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CASE STUDY

HIDDEN WOODEN STICK CAUSING CANINE SPACE INFECTION IN ATTENTION DEFICIT HYPERACTIVE CHILD

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ABSTRACT

The infraorbital swelling due to canine space infection is always reported. In this case report the 11 year child, etiology for canine space infection was unknown and the interesting part was the difficulty in finishing endodontic access due to missed foreign body at the root tip of 21 which was visible only after extraction of 21.The patient was suffering from attention deficit hyperactivity disorder and had not given any history of self inflicting injury to reduce pain. The extracted tooth had a wooden stick at the apex which was a very rare and shocking finding and the answer to the surgeon's dilemma. This case report is one of its kind where hidden wooden stick has caused canine space infection.

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INTRODUCTION

Swelling in the infraorbital region may be due to infection, trauma, tumours. Canine space infection is related to the periapical region of roots involved. The unobserved foreign body can cause a clinical as well as surgical dilemma. The etiologies of foreign bodies are several as described in literature. (Mohanavalli *et al*., 2011; Shuker, 2010) which range from trauma, self inflicting habits, iatrogenic dislodgement of instruments. They can potentially interfere with healing if not detected. This is a case report where a 11 year old male child presented with a canine space infection involving left upper anteriors. The interesting part of the case was the difficulty in finishing endodontic access due to missed foreign body at the root tip of 21 which was visible only after extraction of 21. The patient had not given any history of self inflicting injury to reduce pain before extraction of tooth.

Case description

An 11 year old male child reported to the Department of Oral and Maxillofacial Surgery, with a chief complaint of pain and swelling on upper left part of face including the upper eyelid. (Figure 1) The patient was not able to open the eye due to the swelling. The swelling was diffuse, tender on palpation and febrile in nature, obliterating upper left anterior vestibule. The skin over the swelling was reddish pink in colour. The patient complained of pain which was spontaneous, dull aching and intermittent in nature with no aggravating and relieving factors. There was history of trauma with the same region and impact on the same tooth 4 years back. Clinical examination revealed, greyish discoloration and pain with an Ellis Class III fractured Left maxillary permanent central incisor. It was also associated with a draining sinus on the labial mucosa over the tooth. Digital Orthopantomogram revealed an incompletely formed root apex with periapical radiolucency associated with 21. (Figure 2) The case was diagnosed as canine space infection secondary to fractured 21.

The patient was administered intravenous antibiotics and analgesics. The vitality test was done and 21 was found out to be vital and hence endodontic therapy was planned with 21. Following the removal of necrotic material and food debris, access was obtained. While determining the working length of the tooth, firm resistance was felt at the apical portion of the tooth, beyond which the pedodontist was unable to prepare the canal, giving signs of obstruction. The endodontic therapy was abandoned due to canal obstruction. The swelling did not

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subside for another 3 days inspite of intravenous antibiotics and hence Incision and drainage was planned. Incision was placed at the most dependant area according to hilton's method. The drainage of pus was considerably less in the incision site corresponding to the canine space. Therefore the extraction of 21 was done. (Figure 3)

Table 1. Literature reports pertaining to the various fascial spaces involved due to foreign bodies

S. No.	References	Type of Article	Space involved
1.	Shehata *et al*. (2010)	Case Report	Submandibular
2.	Wakisaka *et al*. (2010)	Case Report	Pharyngeal space
3.	Aregbesola *et al*. (2013)	Case series	Buccal Space
5.	Ziadeet *et al*. (2009)	Case report	Infra temporal space
6.	Sajad Mir *et al*. (2011)	Case report	Infra temporal space
7.	Selvi *et al*. (2011)	Case report	Infra temporal space
8.	Shuker (2010)	Case report	Infra temporal space
9.	Sverzut *et al*. (2009)	Case report	Infra temporal space
10.	English *et al*. (1751)	Case report	Infratemporal space
11.	Tang *et al*. (1998)	Case report	Infratemporal space
12.	Duarte *et al*. (1991)	Case Report	Pterygomaxillary Fossa

