

CASE REPORT

Periodontal Management of Inadequate Interocclusal Edentulous Space-A Case Report

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Abstract

Location of the osseous crest in relation to a restorative margin is the most critical reference point for both the periodontist and restorative prosthetic dentist. The periodontal structures should be preserved during tooth preparation and it must provide a sufficient space to establish a healthy, long lasting and esthetic restoration. Ostectomy and Osteoplasty are the procedures that permits successful placement of prosthesis with good prognosis by preservation of adequate bone. This case report presents a surgical approach where ostectomy and osteoplasty were performed along with crown lengthening with the help of mechanical and hand instruments for the reduction of the alveolar ridge and increase of clinical crown length by preserving biological width.

Keywords: Pontic, Ostectomy, Osteoplasty, Biological width

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Introduction

Fixed prosthodontic treatment has gained its importance as a part of dental practice where there is need for the patient comfort and aesthetics. To have a high rate of success of the fixed partial denture, the biological width should be preserved. The biological width is defined as the physiologic dimension of the junctional epithelium and the connective tissue attachment.¹ Any violation of biological width by placement of a restoration within its zone may result in gingival inflammation, pocket formation, abscess formation and alveolar bone loss. Hence in a tooth with short clinical crown and edentulous space with short corono-gingival distance periodontal intervention, namely crown lengthening and ostectomy and osteoplasty is important and crucial for long-term prognosis of the fixed partial denture. Osteoplasty refers to

reshaping the bone without removing tooth supporting bone. Ostectomy is the procedure in which radicular and interradicular supporting bone is removed.²

Case Report

A 55-year-old female patient was referred from the department of prosthodontics with a very short clinical crown and less interocclusal space to accommodate the pontic of fixed partial denture [Figure 1]. On examination, crown structure of 35, was considered inadequate for prosthetic crown preparation and inter occlusal distance was 3 mm which was very less to accommodate a pontic. Treatment plan included an osteoplasty/osteotomy procedure for lower edentulous ridge of 36 tooth region and crown lengthening for 35 tooth regions. Sulcus depth was 2 mm (with no pockets present), thus decision was made to perform osseous resection

and recontouring. Ethical clearance was obtained from the ethical committee of the institution and patient was informed regarding the treatment protocol and written consent was taken.

The surgical procedure was carried out in the following steps:

Internal bevel incision was given in relation to the teeth and continued as two parallel incisions on the crest of edentulous area [Figure 2]. Thin strip of gingiva between the parallel incisions was removed and then primary flap was elevated. Osseous reduction of the crest of the alveolar bone in the edentulous area of 36 tooth region was done to increase inter occlusal distance [Figure 3] and ostectomy in relation to 35 was done to increase the clinical crown height with sufficient area for biologic width and the attachment flap was closed at more apical level with respect to the cemento-enamel junction of the adjacent tooth. Sutures were placed and a periodontal dressing was placed, which were removed after one week.

Results showed that after surgery there was a gain of 4mm in inter occlusal space for a pontic and supra crown structure was sufficient for restoration with prosthesis [Figure 4]. Fixed partial denture was fabricated and delivered after six months.[Figure 5] Patient was followed up for two years and results appeared to be satisfactory without any pocket or inflammation around the prosthesis.

