

ACCIDENTAL DISPLACEMENT OF MANDIBULAR THIRD MOLAR ROOT INTO THE SUBMANDIBULAR SPACE: A CASE REPORT

Mayur Vilas Limbhore, Viren S Patil, Shandilya Ramanojam, Vrushika Mahajan, Pallavi Rathi, Kisna Tadas

Department of Oral and Maxillofacial surgery

Bharati Vidyapeeth Dental College, Katraj, Pune, Maharashtra, India-411030

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ABSTRACT

Accidental displacement of an impacted third molar, either a crown, root piece, or the entire tooth, is a rare complication that occurs during surgical removal. The most common sites of dislodgment of an impacted mandibular third molar root are the submandibular, sublingual and pterygomandibular spaces. Removal of a displaced root from these spaces may be complex due to poor visualization and limited access. A thorough evaluation of all significant risk factors must be performed in advance to prevent complications. This case report reveals the management of accidental displaced mandibular third molar root into the submandibular space. An 39 years-old male patient underwent a third mandibular molar extraction. Accidentally, the mandibular right third molar distal root was displaced into the submandibular space, making necessary a second surgical step.

After 2 days awaiting an asymptomatic health status, the second surgical step was successfully performed using multislice CBCT as preoperative imaging guide.

The present case report highlights the clinical usefulness of CBCT in proper treatment of the patient.

KEYWORDS: Third molar root, Submandibular space, Intra oral technique, CBCT, Oral surgery.

INTRODUCTION

Third molar surgery is the most common procedure performed by an maxillofacial surgeons worldwide. Complications, such as pain, dry socket, swelling, paresthesia of the lingual or inferior alveolar nerve, bleeding and infection, occur in about 1% of third molar operations (1). Accidental displacement of some portion of the third molar into the sublingual, submandibular, or pterygomandibular space is a rare complication (2).

Cases with atypical anatomical considerations such as a distolingual tooth inclination or a thin lingual cortex, displacement can usually be attributed to the application of uncontrolled or excessive force, excessive manipulation, improper surgical planning, or poor clinical and/or radiological assessment (3).

Because the incidence of third molar displacement is very low, there are only a few case reports of this condition in the literature and there is little information about it in general. Here, we report a case of an accidentally displaced mandibular third molar root into submandibular space and the intraoral retrieval of the displaced distal root under local anaesthesia. Written informed consent for publication was been approved by the patient.

Address for correspondence

Dr. Mayur Vilas Limbhore

Department of Oral and Maxillofacial Surgery

Bharati Vidyapeeth Dental College,

Katraj, Pune, Maharashtra, India-411030

Email: dr.mayur.limbhore18@gmail.com

Contact no: +91-8552887325

CASE REPORT

A 39-year-old male patient was referred to the Oral and Maxillofacial Surgery unit of our institution with the chief complaint of impacted teeth in mandibular right posterior region. Patient complains of pain and swelling in mandibular right back teeth region. OPG revealed carious and impacted right third molar. Surgical removal was planned for the same under local anesthesia. Local anesthesia was given. Flap was raised. Buccal guttering followed by sectioning of the tooth was done. Crown was sectioned and removed. Mesial and distal root were sectioned. Mesial root was been removed following removal of mesial root, distal root was out of vision and could not been found. Immediate post operative intra oral periapical radiograph was taken. Root was not visible in it. Patient was recalled for follow up after 2 days. Again one intra oral periapical radiograph was taken. An intraoral periapical radiograph revealed a deep-seated root fragment positioned distally, away from the root tip of mandibular second molar (Fig. 1).

A CBCT scan performed to locate the precise position of the distal root that is (anterioposteriorly: approximately 8-9 mm behind the right second molar, superoinferior: 5mm above the floor of the mouth and

mediolateral lying horizontally below the level of inferior alveolar nerve) near the third molar region (Fig. 1,2) and a hyperdense fragment situated medial edge of the submandibular space (Fig. 3). We planned subsequent removal of the root under local anaesthesia and explained the procedure and potential complications to the patient.

