



Case report

Transplantation of an impacted wisdom tooth into the site of the maxillary first molar

Transplantation d'une dent de sagesse incluse au niveau du site de la première molaire maxillaire

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Résumé

Introduction : La transplantation dentaire est une technique chirurgicale permettant de placer une dent ou un germe dentaire dans une alvéole. L'objectif de cette étude était de décrire la transplantation d'une dent de sagesse maxillaire chez un jeune adulte.

Cas clinique : Ce cas concerne un incident d'évolution de la dent 24 bis chez un patient de 18 ans. L'examen endobuccal a révélé une mobilité de grade 3 et une sensibilité à la percussion axiale de la dent 23. L'examen par Cone Beam a mis en évidence l'inclusion de la dent 28, une résorption radiculaire de la dent 26 et une position mésio-oblique de la dent 24 bis, située entre les racines vestibulaires et la racine palatine de la dent 26.

La décision thérapeutique a consisté en l'extraction des dents 26, 24 bis et 28 sous anesthésie locale, suivie de la transplantation de la dent 28 dans l'alvéole de la dent 26. Les suites opératoires ont été simples, avec une cicatrisation muqueuse favorable à 28 jours et, à deux mois, l'absence d'image ostéolytique autour de la dent transplantée.

Conclusion : La transplantation dentaire est une intervention chirurgicale réalisable par un omnipraticien, constituant une alternative aux solutions prothétiques conventionnelles. Le taux de survie à long terme est favorable chez les patients jeunes. Toutefois, il existe un risque de perte du transplant en raison d'une résorption radiculaire, d'une résorption osseuse ou d'une ankylose.

Mots-clés : Transplantation ; Dents incluses ; Maxillaire ; Dents surnuméraires.

Abstract

Introduction: Dental transplantation is a surgical technique that allows a tooth or a tooth germ to be placed into an alveolar cavity. The objective of this study was to describe dental transplantation of a maxillary wisdom tooth in a young adult.

Clinical case: This case study involved a mechanical evolution accident of tooth 24 bis, in an 18-year-old. Intraoral examination, tooth 23 presented grade 3 mobility and painful axial percussion. Cone beam exam showed impaction of tooth 28, root resorption of tooth 26, and the mesial oblique position of tooth 24 bis between vestibular roots and palatal root of tooth 26.

The treatment decision was the extraction of teeth 26, 24 bis and 28 under local anesthesia followed by transplantation of tooth 28 to the extraction site of tooth 26. Post-operative follow-up was unremarkable, showing favorable mucosal healing at day 28 and at 2 months by the absence of osteolytic image around the transplant.

Conclusion: Dental transplantation is a surgical procedure that can be performed by a general practitioner as an alternative to conventional prosthetics. Long term survival is favorable in young patients. However, there is a risk of losing the transplant due to root resorption, bone resorption or ankylosis.

Keywords: Transplantation; Impacted teeth; Maxillary bone; Supernumerary teeth.

Introduction

Dental transplantation is a surgical technique that allows a tooth or a tooth germ to be placed into a prepared alveolar cavity [1]. The objective of this technique is to bring an impacted tooth into a functional position, which cannot be freed by orthopedic or surgical-orthodontic methods [2]. Transplantation appears as

a solution for functional occlusal rehabilitation as an alternative to conventional prosthetics. The prevalence of dental impactions is dominated by mandibular and maxillary wisdom teeth followed by maxillary canines and premolars [3]. Supernumerary teeth, which are an anomaly in number are prone to impactions. Several therapeutic options exist for dental impaction such as doing nothing, extraction, orthodontic traction, and reimplantation or transplantation. The goal of this study was to describe the technique of dental transplantation of a maxillary wisdom tooth in a young adult.

Case report

We received an 18-year-old patient for a consultation, who was referred to the oral surgery department of the Consultation and Odonto-Stomatology Treatment Center (CCTOS) for a swelling on the left cheek. This recurring swelling had started about a year ago and would improve with pre-medication from his dentist, which included amoxicillin, paracetamol, and a chlorhexidine-based mouthwash. His medical and surgical history was unremarkable.