Figure 1: Pre-Operative



Figure 2: Parallel Incision Given



Figure 3: During Osseous Reduction and after Osseous Reduction Done

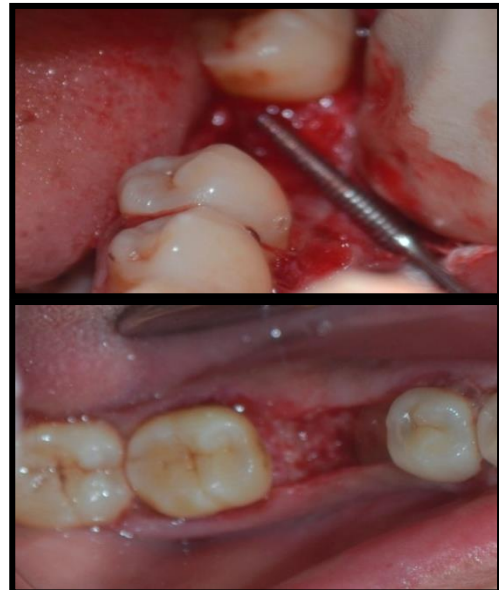


Figure 4: One Month Postoperative



Figure 5: Six Months Follow Up



Discussion

Fixed prosthodontic restoration has gained a lot of importance in the present days in dental practice. Before undergoing any fixed prosthodontic treatment periodontal evaluation should be done to have long term success of the bridge. The periodontal structures should be preserved during tooth preparation and it must provide a sufficient space to establish a healthy, long lasting and esthetic restoration. Before proceeding with tooth preparation of a carious,

fractured tooth, status of the clinical crown should be considered first. If it is short, it requires crown lengthening by restorative build up or extension of gingival margin apically by periodontal surgical means. Ideally for posterior tooth rehabilitation, the recommended dimensions are as follows;³

Minimum thickness of crown material on occlusal surface = 2 mm

Minimum abutment height = 4-5 mm

Sulcus depth = 2 mm

Biological width = 3 mm

If these minimal length and dimensions are not there, proper planning should be done to restore these dimensions with effective steps to develop a healthy and a long standing restoration. Crown lengthening is one of the effective and predictable procedures done before prosthetic and restorative treatment. Objectives of crown lengthening are removal of subgingival caries, preservation and maintenance of restorations, cosmetic improvement, enabling restorative treatment without impinging biological width, correction of occlusal plane and facilitation of improved oral hygiene.³ In crown-lengthening procedure, the periodontal tissue is assessed carefully and the clinical crown is lengthened apically with an intentional calculated attachment loss. Sufficient amount of residual alveolar bone and minimum required width of attached gingiva are prerequisites before this treatment.^{3,4} Gargiulo (1961), has done

extensive studies and found that gingival connective tissue attachment occupies 1.07 mm and junctional epithelium occupies another 0.97 mm coronal to alveolar bone. A combination of these two measurements constitutes the biological width.² Location of the osseous crest in relation to the gingival margin and future restorative margin is the most critical reference point for both the periodontist and restorative prosthetic dentist.⁵ In order to prevent violation of the biological width during intra crevicular tooth preparation, assessment of the following parameters is recommended.⁶ Before planning for crown lengthening procedure the anatomical relationship of the bone with respect to the gingival margin is assessed. This is done by bone sounding or transgingival probing (inserting the probe forcefully through the gingival sulcus towards the crest of alveolar bone under local anesthesia). Transgingival

probing also helps to determine the relationship of gingival crest to CEJ. These procedures help us to determine the location of these anatomical landmarks which helps us to assess whether there is gingival excess or normal gingival width. The surgical intervention for correcting any discrepancy is based on four criteria namely pocket depth, width of attached gingiva, level of alveolar bone with respect to the gingival margin and additional crown length required.⁷

Decision making during surgery³

1. If the pocket depth is more than 4 mm with sufficient amount of attached gingiva, simple gingivectomy is indicated.

2. If pocket more than 4 mm is present with minimal attached gingiva, apically positioned flap is indicated.

3. In case of short clinical crown with no pockets and a sufficiently attached gingiva, flap surgery (internal bevel gingivectomy) and osteoplasty is indicated.

Crown preparation should not be made for at least three months after surgery and sometimes when the periodontal biotype is thin, not before six months.⁸

There are every chances of reestablishment of the biological width to its original vertical dimension by the end of six months following surgery.⁶ It is preferable to use osseous crest as the reference point during crown preparation after surgery and follow the scalloping path.⁹

Conclusion

For the long-term success of restorations and prostheses, preservation of biologic width is essential. Cases with short clinical crown length can be successfully restored by crown lengthening procedure and placement of a prosthesis that does not encroach the biologic width. This procedure helps us to have a good prognostic value prosthesis which can be maintained for a longer duration.

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