Under local anesthesia, the displaced distal root was palpated with the index finger intra orally (operator's hand) and confirmed to be situated deep in the submandibular region. A lingual flap was raised mesially up to the second molar and distally parallel to external oblique ridge with great care until the root could be visualized with good illumination and support by assistant was given extraorally by digital pressure. Careful blunt dissection was performed to reach the desired position and with the help of small curved artery forceps, the root was secured and retrieved gently (Fig. 4,5).

The wound was irrigated with normal saline and closed with 3–0 silk sutures. An antibiotic and analgesic were prescribed for 5 days. Patient was recalled for suturing removal after 8 days. Healing was satisfactory with no complaints (Fig 6). There were no any possible post operative complication seen.

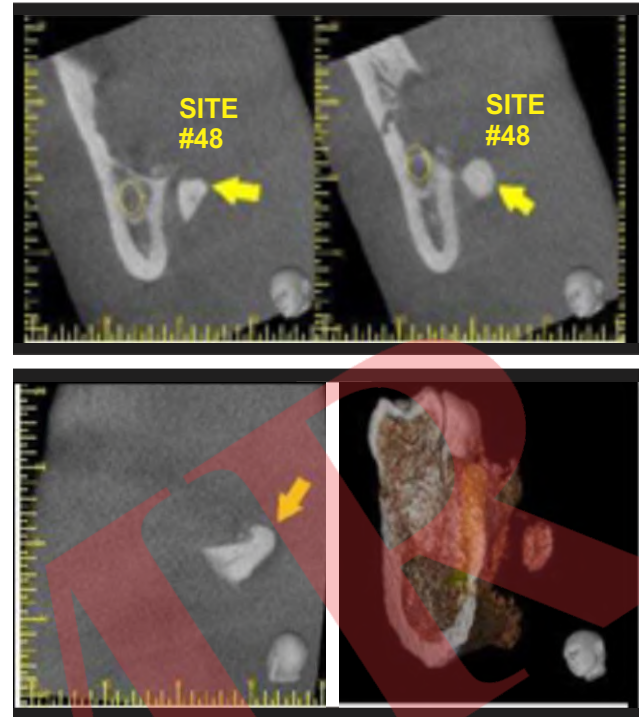


Fig 3: CBCT Showing Displaced Root. (Coronal Sections)



Fig 1: Intra Oral Periapical Radiograph Showing Displaced Root



Fig 4: Post Operation Intra Oral Photograph

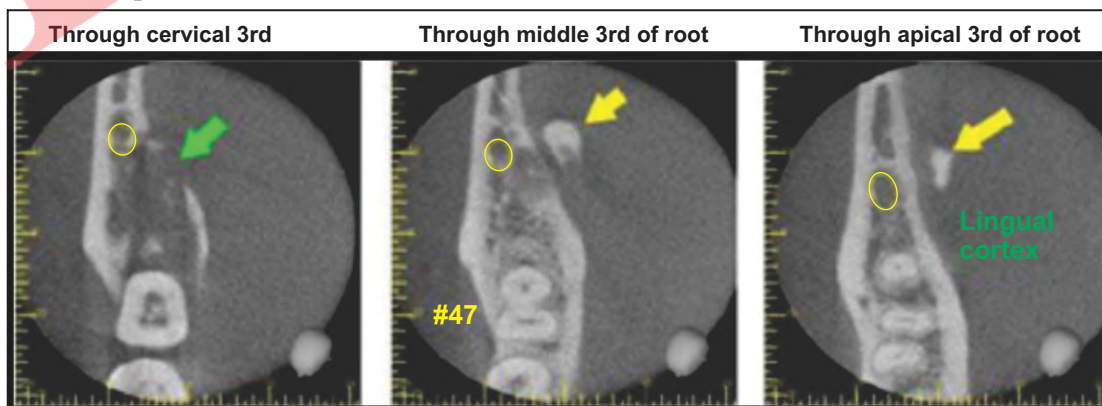


Fig 2: CBCT Showing Lingually Displaced Root. (Axial Sections)



