

Recovery of an accidentally displaced third molar from the infratemporal fossa

Recuperação de terceiro molar maxilar deslocado acidentalmente para fossa infratemporal

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ABSTRACT

Background. Displacement of an impacted maxillary third molar into the infratemporal fossa is frequently mentioned but rarely reported. Retrieval of such a displaced tooth is difficult and requires urgent referral. The use of normal radiographic examination may lead to an incorrect diagnosis because of the superimposition of anatomical structures. Many surgical approaches have been suggested to recover such a dislocated tooth. The following report describes a case of displacement of a maxillary third molar into the infratemporal fossa, treated several days after displacement, with an installed local infection. There is no universal treatment applicable to all maxillary third molars with displacement in the infratemporal fossa, and an oral and maxillofacial surgeon can choose which treatment is most appropriate for each case. The use of normal radiographic examination may lead to an incorrect diagnosis because of the superimposition of anatomical structures. Therefore the computed tomography is recommended.

Keywords: Maxillary third molar. Displaced tooth. Accidental displacement. Intraoperative complications. Infratemporal space.

RESUMO

O deslocamento de um terceiro molar maxilar impactado na fossa infratemporal é frequentemente mencionada mas raramente relatada. Recuperação de tal um dente deslocado é difícil e requer encaminhamento urgente. O uso de exame radiográfico normal pode levar a um diagnóstico incorreto, devido à sobreposição das estruturas anatômicas. Muitas abordagens cirúrgicas têm sido sugeridos para recuperar tal um dente deslocado. O presente relato descreve um caso de deslocamento de um terceiro molar maxilar para a fossa infratemporal, tratado muitos dias após o seu deslocamento, já uma infecção local instalada. Não existe um tratamento universal aplicável a todos os casos de terceiros molares superiores deslocados à fossa infratemporal, e o cirurgião bucomaxilofacial pode selecionar qual o tratamento mais adequado para cada caso. O uso de exame radiográfico convencional pode levar a um diagnóstico incorreto devido à sobreposição das estruturas anatômicas. Portanto, a tomografia computadorizada é recomendada.

Descritores: Terceiro molar maxilar. Dente deslocado. Deslocamento acidental. Complicações intra-operatórias. Espaço infratemporal

INTRODUCTION

The surgical removal of impacted maxillary third molars is a procedure routinely carried out by dentists and oral surgeons, and it is usually associated with low rates of complications and morbidity.^{1,2} These complications frequently include fracture of the tuberosity, tooth root fracture, perforation of the maxillary sinus, prolapse of the buccal fat pad, and displacement of the roots or tooth into the maxillary sinus, all of which may be easily managed.^{2,3} Although the displacement of an entire tooth into the infratemporal fossa was once considered a rare complication,³ it has been reported more frequently in the literature in the last 4 decades.^{1,2,4-9}

Displacement of maxillary third molars into the infratemporal fossa is associated with lack of the basic principles of surgical technique such as poor anatomic knowledge, inadequate flap and decreased visibility during surgical extraction, incorrect extraction technique, distolingual angulated tooth, third molar crown above the level of the adjacent molar root apices, and limited bone distal to the third molar.^{6,9}

Maxillary third molars are usually displaced through the periosteum into the infratemporal fossa and located lateral to the lateral pterygoid plate and inferior to the lateral pterygoid muscle.⁹

The following report describes a case of displacement of a maxillary third molar into the infratemporal fossa, treated several days after displacement, with an installed local infection.

CASE REPORT

A healthy 15-year-old boy had undergone a surgical procedure, performed by his orthodontist, to remove the right maxillary third molar. The exodontia was unsuccessful and the tooth was dislodged. During luxation the tooth inadvertently slid distally under the mucoperiosteal flap and into the infratemporal fossa. The orthodontist "accompanied" the case for 10 days. After a formation of an abscess, he referred the patient to the Odilon Behrens Hospital, Belo Horizonte, Brazil.

The patient had a significant mouth opening limitation (Figure 1), and the mandibular movements were painful and restricted. His right cheek was swelled, red, warm and painful (Figure 2). Initially, a panoramic radiograph (Figure 3) and a telerradiograph (Figure 4) were made, which showed an incompletely formed right maxillary third molar dislocated in a superior and posterior direction. Because of his accentuated trismus, only the abscess was drained at the first moment. At the drainage process, one gauze was removed, probably left in the place by the orthodontist (Figure 5). An antibiotic therapy was began (Amoxicillin + Clavulanate 500mg 8/8h for 21 days). A computed tomography was requested and showed that the right maxillary third molar was displaced into the infratemporal fossa, located posterior to the posterior wall of the maxillary sinus, and lateral to the lateral pterygoid plate (Figure 6).