Intraoral examination showed, on inspection, no inflammation of the vestibular and palatal mucosa and absence of wisdom teeth (Figure 1). Palpation of the vestibular area near the molars in quadrant 2 was painful. Tooth 26 showed type 3 mobility and painful axial percussion. At the end of the clinical assessment, we suggested as a diagnostic hypothesis an odontogenic cyst or an odontoma.

A radiographic exam was performed to confirm the diagnosis. Initially, a dental panoramic X-ray was done, confirming the impaction of all 4 wisdom teeth, an X-ray clarity of the maxillary sinuses showing an incidental finding of an impacted extra tooth, the 24 bis, in an oblique mesial position in contact with the roots of teeth 25, 26, and 27 (Figure 2). A cone beam scan was requested to evaluate the three-dimensional relationships of the impacted 24 bis with the neighboring teeth and the maxillary sinus (Figure 3). The sagittal and axial slices showed that the 24 bis

was closed to the floor of the left maxillary sinus and positioned between the buccal roots and palatal root of tooth 26. Additionally, root resorption of tooth 26 was observed.

At the end of the clinical and radiographic assessment, the diagnostic orientation suggested a mechanical evolution accident of tooth 24 bis associated with the misalignment of the 4 impacted wisdom teeth.

The overall treatment plan was the extraction of the 4 wisdom teeth. Specifically, we started with quadrant 2, which was the reason for the consultation. First, the extraction of teeth 26, 24 bis, and 28 under local anesthesia, followed by the transplantation of tooth 28 into the extraction site of tooth 26. An intramuscular incision from tooth 24 to the left tuberosity area, along with a vertical release mesial to tooth 24, was performed. Next, the mucoperiosteal detachment and the extraction of tooth 26 (Figure 4). The extraction of tooth 24 bis started with the crown section using a Zekrya surgical bur mounted on a turbine under abundant irrigation, then the removal of the crown and root fragments using a curved syndesmotome (Figure 5). After that, we performed a vestibular osteotomy

in view of tooth 28 under abundant irrigation with a round bur mounted on a hand piece before extracting tooth 28, which was immediately transplanted while preserving pulp vitality at the extraction site of teeth 26 and 24 bis (Figure 6). Finally, a flexible splint using fluid composite and 3/10th stainless steel wire was placed for a month on the palatal side of teeth 24 to 27.

A post-operative medical prescription had been given, consisting of an antibiotic (Amoxicillin 1g: twice a day for 7 days), a painkiller (Tramadol 37.5 mg and paracetamol 325 mg every 6 hours for 5 days), a steroidal anti-inflammatory (Prednisolone 60mg once a day for 3 days), and a mouth antiseptic (Chlorhexidine 0.12% mouthwash 3 times a day for 7 days). The post-operative course was without issue. At day 14, the stitches were removed, and the splint was taken out at day 28, showing good mucosal healing (Figure 7). A radiographic check at 2 months confirmed the integration of the transplant as well as a favorable progression of bone healing in the tuberosity.



