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Case Report

Connective Tissue Graft as a Predictable Curtain for Aesthetics: A Case Report

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Abstract

Dental implant practice has now become a major choice for replacement of missing teeth in modern dentistry. Over the years, the success rate of dental implants has increased from 80-90% to 96-98%. However, due to lack of proper availability of soft tissue and hard tissue along with improper alignment of dental implants often pose aesthetic concerns in anterior aesthetic zone though the implant is fully osseointegrated with no signs of clinical mobility. This case report presents a case of a 21 years old male with a history of tooth loss due to trauma 8 months back and rehabilitation with dental implant 6 months back. On examination, mid-labial recession of around 3mm associated with #11 with no clinical signs of overlying inflammation was noted. Intact bone support was revealed by IOPAR. The recessed area around dental implant was managed with connective tissue graft and coronally advanced flap.

Keywords: *Aesthetics, Connective tissue, Graft*

Introduction

Implant dentistry is an inseparable part of periodontology. Among the different disciples in dental field, periodontal field is one of the major stakeholders in implantology. Healing of the implants in a specialization practice is highly successful [1]. Implants in anterior aesthetic zone are highly challenging. Among the different timings for implant placement, immediate implant is a common choice in modern era due to reduced visits to dentist; less number of surgeries required as well as crown delivery within a short duration when compared with conventional delayed placement and delayed loading protocol [2]. However, the biggest challenge associated with immediate implant is prevalence of mid-facial peri-implant recession. A systematic review done by Chen and Buser in 2014 estimated that there is around 9-41% risk of mid-facial recession (>1mm) [3]. Zucchelli et al in 2019 proposed a classification and management protocol for management of different types of recession around implants in anterior aesthetic zone [4].

This case report shows the use of connective tissue graft in conjunction with coronally advanced flap for soft tissue coverage to manage peri-implant soft tissue dehiscence in the anterior aesthetic zone.

Case Presentation

A 21 years old male patient had undergone immediate implant therapy 6 months back. He

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had lost his tooth following a trauma in a motorbike accident. Medical history was non-contributory and had no deleterious personal habits. He was given to wear removable partial denture after immediate implant and was referred to our center for a second stage surgery and prosthetic phase.Department of Prosthodontics gave an implant supported temporary crown with respect to #11. As the patient presented with peri-implant mid-facial recession with the implant supported temporary prosthesis (Fig: 1), he was referred to Department of Periodontics for proper evaluation and management of the case by consultant prosthodontist.

Figure 1: Initial presentation showing midfacial recession

On examination, we found a peri-implant mid-facial recession around 3mm. There were no overlying signs of inflammation in peri-implant mucosa. On intra-oral peri-apical radiograph, alveolar bone levels were seen intact (Fig: 2a and b). The case was designated as Class II a PSTD (peri-implant soft tissue deficiency/dehiscence) and management protocol was followed as per Zucchelli et al guidelines i.e. the present case didn't require removal of prosthesis and use of combination of connective tissue graft and coronally advanced flap would be sufficient to cover up the recessed area[4].Patient was explained about the procedure and informed consent was obtained.

Figure 2a and b: Clinical and radiographic image revealing intact interproximal area.

Non-surgical periodontal therapy along with slight modification of temporary prosthesis was done to allow growth of gingival tissues at the first visit (Fig: 3). Patient was recalled after 1 month for re-evaluation and peri-implant soft tissue dehiscence coverage using bilaminar technique (connective tissue graft and coronally advanced flap) was planned. We selected quadrilateral flap design for preparing a recipient bed with split thickness flap at the interdental area and full thickness in the area apical to the recession followed by partial thickness flap beyond mucogingival junction (Fig: 4). On flap elevation, we found thin labial plate and 2-3 exposed threads of implant which could have been better managed with guided bone regeneration (GBR) (Fig: 5). But due to financial constraints, we were unable to perform GBR. However, we ensured that giving a thick mucosal biotype around implant wouldn't further lead to exaggerated rate of bone loss. Linkevicius et al in 2009 in their >12 months follow-up study showed almost 1.5mm crestal bone loss in thin biotype compared to 0.3mm bone loss in thick biotype (>2 mm)[5].

Figure 3: Slight modification in temporary crown

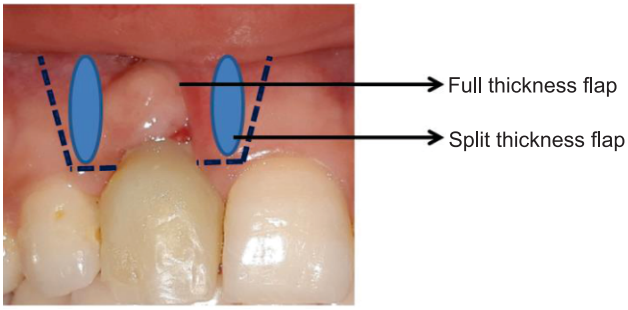

Figure 4: Trapezoidal flap design for bilaminar technique

Figure 5: Flap elevation showing exposed implant threads

The connective tissue graft was harvested using the classical trap door technique given by Edel in 1974 (Fig: 6)[6].The harvested graft was sutured in the recipient area using 5-0 resorbable suture. Then, the connective tissue was covered with coronally advanced flap and secured with 4-0 non-resorbable suture reinforced with composite buttoning (Fig: 7a and b). The surgical area was protected with non eugenol periodontal dressing and patient was recalled after 10 days for suture removal.