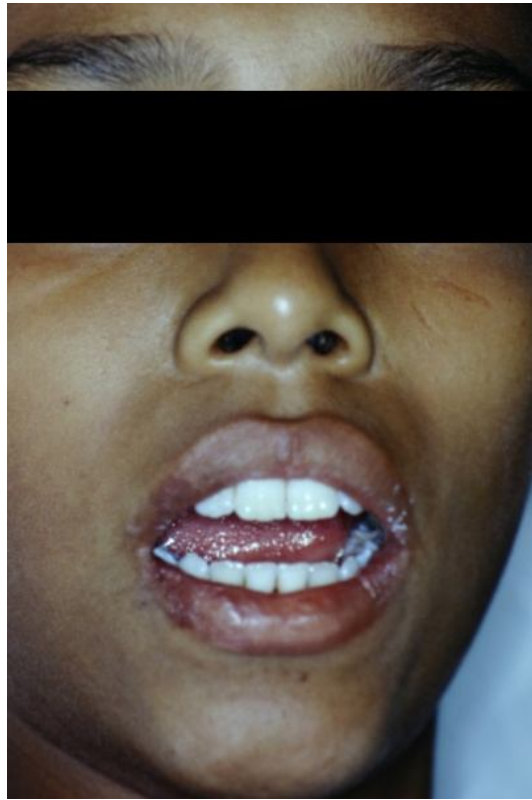


Figure 1 - Mouth opening limitation.



Figure 2 - Swelled and red right cheek.



Figure 3 - Panoramic radiograph showing a superior and posterior dislocation of incompletely formed third molar.



Figure 4 - Teleradiograph



Figure 5 - A gauze was removed at the abscess drainage process.



Figure 6 - Axial computed tomography showing the exact location of the tooth.

The tooth was retrieved via a transoral approach after 15 days under general anesthesia. The incision was extended distally to expose the posterolateral aspect of the maxillary wall. Blunt dissection was used to reach the infratemporal space. Judicious retraction indicated that the displaced tooth

was lateral to the pterygoid plates and in the infratemporal fossa. The tooth was then retrieved (Figure 7). The postoperative period was uneventful, and the patient recovered his mandibular movements 2 weeks after surgery.



Figure 7 - Retrieval of the tooth.

DISCUSSION

The exact anatomic location of the displaced tooth is difficult to determine, and this often presents an involved surgical problem.⁵ The radiographic examination may lead to an incorrect diagnosis, because anatomic structures at the region of the infratemporal fossa (and generally the maxillofacial region) are superimposed on radiographs.^{4,5} Therefore the computed tomography is recommended because it provides superior imaging of the region, allowing an exact and detailed location of the displaced tooth to be determined, as in our case here presented.

Clinically, a patient with a maxillary third molar displaced into the infratemporal fossa either is asymptomatic or has symptoms of

chronic infection, such as swelling and pain, limitation of mandibular motion because of the location of the dislodged tooth between the cocooned process and the posterolateral wall of the maxilla, or trismus due to fibrosis.^{1,4,9} In our case the patient had a swelled, red, warm and painful cheek, all classical signs of infection.

Access for surgical removal of the tooth from the infratemporal fossa not only is difficult to obtain but has the potential for morbidity because of the structures running through it.⁶ Despite that, a gauze was discovered in place in our patient at the abscess drainage, with may have contributed with the installation of a local infection. Some authors prefer to postpone the retrieval surgery for several weeks so that fibrous

tissue formation can immobilize the tooth. Exploration before the formation of a fibrous capsule may cause displacement of the tooth deeper toward the base of the skull.¹⁰ But delaying the retrieval procedure may increase the risk of infection, foreign-body reaction, and patient discomfort.^{1,4,9}

Many surgical approaches have been suggested to recover a maxillary third molar displaced into the infratemporal fossa, such as long incision in the buccal sulcus^{1-6,9} that can be associated with the hemicoronal¹ or coronal approach,⁷ Gillies's approach,² Caldwell-Luc approach through the maxillary sinus after removal of the whole posterior wall,⁴ and resection of the coronoid process.⁶

Some authors recommend urgent hospitalization and removal of the tooth under a general anesthetic with the aid of image intensification, but do not mention the specific surgical technique.⁶ In our case, the displaced tooth become accessible through a slightly extended intraoral incision similar to that used for usual access during maxillary third molar removal. If the clinical situation appears favorable, immediate removal can avoid subsequent hospitalization and the associated temporal and financial inconvenience for the patient. In this case, infection was controlled by aggressive antibiotic therapy before surgical intervention, and the patient recovered without any sequelae.

CONCLUSIONS

The use of normal radiographic examination may lead to an incorrect diagnosis because of the superimposition of anatomical structures. Therefore the computed tomography is recommended.

The decision of treatment to retrieve maxillary third molars displaced in the infratemporal fossa should be guided by the precise location of the tooth, the signs and symptoms presented by the patient, the surgeon's knowledge and skill, and the patient's wishes. If the clinical situation

appears favorable, immediate removal can avoid subsequent hospitalization and the associated temporal and financial inconvenience for the patient.

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