Figure 1 : Intraoral view showing presence of tooth 26 and absence of 28

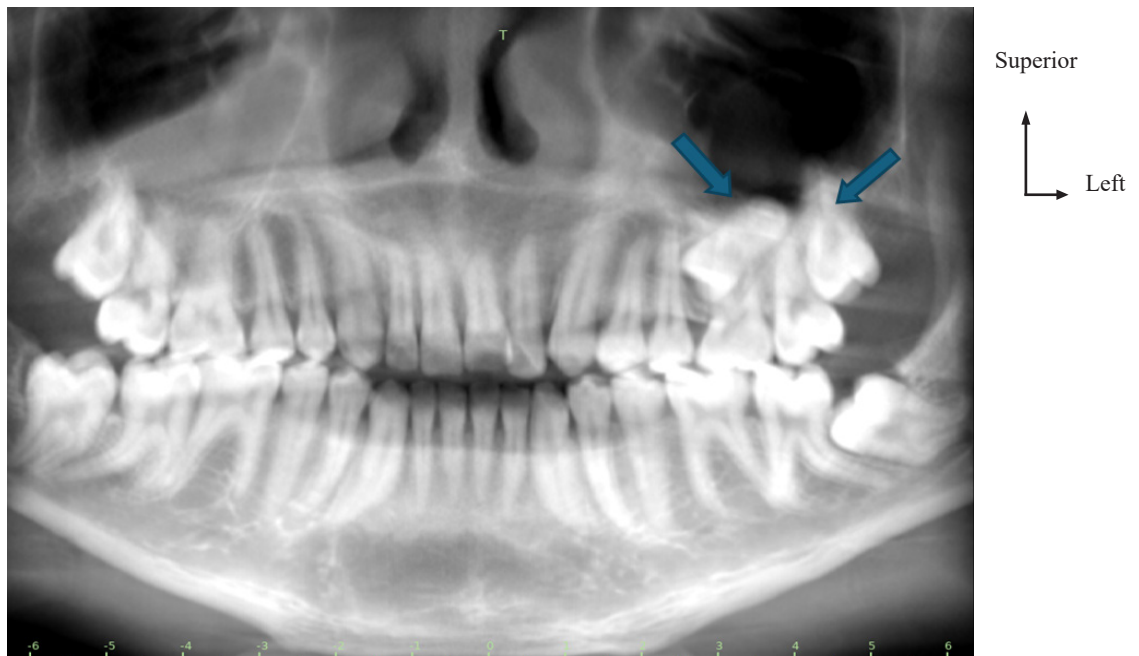


Figure 2: Dental panoramic X-ray showing teeth 24 bis and 28 impacted

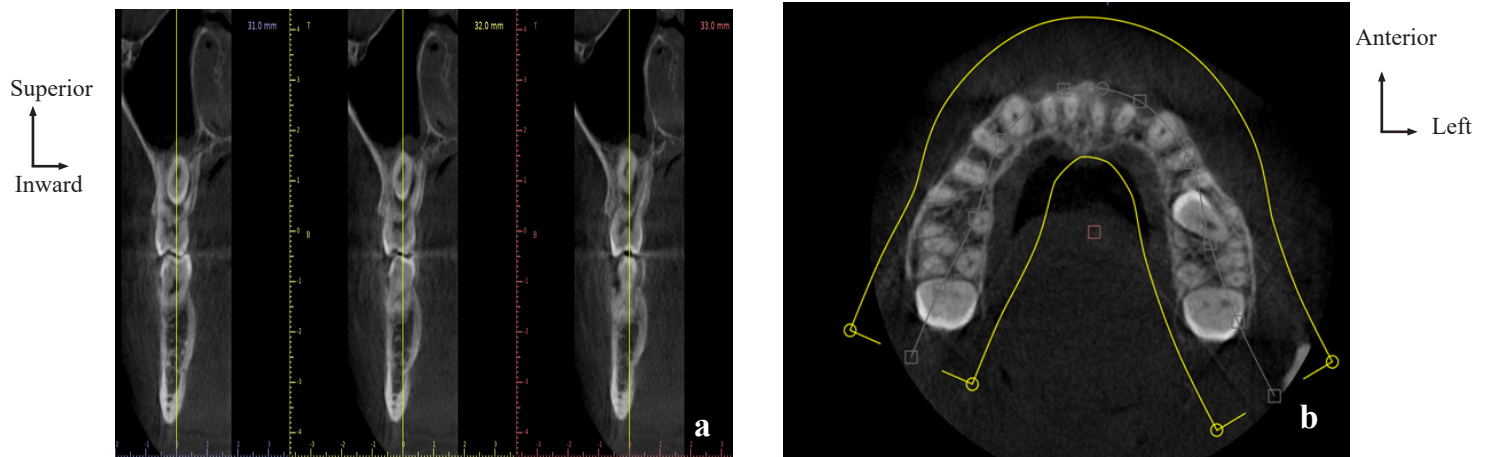


Figure 3: Sagittal (a) and axial (b) slices of a cone beam showing the impacted 24 located between the vestibular roots and the palatal root of 26.