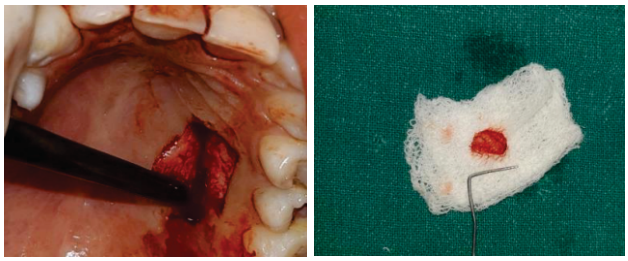

Figure 6: Trap door technique and harvested connective tissue graft

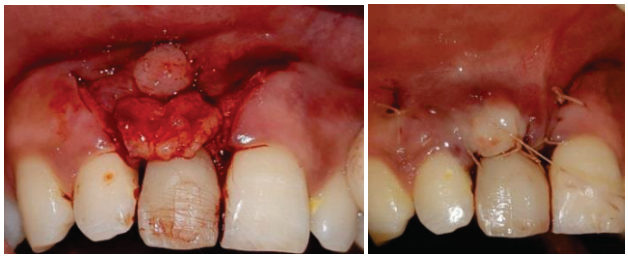

Figure 7a and b: Connective tissue graft sutured in recipient site and coronally advanced flap secured with suture and composite buttoning

The healing was satisfactory at suture removal (Fig: 8) and patient was kept on regular observation. After a month of surgery, we achieved good soft tissue coverage around the surgical site (Fig: 9).

Figure 8: Healing at 10th day

Figure 9: Healing at 1 month

We couldn't attend the case during the initial days of covid-19 pandemic which hit the whole universe. Finally after 9 months of surgery, we evaluated the patient and underwent into prosthetic phase. Both the frontal view and occlusal view of the treated area showed significant amount of changes in terms of both vertical as well as horizontal gain in peri-implant mucosal level (Fig: 10a and b). Final metal ceramic prosthesis for the patient was delivered at 10 month time period which was satisfactory when compared to baseline (Fig: 11a and b).

Figure 10a and b : Gain of peri-implant mucosa in both horizontal and vertical gain from baseline

Figure 11a and b : Extra and intra oral photograph with porcelain fused metal ceramic crown at 10 months period.

Discussion

Dental implant is the nearest artificial analogue to natural tooth. Fulfilling both aesthetics and functional demand in a short period of time is the theme of modern implant dentistry. Among the different implant placement timings, immediate implant is the one that offers for a shorter treatment time and is believed to conserve the ongoing hard and soft tissue resorption to a certain extent. However, the biggest issue with immediate implant is peri-implant soft tissue recession. The causes of soft tissue recession in peri-implant areas could be thin gingival biotype, thin or dam-aged facial wall, malpositioning of the implants, vigorous tooth brushing and over contoured prosthesis [5]. In addition to these factors associated for peri-implant recession, the remov-able partial denture which exerts pressure and result in both hard and soft tissue resorption was given to the patient in this case which could have led to peri-implant recession. Another important parameter in immediate implant for preventing recession is immediate temporization which was also missing in the present case. A preserving effect of an immediate implant crown is found on midfacial mucosa level following immediate implant (on average 0.75 mm less midfacial recession)[7].

Whenever we find the case of peri-implant recession, we need to first categorize the case. According to World workshop 2017 for classification of periodontal and peri-implant disease and condition, in absence of a baseline radiographs, implants showing signs of inflammation on gentle probing, probing depth ≥ 6mm and bone levels ≥3mm apical to the most coronal portion of

intra-osseous part of the implant are considered tobe affected by a peri-implant disease [8].As this case had no such features, a new terminology as proposed by Zucchelli et al (2019) was used i.e. peri-implant soft tissue dehiscence/deficiency [4]. There are limited scientific literatures regarding the management of peri-implant recession. So, the management protocol as suggested by Zucchelli et al was followed [4].The sub-epithelial connective tissue graft is considered as the gold standard technique to cover the recession around natural teeth [8]. Similar to the technique, bilaminar technique with connective tissue and covered with coronally advanced flap was used to treat the mid-facial recession around implant. Trapezoidal flap design was used where split thickness was elevated in the interdental area to maintain sufficient connective tissue thickness, leave an underlying CT bed rich with blood vessels lateral to the root exposure and to optimize blending of the treated area with the adjacent soft tissues [9]. Full thickness was elevated in the area apical to recessed area because of inclusion of blood supply providing periosteum in the flap and to obtain a thick donor graft[9].This technique yielded an excellent result when compared with initial situation.

Conclusion

So, the bilaminar technique using a small connective tissue in conjunction with coronally advanced flap seems to be a valid option even for management of peri-implant soft tissue recession.

Conflict of interests: None

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