INTERDISCIPLINARY MANAGEMENT OF DENTAL IMPLANT PATIENT: A CASE REPORT

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Maxillary molars can over-erupt when their antagonists are lost and there are no replacements. When the opposing molars severely extrude into the edentulous space, it is difficult to replace the missing teeth with either fixed or removable prostheses. We present the following case report, providing a solution for this type of problem. A two-stage posterior subapical osteotomy was used to reestablish the intermaxillary space. Following orthodontic treatment and implant placement, the patient regained occlusal harmony and normal masticatory function.

Key Words: posterior subapical osteotomy, dental implant (Kaohsiung J Med Sci 2004;20:415–8)

When a tooth is lost and no replacement is provided, the opposing teeth may erupt beyond the occlusal plane in over- or supraeruption. Supraeruption of the right maxillary molars and a concomitant drop in the alveolar ridge results in loss of the intermaxillary space. The lost intermaxillary space must be regained before prosthetic reconstruction can proceed [1,2]. Efforts to restore the proper plane of occlusion by endodontic therapy and reduction of crown height may also provide less-than-desired results. An adequate solution of choice is to perform a posterior subapical osteotomy (PSO) [3]. In the presented case, PSO superiorly repositioned the extruded segment and resulted in sufficient intermaxillary space for prosthetic restoration. The PSO was performed using a two-stage osteotomy. The teeth in the post-surgical segment were orthodontically aligned to meet predetermined prosthetic requirements. Through use of combined surgery, orthodontics, and implant prosthesis, the severe prosthodontic problem in this patient was successfully treated.

CASE PRESENTATION

A 22-year-old woman was referred to our department by her general dentist for prosthodontic consultation. She desired to have her edentulous right mandible restored with implant placement. It was impossible to restore the patient’s mandibular right sextant with either a fixed or removable prosthesis due to a lack of intermaxillary space (Figure 1). Intraoral and roentgenographic examinations revealed severe extrusion of the maxillary right premolar and molars, with deficient class II Kennedy classification of the edentulous posterior right mandible and its width (Figure 2). Tracing her history, we found that the mandibular right first and second molars had been extracted due to severe caries 8 years previously, and no restoration had been performed following the extractions. The mandibular right second premolars and first and second molars had been removed long before, causing the maxillary molars to extrude to near the mandibular edentulous ridge, and the second maxillary molar to drift buccally. There was not enough space to replace the missing mandibular teeth by means of any conventional prosthetic restoration, and the edentulous ridge was deficient in width. The following treatment plan was recommended: PSO under general anesthesia, autogenous block graft, and the insertion of
After expressing financial and time concerns, she accepted a two-stage PSO (including second premolar extraction) under local anesthesia and placement of two implants without an autogenous block graft. Therefore, we initially had to reestablish an adequate intermaxillary space. The first stage involved creating a full-thickness mucoperiosteal palatal flap and extracting the maxillary right second premolar. An anterior vertical bony incision was made directly at the socket of the maxillary right second premolar. A posterior bony incision was made posterior to the maxillary right second molar, and these vertical incisions were connected by a horizontal bony incision, which was superior to the palatal roots and penetrated the maxillary antrum. The second stage was delayed for 6 weeks. A buccal mucoperiosteal flap was reflected, and bony incisions were made to free a segment of the alveolar process (Figure 3). The bony section, containing both maxillary right molars, was impacted superiorly into the desired position. A prefabricated splint was ligated to the remaining teeth to stabilize the segment for 8 weeks.

During the maxillary fixation period, two implants (3i, 3.25 × 10 mm and 3.75 × 13 mm) and guided bone regeneration (autogenous bone from an implant osteotomy using bone collection devices) were inserted in the edentulous right posterior mandible. After 8 weeks, the surgical splint was removed and orthodontic treatment was performed to correct minor irregularities of the maxillary teeth. Completion of orthodontic treatment and implant prosthesis occurred 9 months after the first operation (Figure 4).

**DISCUSSION**

Not infrequently, dentists are faced with a multitude of problems regarding the proper replacement of one or several
missing teeth. Early loss of mandibular molars is the most common cause of extruded maxillary molars. In severe cases, the lost antagonist cannot be restored because of interference by the over-erupted molars. Grinding the crown is a quick way to correct an over-erupted molar, but if the enamel loss could extend as far as the dentin, then the tooth should first be treated endodontically. Use of conventional fixed appliances to intrude the molar may lead to undesirable extrusion of the anchorage units and can possibly lengthen treatment time [4]. When the supraeruption is extreme, or there is more than a supraeruption, orthodontic intrusion is very difficult and surgical intervention is inevitable.

PSO may be used to expand, narrow, and intrude the maxillary arch unilaterally or bilaterally. PSO can correct excessive eruption of posterior maxillary teeth as a result of missing mandibular posterior teeth. It can be achieved in a one-stage operation under general anesthesia or a two-stage operation under local anesthesia. In the two-stage operation, the palatal side is completed first, and the second stage is delayed for 3 to 4 weeks to ensure reestablishment of a blood supply. However, the second stage was delayed for 6 weeks in this case for the patient’s own reasons. After the buccal side was sectioned, a prefabricated cast splint was used to ensure proper union and to prevent a relapse. Bell and Levy clearly showed that the vitality of the bone and teeth will be maintained, provided that soft-tissue attachment remains at all times [5]. If the vitality of the teeth is maintained, then endodontic therapy is not necessary.

Long-term unrestored edentulous areas may lead to supraeruption, drifting, tipping, and rotation of neighboring and opposing teeth [6]. Therefore, postsurgical orthodontic treatment was performed to align the teeth and create an adequate occlusal plane. For this patient, repositioning the posterior maxilla and arranging the misaligned teeth facilitated development of occlusal harmony restored by implants.

This report presents a successful two-stage PSO method for treatment of severe supraeruption of the posterior right maxilla. Following orthodontic treatment and implant placement, the patient regained occlusal harmony and normal masticatory function.

**References**

應用人工植牙之整合性治療 — 病例報告

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過早喪失的下顎臼齒，不只會造成鄰接牙傾斜或不當的位移，也會使上顎對咬牙產生
護度萌發，更嚴重進帶齒槽骨向下生長，使得後牙區顎間垂直距離不足；因此如何去
完成合適之補綴物便是一大挑戰。本病例為二十二歲女性，因為有上述的困難，以至
於不能製作補綴物。經分析擬定其治療計劃為：上顎後牙區以門診手術進行二階段的
後上顎根尖截骨術 (posterior subapical osteotomy)，增加顎間垂直距離，並以局
部矯正裝置改正咬合平面，最後利用人工植牙方式來製作補綴物，來恢復病患的咀嚼
功能。

關鍵詞：後上顎根尖截骨術，人工植牙

(高雄醫誌 2004;20:415-8)