Figure 4: Intraoral view showing the extraction tooth 26

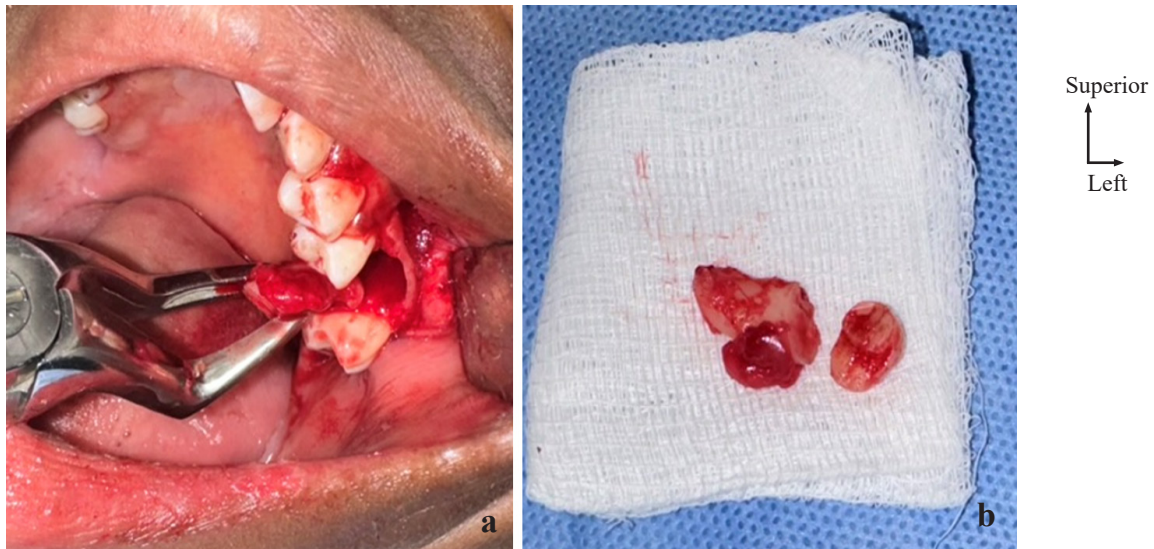


Figure 5: Intraoral view of the extraction of 24 bis (a) and of the surgical specimen (b)

