

Displacement of maxillary third molar into buccal space- A case report

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ABSTRACT

A few cases of accidental displacement of molars into adjacent anatomical spaces, such as the infratemporal fossa, the pterygomandibular space, the maxillary sinus, or the lateral pharyngeal space, during surgical interventions have been reported. This report describes the displacement of a maxillary third molar into the buccal space and discusses the anatomical implications.

Post-operative complications can be observed during surgical extraction of third molars, such as uncountable bleeding, tooth root fracture, fracture of the tuberosity or the buccal bone, perforation of the sinus membrane, and prolapse of the buccal fat pad.¹ Few cases of accidental teeth displacement in direction of bordering anatomical areas such as the maxillary sinus², infra-temporal fossa^{3,4,5}, pterygoid-mandibular space, lateral pharyngeal space, and the buccal space^{6,7} have rarely been reported. The buccal space is a deep fascial space that lies adjacent to the maxillary alveolar ridge and is enclosed by the buccinator muscle, the masseter muscle, the zygomaticus major and minor muscles, the superficial layer of the deep cervical fascia, the external and internal pterygoid muscles, and the mandible⁸. According to the literature, accidental displacement of a tooth into adjacent anatomical spaces such as the maxillary sinus, the infratemporal fossa, the lateral pharyngeal space, or the pterygomandibular space has rarely been reported.^{9,10,11}

CASE REPORT

A 17-year-old female was referred to the department of oral and maxillofacial surgery, D Y Patil School of Dentistry from the department of orthodontics for bilateral therapeutic extraction of maxillary third molars. The orthopantogram revealed incomplete root formation of the bilateral upper third molars.

While extracting , accidentally the right maxillary third molar tooth got displaced into the right buccal space. Due to patients incomppliance the displaced tooth was planned to be retrieved after few days.

The patient's temperature was 39 .8⁰C; she had malaise as well as local pain, swelling, and an elevated temperature in the buccal area. Her mouth opening was limited to 1 cm. An Orthopantogram showed the upper right maxillary molar positioned anterior to the coronoid notch, at the level of the lateral maxillary buttress. We decided to remove the displaced tooth after 2 weeks.



Fig 1 .OPG showing displaced maxillary molar into the buccal space

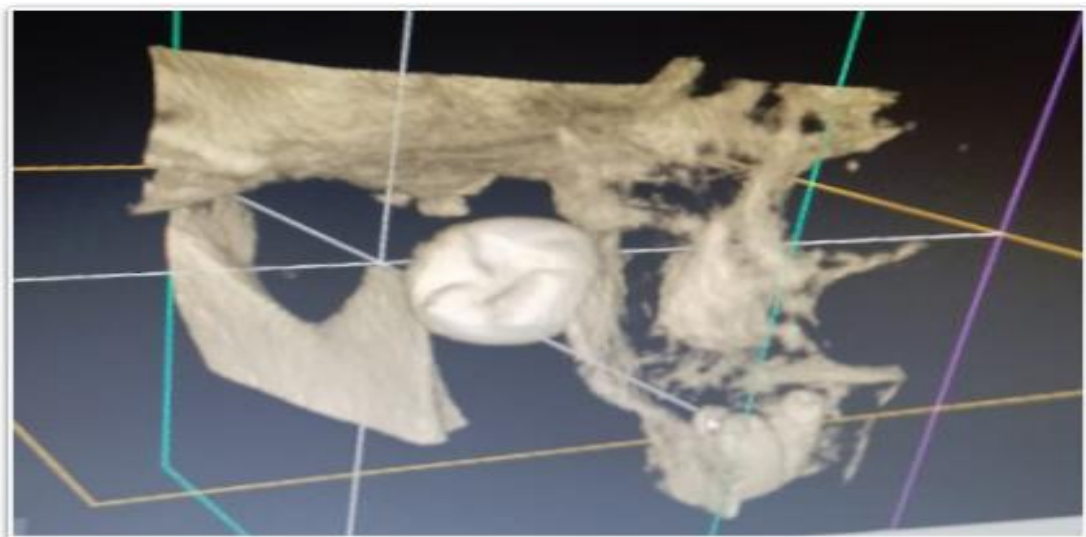


Fig 2 . 3D CBCT shows the displaced third molar just anterior to the coronoid

A cone beam computed tomography (CBCT) examination revealed that the displaced tooth had moved into the buccal space; it was stuck between the masseter and buccinator muscles .

