Case Report
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Rehabilitation with "Calibrated Alveolectomy" for Extruded Alveolus on Maxillary Quadrant

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Abstract

Loss of teeth leads to functional and esthetic problems within the oral cavity. The opposing teeth move into the edentulous space, if not treated in timely manner. Many a times loss of intermaxillary space due to long term edentulism results in compromised prosthetic outcome. Decreased interocclusal spaces can be a challenging task for prosthetic management of partial edentulism. In this kind of cases regaining the lost interocclusal space is the prime requirement for successful prosthetic rehabilitation. Several procedures are used to increase vertical dimension. In this case report, the author presents a special surgical technique, "calibrated alveolectomy", and discussed about regaining adequate inter arch space for implant supported prosthesis.

Keywords: Calibrated Alveolectomy, Interocclusal Space, Implant

1. Introduction

Supraeruption of teeth may result when the opposing teeth are lost and if no replacement has been provided, then it will lead the particular teeth to erupt beyond occlusal plane. This evokes functional and esthetic problems in oral cavity. Before proceeding into prosthetic rehabilitation, regaining the lost intermaxillary space is must[1]. Many a times, loss of interocclusal space results in compromised treatment[2]. Limited interrocclusal space in partially edentulous patient may be challenging for prosthetic rehabilitation[3]. In such scenario, restoring the lost intermaxillary space is the requisite for proper prosthetic rehabilitation of these cases. Several approaches have been proposed for the improvement of interocclusal space such as: No treatment, Restoration with shortened prosthesis, orthodontic measures, alveoloplasty or reduction of extruded teeth etc.[4]. A combination of clinical situations with the desires of patients is the clinical factors in selecting the appropriate treatment plan[5]. In this case report the author presents a case of "calibrated alveolectomy" to regain adequate inter arch space for prosthetic rehabilitation has been discussed.

2. Case Report

50-year-old female patient reported to hospital with chief complaint of missing teeth in relation to upper right back tooth since 18 months. On clinical examination there was missing teeth in relation to upper right and left premolars and molars. She had implant in right lower molar region, which was implanted 12 months back, for which she failed to get prosthesis. In addition to this, right maxillary alveolus was extruded which was preventing the prosthetic rehabilitation (Figure 1).

Treatment plan involving reestablishment of lost interocclusal space was planned (Figure 2). Radiographic examination was done by taking panoramic radiograph (Figures 3 and 4) and CBCT. Quantity and quality of bone are assessed. It was planned to rehabilitate the extruded posterior maxillary alveolar segment by "calibrated alveolectomy".

Under local anesthesia, a full thickness mucoperiosteal flap was reflected. Using Castroviejo caliper 5mm bone was calculated and using 701 bur punch holes created and holes are joined in linear fashion, planned alveolectomy done from 1st premolar to 1st molar region. Achieved

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Figure 1. Note the reduced interarch space noted in the right side of patient's mouth. No place for the rehabilitation of maxillary and mandibular teeth.



Figure 2. Bone removed using chisel and mallet.

interocclusal space was confirmed clinically. A 5D×10L and 4.2D×11.5L implants placed simultaneously in 1st molar and 1st premolar region respectively (Figure 3). Closure of mucopreiosteal flap done. Post-operative OPG was taken (Figure 4) after a week patient was rehabilitated with interim prosthesis for maintenance of interocclusal space for about 3 months later the final prosthesis was made.

3. Discussion

Edentulism is a condition secondary to infection or trauma to teeth[6]. Loss of interocclusal space occurs, when there is a teeth loss and if no appropriate in time replacement is provided in the place of lost teeth, in over or concomitant drop in alveolar ridge takes place in due time if the opposing tooth may supraerupt beyond occlusal plane[1]. To attain predictable outcome and successful results in patients, including in edentulous ones, precise diagnosis and treatment planning are utmost important[7]. Using dental implants to replace missing teeth has become the

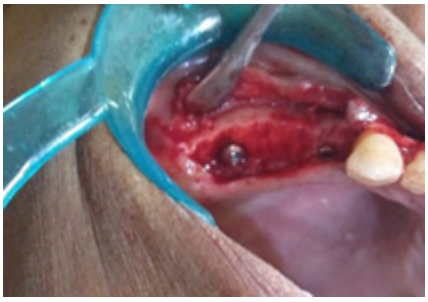


Figure 3. 4.2D10L and 5D10L implants placed.