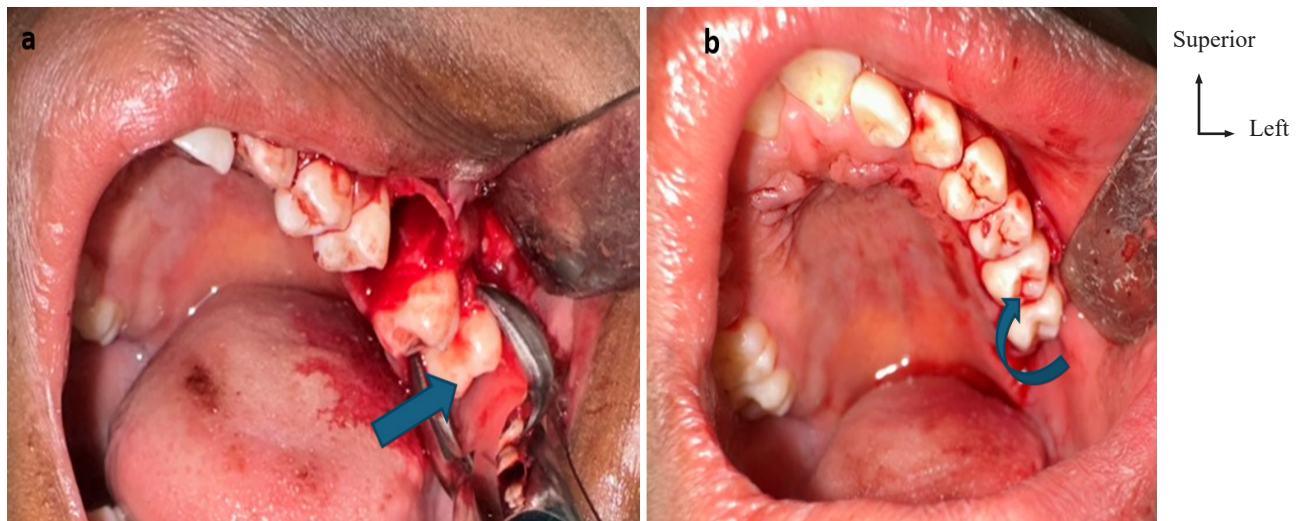


Figure 6: Intraoral view of the extraction of tooth 28 (a) and the transplantation of tooth 28 into the prepared site after the extraction of teeth 26 and 24 bis impacted (b).



Figure 7: Intraoral view of the transplant at day 28.



Figure 8: Follow-up dental panoramic X-ray at 2 months.

Discussion

Our work showed the transplantation of the impacted tooth 28 to the avulsion site of the 26 in an 18-year-old adult. The postoperative course was without complications, and the clinical and radiographic follow-up at 2 months showed good integration of the transplant.

The transplantation procedure begins with a thorough clinical examination to choose the right timing and to obtain the patient's informed consent. The technique is carried out in several steps: First, the atraumatic harvesting of the transplant; next, the preparation of the recipient site and placement of the transplant into the prepared socket followed by stabilization; and finally, postoperative follow-up, both clinical and radiographic.

The choice of the tooth to be transplanted focuses on a healthy, non-functional tooth on the arch or impacted, usually wisdom teeth [4] used to replace the first and second molars of the same half-arch [5]. This is the case in our study where we used the impacted tooth 28 to replace the 26. The transplantation is done at the site of a tooth destined for extraction [6]. Indeed, in our study, the tooth 26 was mobile and showed root resorption. Furthermore, the vestibular approach for the extraction of the impacted 24 bis in an oblique position between the roots of 26 would damage the external cortical, which would compromise the success of the transplantation. Hence the decision for an atraumatic extraction of 26 with preservation of the external and palatal cortical. Better periodontal healing depends on the preservation of the periodontal ligament fibers during the harvesting of the transplant [7]. In our work, we performed the atraumatic extraction of tooth 28 and immediately transplanted it to the extraction site of tooth 26 to avoid extra-oral root dehydration, which would compromise the survival of the periodontal cells. Stabilizing the transplant is essential for better consolidation, but root canal treatment is not systematic if the outcome is favorable [8]. The transplant was placed in slight under-occlusion and then sutured with separate stitches. Since the clinical and radiographic follow-up at 1 and 2 months was favorable, we did not perform

root canal treatment on the transplant. Long-term follow-up of our clinical case would help confirm the success of this technique, especially in young adults, where the success rate of transplantation is high [9]. Several prosthetic treatment options are available for managing single-tooth missing, including dental implants and standard bridges. The main disadvantage of these techniques is that they cannot be performed until the end of craniofacial growth, hence the interest in dental transplantation which is performed in young patients who are still growing, with the advantage of preserving masticatory function, proprioception, and adjacent teeth. The transplantation technique can be recommended as an alternative to prosthetics but is not without risks of failure, such as root resorption leading to transplant loss [10], which is why it's important to strictly follow the indications and surgical steps.

Conclusion

Dental transplantation is a treatment option that can be performed by a general dentist, aiming to place a natural tooth into the dental arch, with the advantage of being less expensive compared to prosthetics. In the described clinical case, tooth 28 was transplanted to the site of tooth 26, and the postoperative period was without complication. The long-term survival prognosis for transplantation of impacted maxillary wisdom teeth is favorable, especially in young patients. However, there is still a risk of transplant loss, linked to root or bone resorption or ankylosis.

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