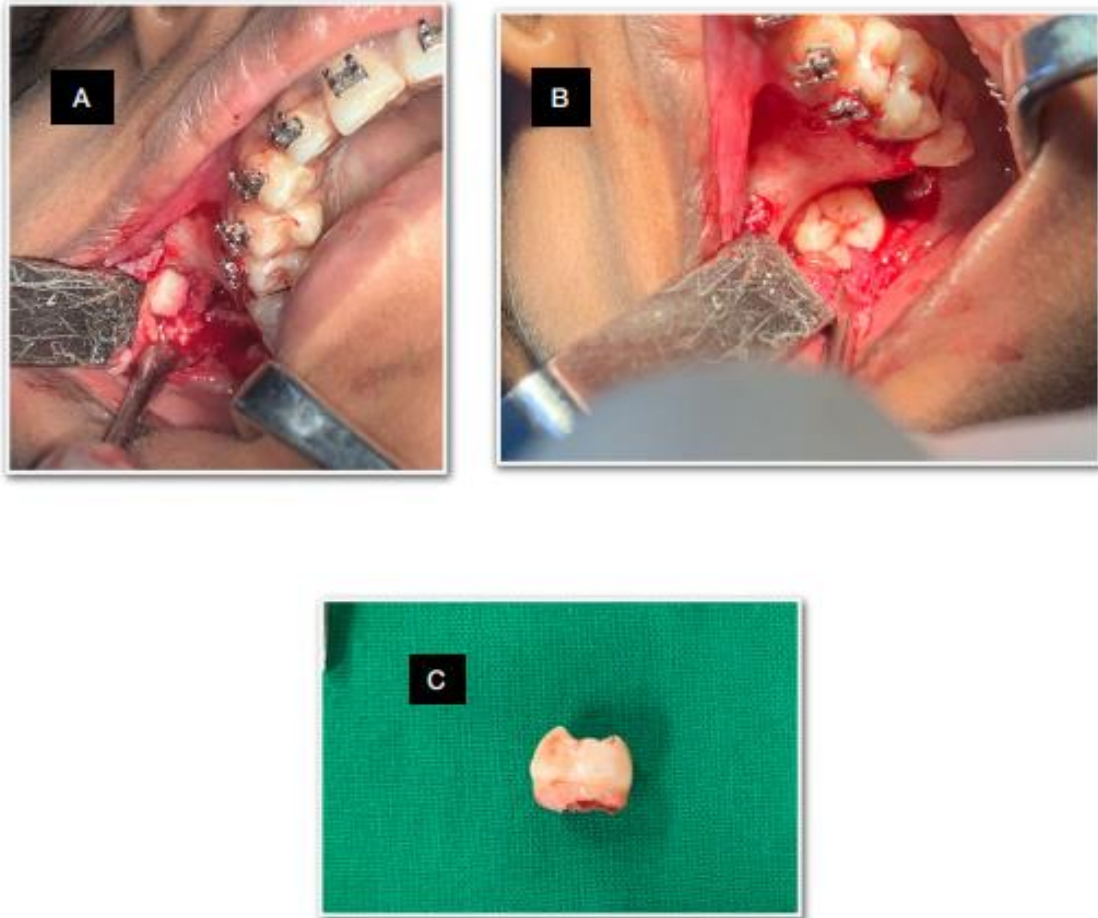


Fig 3 (A,B) Showing the position of displaced maxillary molar ,3C Retrieved maxillary third molar with incomplete root formation