Figure 4. Post op showing reduction in extruded alveolus with implants in place.

standard care for edentulous spaces[4]. In the present case, loss of interocclusal space due to extruded posterior right maxillary alveolar segment being prime challenge for rehabilitating with implant supported prosthesis, loss of cortical bone is the main adverse outcome of alveoloplasty, although it has advantage of increasing the obtainable restorative space without directly compromising appropriate VDO, esthetics or phonetics[7].

Of various surgical options conducive for rectifying supraerupted maxillary segment that include a) vertical reduction of alveolar ridge excess b) superior positioning of posterior segment by lefort 1 osteotomy c) posterior maxillary segmental osteotomy and d) extraction of supra erupted teeth. 11 Implant placement may not be performed along with sinus elevation though it is a predictable procedure as it may require a prolonged healing upto 9 months[8]. Segmental osteotomy is the most aggressive treatment option, but it could be considered as an alternative option for severe extrusion[9]. In segmental lefort 1 osteotomy tough tasks are present in domain of planning for surgery and good surgical technique. High percentage of postoperative relapse and frank aseptic necrosis of mobilized segments were serious complications noted[10]. It has been cited as a serious problem in reduction of nasal airway space resulting from superior repositioning by lefort 1 osteotomy[11].

The osteotomy and sinus membrane elevation can be performed in a safe way by piezosurgery[9]. The team approach of at least a prosthodontist and an oral and maxillofacial surgeon involved in all phases of treatment ensures better treatment outcome. The patient's complete commitment is also absolutely necessary.

Present trends affirm "selective stent guided" approach to site specific bone recon touring, thus removing bony abnormalities that interfere with prosthetic rehabilitation or insertion, hence a guide template is critically important for estimation of amount of bone reduction during surgical procedure. When large amount of bone needs to be removed, use of surgical guide may be needed in other surgical procedure[7].

For obtaining optimal results in these kinds of cases one should keep in mind that not only considering minimal invasive techniques but also the prosthetic aspects like the function, esthetics and harmony of occlusion and long term outcomes of prosthesis. The surgeon should always bear this in mind that procedures and techniques used should able to cater to the needs of the patient, to make it least traumatic and lessen waiting time for the patients, especially in these type of cases. Compared to other complicated and time taking procedures mentioned, the procedure here opted is very simple and time saving. It allows the operator to utilize the amount of adequate bone which was available in the alveolus to mould the future prosthesis, without compromising the opposing or contra lateral arches, not needed for tedious procedures and multidisciplinary approaches and patient is much likely to undergo the procedure as it was simple and done as a day care procedure.

As patient was not willing for above mentioned tedious procedure, keeping in mind the patient's deformity and the surgeon's experience and choice, the author determined the specific surgical procedure which is performed. Based on the requirements and needs of patients and after assessing treatment outcome we choose the novel method "calibrated alveolectomy" to regain adequate inter maxillary space and rehabilitated patient with implant supported prosthesis. Always keeping in mind the patient's requirements and for their well-being traditional techniques can be modified according to the patient's welfare and benefits as long as it won't harm them. The option here opted by the author ("calibrated alveoloplasty") justify its need for the proper placement of implants - there by prosthesis with minimal intervention of bone, making "happy patient – happy doctor" scenario come true.

4. Conclusion

This report presents successful single stage calibrated alveolplasty and implant placement. This procedure is recommended when there is limited inter occlusal space, provided adequate bone remaining even though there is extruded alveolar segment.

5. References

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