after drain placement (figure 3).

Figure 2: Facial view ruptures of previous bullae and formation of new bullae

Figure 3: Intraoral view

The treatment plan involves an extra-oral incision for drainage of the fluid. The procedure begins with an aseptic using povidone-iodine. Then, local anesthesia was given using chloroethyl and lidocaine injected with a 1cc syringe.

An extra-oral incision was made along the length of the bullae lesion using a size 11 blade and blunt dissection using hemostatic forceps towards the superior direction for fluid drainage. The fluid was clear in color. Then, the wound was covered with a bandage to prevent contamination and friction. Additionally, the patient was prescribed antibiotics and analgesics, Cefixime 200mg to be taken twice daily for 5 days, Doxycycline 200mg to be taken twice daily for 5 days, and Mefenamic Acid 500mg to be taken three times daily for 5 days. The patient was

Figure 4: Panoramic view

Figure 5: Extraoral incision and post-operative

Figure 6: D+7 post-operative

Discussion

This case began with the formation of a canine fossa abscess originating from an odontogenic infection, specifically the upper right anterior teeth (lateral incisor and canine). Previously, the operator had performed drainage management through an intraoral approach to avoid facial scarring, followed by extraction of both infected teeth (the remnant root of tooth 12 and proximal caries that reached the pulp chamber of tooth 13 with radiolucent lesions at the periapical of both teeth), which was followed by administration of cefixime antibiotic therapy.

During the follow-up, it was found that the canine fossa abscess had subsided. Most odontogenic infections can be drained through intraoral access with incisions made in safe places without affecting vital structures such as blood vessels and nerves.[6] However, a few days later, bullae lesions were found at the same extraoral location below the eye as the previous canine fossa abscess. The patient stated that this blister had reoccurred after it had previously ruptured and a new blister reappeared in the same location.

Bullae that are easily ruptured are flaccid and tend to originate from the epidermal layer. Unlike bullae that arise from subepidermal layers, they tend to be harder, have good structural integrity, and are less prone to rupture.[7]

In the epidermal layer, there are epidermal cells (melanocytes and keratinocytes) attached to each other with different adhesion proteins. Before bullae appear, this adhesion bond is disrupted.[8,10] The disrupted adhesion bond then creates space, followed by the accumulation of fluid that leaks from blood vessels.[7,14] This disruption can be caused by trauma, infection, inflammation, and autoimmune disorders.[10]

However, the most common cause of bullae is mechanical trauma, especially scratching.[1] Mechanical trauma can directly damage adhesion molecules.[10] Mechanically-induced bullae manifest with blisters at the site of irritation and recurrent mild trauma.[1]

In this case, the appearance of bullae is suspected to be due to trauma. The patient denied scratching the lesion area. The trauma occurred during an attempt to drain a previous canine fossa abscess. During intraoral drainage, blunt dissection deep into the maxillary sulcus in a superior direction using hemostat forceps was performed, which could cause tissue necrosis, triggering bullae formation on the extraoral skin site. Bullae form when the skin starts to necrose due to thrombosis of nutrient vessels as they pass through the involved fascia area.[13]

The patient's age also influenced the formation of the bulla. The 55 years old patient influenced the incidence of bullae formation in the elderly due to lost structure and decreased molecular adhesion function to maintain cell integrity and adhesion of matrix cells. The rete ridge pattern also decreased with age. This will cause surface area shrinkage and dermal-epidermal adhesion strength, leading

to the easy formation of bullae. Furthermore, immune dysregulation also increases with age. As a result, the incidence of autoantibody production and some autoimmune diseases can trigger bullae formation.[12]

Moreover, the finding of bullae lesions on the skin warns clinicians about the possibility of underlying systemic inflammatory response syndrome. They can also be a sign that local infection is still present.[11]

Under the circumstances, it was decided to perform an incision in the extraoral area. This decision was based on the previous intraoral drainage attempt. Then, closure was performed to protect the surgical site from bacterial contamination and possible friction that could trigger mechanical trauma.

The patient was followed up one week after the procedure. The results showed no bullae in the extraoral or intraoral parts of the patient, there was a dry scar, and no pain was reported. The prognosis, in this case, is ad bonam. In elderly patients, wound healing will take longer.

Conclusion

Canine fossa abscess cases can be life-threatening. Complications that arise, such as bullae, are rare but it is important to know the causes, treatment, and management. It is crucial for dentists to be aware so that they can determine the treatment when such cases occur.

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