3D CBCT images showed that the tooth was situated anterior and medial to the anterior margin of the ramus, with its crown level distal to the second molar and a long axis extending in a bucco-palatinal and media-lateral direction . The patient was administered antibiotic and analgesic/antipyretic therapy. After 2 weeks, her high temperature, swelling, and pain were all resolved and she showed no sign of difficulty in opening her mouth. The tooth was easily palpable in the buccal area during the intraoral examination . Under local anaesthesia, following a submucosal incision underneath the parotid papilla, the tooth was reached via blunt dissection. The crown of the tooth was rotated with the help of a periosteal elevator and orientated with the incision line. The most interesting part of the intervention was the separation of the fibrous connection between the periodontal structure on the surface of the tooth and the adipose tissue. After separating the tooth from the adipose tissue, the submucosal and mucosal tissues were sutured with 3.0 catgut . Postoperatively, non-steroid anti inflammatory agents, analgesic, and antibiotic drugs were given to the patient; she recovered without incident.

Discussion

Various complications resulting from maxillary third molar extraction have been mentioned in the literature, such as alveolar osteitis, fractures, postoperative infection, haemorrhage,

oro-antral communication, damage to adjacent teeth, and displaced teeth. Regarding the latter, the most common types of accidental displacement occur in the infratemporal fossa or the maxillary sinus. Excessive force when using elevators and improper surgical technique are cited as the most common causes of these iatrogenic displacements.^{1,10}

During the extraction, a maxillary third molar may displace into the buccal space as a result of the tooth being pushed by an elevator. Incorrect use of the elevator may lead to a fracture of the buccal wall, which consists mostly of trabecular bone with a thin cortical layer, and the pushed tooth may easily displace into the buccal space. If the bone height buccal and/or distal to the molar is inadequate, the risk increases.

The buccal space is bounded medially by the buccinator muscle and its fascia; laterally by the zygomaticus major and minor muscles, the risorius and superior levator labii muscles, and their investing fascia; anteriorly by the orbicularis oris and levator labii muscles; and posteriorly by the masseter muscle. Superior to the buccal space lies the temporal fossa, and the submandibular space is inferior. The posterior border of the buccal space is not completely separated from the masticator space since the parotidomasseteric fascia is incomplete in its medial course.

The buccinator muscle originates from the external surface of the alveolar process of the maxilla and inserts inferiorly on the alveolar process of the mandible and posteriorly onto the anterior border of the pterygo-maxillary ligament. Branches of the buccal nerve perforate the buccinator muscle and ramify in the mucous membranes of the cheek.¹² If the nerves are damaged by a displaced tooth, sensory disturbances may occur.

The buccal space is filled with adipose tissue, which assists muscular motion such as that needed to open and close the mouth. The thin and divergent roots of the maxillary third molars are vulnerable to fractures. A small part detached from the tooth or bone that is displaced into the buccal space can be easily pushed with the help of the adipose tissue and the muscular motion, and may travel to the adjacent deep spaces via the anatomical communications of the buccal space.⁶

The buccal division of the facial nerve and the buccal branch of the mandibular nerve are the main contents of the buccal space. Although no injury to any neural structure was reported, the displaced tooth has the potential to result in nerve damage. If the motor branches are injured by a displaced tooth, the muscle might not impart stiffness to the cheek, leading to infolding of the cheek, which might result in the buccal mucosa being bitten¹³. Motor function tests performed on the patient to assess any possible damage that might have been caused by the displaced tooth to the neural structures in question were negative. The facial artery and buccal artery, which course through the buccal space, the former to the nasolabial region and the latter to the masticator space, might also be injured. The buccal space includes minor salivary glands which might be infected by the displaced tooth and even result in exacerbated inflammation.

It is recommended that an open surgical procedure be performed instead of using elevators when the movement of the tooth in an unfavorable direction is recognized. There are reports

of ectopically displaced teeth left in situ for long periods without precipitating any pathologic symptoms due to the encapsulation of the displaced tooth by fibrous tissue. The architecture of the maxillary tuberosity features a trabecular pattern that is more vulnerable to fractures and depicts non-pathological perforations, which are not rare anatomical variations, so there is a risk of displacement into adjacent anatomical sites. If there is limited access, an open surgical procedure is preferable to blind elevation.

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