Figure 1. Left canine space infection with obliteration of nasolabial fold

Figure 2. Digital orthopantogram showing blunderbuss canals of 21

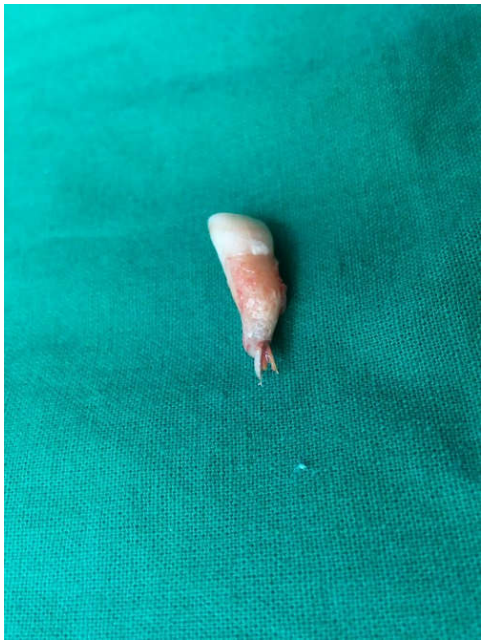

Figure 3. Extraction of 21 done

Figure 4. The extracted wood showing inflicted wooden sticks

Figure 5. Post operative follow up after one year

The interesting rare finding after removal of 21 was the pus drained profusely from the socket. The extracted tooth had a foreign body at the apex which was the cause for obstruction for endodontic therapy. The tooth grinding at the apex revealed that there was wooden stick in the tooth which was a very rare and shocking finding. (Figure 4)

DISCUSSION

This case we describe a male patient with swelling in the left infraorbital space. The presentation of a swelling generally, the root cause always being the infected tooth. The unusual presentation was that the neither the child nor mother reported during preoperative case record taking that the child was inflicting wooden stick into the tooth. In case of odontogenic infections in pediatric patients one or more offending teeth are usually obvious because of caries, periodontal disease or injury and tenderness to percussion. (Dodson and Kaban, 2004) The patients age is helpful as a guide to determine the source of infection and etiology. (Scutari and Dodson, 1996) In younger age group the exact source for infection is less likely to be found. In our case reason for canine space infection as a diagnosis was a dilemma, since patient presented with draining sinus with respect to 21, where the challenge was that the tooth was vital. The patient also gave a history of trauma in that tooth 4 years back. This was the reason for its non vitality.

The canine space is bounded by the nasal cartilages anteriorly, the buccal space posteriorly, the quadratus labii superioris muscle (levator labii superioris) superiorly, the oral mucosa of the maxillary labial sulcus inferiorly, the quadratus labii superioris muscle superficially and the deep border is created by the levator anguli oris muscle. The patient always reports with a swelling obliterating the nasolabial fold, and in such cases, if left untreated, the infection would eventually and spontaneously drain via the medial or lateral canthus of the eye, as this is the path of least resistance. (Peterson *et al*., 2008) In this patient the obliteration of the nasolabial fold with orbital swelling was seen positive. Self-injurious behaviour (SIB) may be defined as that which results in the infliction of physical damage and, perhaps, pain upon oneself. On further exploration the parents confirmed that the patient had a habit of inserting foreign objects in the mouth such as stick and twigs to reduce pain. These self-inflicted injuries are sometimes referred to as factitious injury, self-mutilating injuries and injuries due to masochistic habits. (Subbaiah *et al*., 2010; Spencer *et al*., 1999)

The self inflicted injuries by Stewart and Kernohan (1972) gave a clue for diagnosis in our case.

- **Type A:** injuries are superimposed on a pre-existing condition, such as herpetic lesions or localized gingival infection.
- **Type B:** injuries are secondary to established habits, such as finger sucking or nailbiting.
- **Type C:** injuries have unknown or complex etiologies. These would include injuries due to psychological problems. Our patient came under the type C category. The awareness about previous history of wooden stick being done by the child was revealed by the patient party only after the extraction of the tooth.

The interesting observation which was seen with this patient was hyperactivity and impulsiveness. Venkata *et al*. in their study recorded prevalence of attention deficit hyperactivity disorder in the age group of 9 and 10 years. (Venkata and Panicker, 2013) This can be one of the reason for presentation of self infliction trait in the patient. Subbiah *et al*. (2010) have suggested guidelines might be useful where detailed case history including oral hygiene practices, history of any deleterious oral habits, previous history of similar lesions, and present emotional status of the patient and parents should be recorded .They also have recorded that if diagnosis of self-inflicted injury cannot be established from the initial evaluation then removal of the cause is the answer to treatment. In our case, the lesion failed to regress with antibiotic therapy. And due to the canal obstruction, endodontic treatment was abandoned. Therefore, extraction of the offending tooth along with incision and drainage was done for the removal of cause.

The extensive literature search in PubMed, Cochrane and Embase & Medline, for the last 30 years, as described in (Table 1) indicates that there are only three reports till date of wood as a foreign body in the various anatomical spaces such as Infratemporal space, Buccal space, Pharyngeal space, Submandibular space and Infraorbital space. This report is the only case of a foreign body retrieved from the canine space causing maxillofacial infection. The patient was followed for one year and no recurrence of the infection. (Figure 5)

Conclusion

The wooden stick being the source for canine space infection was retrieved from the apices of the root tips of the tooth after extraction of the tooth. The radiographs were not able to detect the wooden sticks. The literature search does not report any similar case .The mystery of canine space infection resolved only after the removal of the tooth. In the diagnostic dilemma in such cases, dedicated search of previous misdiagnosed cases, offer excellent results thereby reducing associated comorbidity.

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