Fig 5: Lingually Displaced Root Removed



Fig 6: Post-operative Photograph After 8 Days

DISCUSSION

Howe presented the first case of removal of a displaced tooth from the submandibular space in 1958. Since that time, there have been some case reports of displaced tooth fragments in the English literature, but displacement of a root fragment into the submandibular space has been described only rarely.³ The accidental displacement of a mandibular third molar root or root fragment during extraction is rare, nevertheless a well-recognized potential complication included in textbooks (4). This complication is considered to be associated with various risk factors, including patient age, tooth position, the presence of thin lingual cortex or with perforation, excessive or uncontrolled force specially in lingually placed tooth

or root, lack of operator expertise and poor clinical and radiological assessment (5). Removal of third molars at a young age before the roots are fully developed can minimize the risk of displacement (3).

The symptoms of a displaced root depend upon its size, location, and whether or not there is an associated infection. Some patients are symptom-free, whereas others experience pain, swelling, and trismus in the immediate postoperative period. According to a removal delay of greater than 24 hours may result in an inflammatory response that can lead to intense pain, swelling, trismus, infection and further migration of the root or root fracture into even deep spaces, producing a foreign body reaction. Our patient complained about pain, swelling and trismus.

A displaced root fragment should be removed promptly upon proper localization with radiographs or a CBCT scan. Manual palpation is also a useful localization method. CBCT scanning is considered to be the most appropriate technique with which to determine a displaced root fragment's exact size and location. CBCT, if available, can provide the added advantage of low-radiation exposure and three-dimensional views (6). We found CBCT scan was competent enough for locating the displaced root.

If CT is not available, panoramic and occlusal radiographs can be used. Several approaches have been described for the intraoral removal of displaced dental root fragments in the literature. The intraoral approach under local anaesthesia is the simplest and least invasive technique for removal of displaced root pieces in the soft tissue of the lingual pouch. Local anaesthesia is used commonly because it is considered to be simple and safe and it avoids complications related to the use general anaesthesia, which is relatively costly and may involve hospital admission. In the present case, adequate visualization was achieved by way of a lingual mucoperiosteal flap raised from second molar site. However, this approach may not provide adequate visibility and access in other situations. When a fragment is displaced within deep spaces, an extraoral approach may be indicated (7) We found that, CBCT is the best diagnostic aid for localting lingually displaced root. Also palpating displaced root lingually with the index finger is also best method for locating. To decrease the risk of complications, a thorough treatment plan should be developed before proceeding with removal.

In the oral cavity, the mylohyoid muscle is the key structure that separates the sublingual from the submandibular spaces. The sublingual space is located superior to the mylohyoid and on either side of the midline genioglossus geniohyoid complex. The

contents of this space are the sublingual gland, Wharton's duct, a small superior portion of the submandibular gland, the lingual artery and vein, the lingual nerve, and the hyoglossus muscle. On the other hand, the submandibular space spreads inferior to the mylohyoid and superior to the fascia lining the platysma. The structures within this space include the submandibular gland, submandibular and submental lymph nodes, the facial artery and vein, the hypoglossal nerve, and the anterior belly of the digastric muscle.

Since there are no posterior fascial borders limiting the sublingual and submandibular spaces, communication is free between these spaces at the posterior margin of the mylohyoid. In addition, no fascial border separates these spaces from the inferior parapharyngeal space. Thus, there is free communication among these three spaces, allowing displaced root piece in the sublingual or submandibular space to extend into the parapharyngeal space (8-9).

In summary, the present case report describes the case of a displaced third molar distal root in the submandibular space. A CBCT scan provided accurate localization of the root, which was then removed successfully via an intraoral approach under local anaesthesia by carefully reflecting a deep lingual flap up to the submandibular region. There were no postoperative complications (10-12).

CONCLUSION

This case report present comprehensive management of an accidentally displaced mandibular third molar distal root in submandibular region under local anesthesia. Adequate clinical and radiological assessment should be performed before proceeding with third molar surgery. If a root becomes displaced into a deep space, it is very important to determine the exact location by CBCT or high-quality radiography. Appropriate knowledge about the surgical anatomy helps in locating displaced root. An experienced surgeon should be consulted to avoid any inadvertent complications.

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