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Soft Tissue Ridge Augmentation Around Dental Implant in the Esthetic Zone: A Case Report

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ABSTRACT

The preservation and reconstruction of soft tissue around dental implants is an integral component of dental Implantology. Many factors like comprehensive knowledge of the clinicians in implant placement, surgical skills, prosthetic design and soft tissue management may influence the esthetic and surgical outcome.

Peri-implant mucosa provides protection to the underlying bone via its immune response and protection from apical biofilm migration. An adequate band of attached keratinized mucosa also improves comfort with performing oral hygiene, limit early marginal bone loss and improve aesthetic outcomes around implant prostheses.

This case report describes the management of a ridge defect following an immediate implant placement in an esthetic zone .

Successful management of soft tissue around dental implants require clinicians to have comprehensive knowledge of proper implant placement, prosthetic design and tissue management, and a high level of surgical skills for soft tissue augmentation and grafting. Autogenous gingival grafts can be utilized in various clinical situations, providing surgeons with great potential and freedom to enhance the quality and quantity of peri-implant soft tissue.[1]

The periimplant area primarily comprises the crestal bone and the healthy soft tissue around it. They are considered necessary for the long-term success of implant-supported restorations. If these two parameters are respected, implant therapy can be a reliable treatment with an impressive outcome.[2]

Several factors, including gingival phenotype, the amount of keratinized tissue, and the flap technique employed, can influence peri-implant soft tissue .A lack of adequate keratinized mucosa often leads to soft tissue inflammation and mucosal recession,, while a thin gingival biotype may cause buccal soft tissue dehiscence. Thus, it is recommended to maintain a keratinized gingiva of at least 2 mm width on the buccal aspect and to employ a flapless technique when feasible to optimize esthetic results.[3].

When the soft tissue volume is inadequate, modification of the peri-implant soft tissue phenotype is sometime necessary. Soft tissue reconstruction can be achieved through various flap design technique to manipulate the soft tissue around dental implants. In cases where the soft tissue volume is insufficient, soft tissue augmentation can be performed by utilizing autogenous soft tissue grafts or soft tissue substitutes in conjunction with the flap approach. The efficacy of peri-implant soft tissue phenotype modification therapy in augmenting peri-implant soft tissue phenotype and its association with peri-implant health has been investigated through previous systematic reviews.[4]

CASE REPORT

A 20 year old patient reported with chief complaint of mobile upper right front tooth. The patient revealed a history of trauma while playing 8 years back. The patient also revealed tooth avulsion and transplantation following the trauma**.**

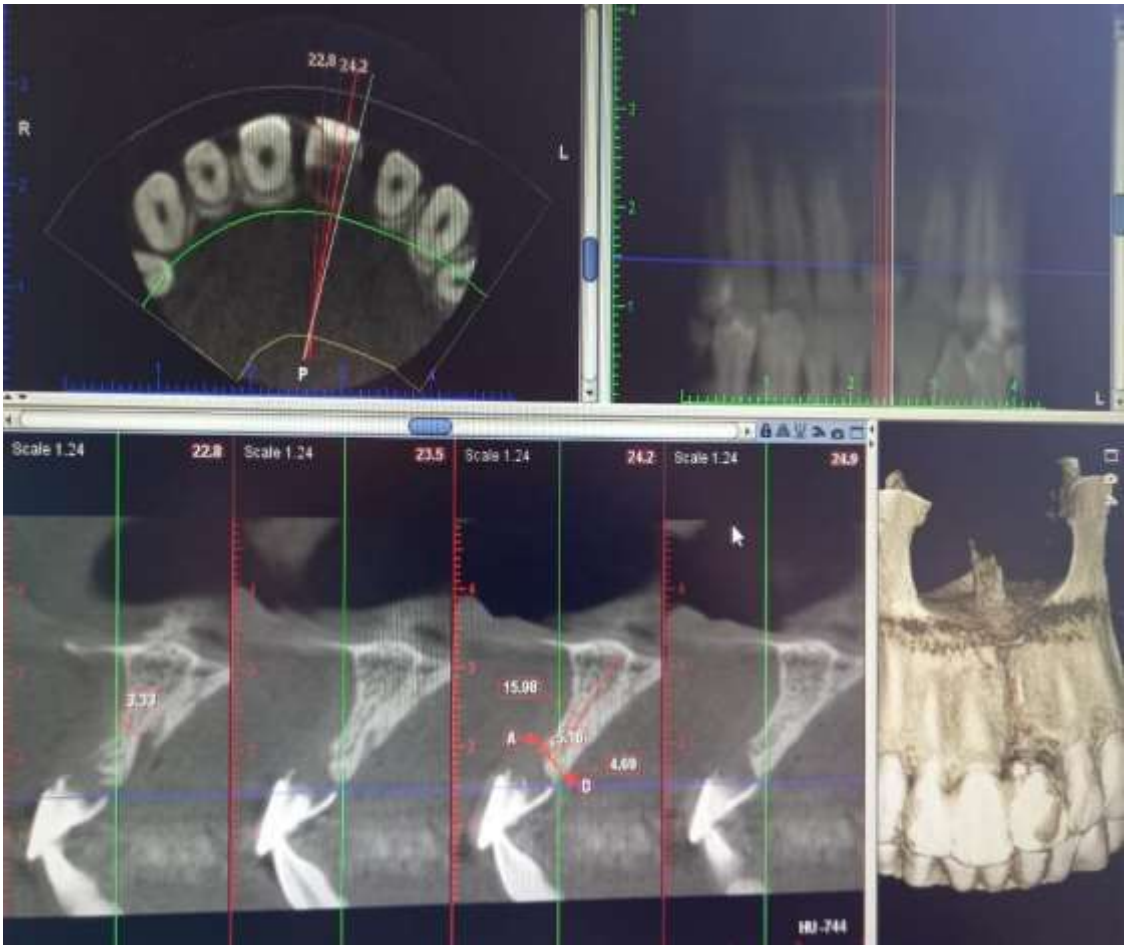
Preoperative Photographs which shows ridge defects

Fig a)

Fig b)

CBCT revealed root resorption following transplantation.

Fig c)



TREATMENT:

The mobile tooth was extracted .Immediate implant was placed in the socket (3.75x13mm)

Fig d)

After 6 months patient was recalled, Ridge augmentation procedure was planned to compensate for the resorbed ridge. Under local anesthesia,connective tissue graft was procured from the adjacent site of the implant site, while uncovering the implant cover screw. The graft was sutured on the facial aspect. A cover screw was placed over the implant**.**

Fig e)

Postoperative Photographs

Fig f) **Fig g)**

PROSTHETIC PHASE

An impression was made using close tray technique. Provisional prosthesis was fabricated

The newly fabricated prosthesis

Fig h)

After placement of prosthesis

Fig i)

One year Postoperative picture

Fig j)

DISCUSSION

Free gingival grafts and subepithelial connective grafts have been proposed as effective treatment options in increasing soft tissue volume around implants. Immediate Type 1 implant placement is associated with soft tissue recession and buccal plate loss regardless of surgical approach . Even with the use of osseous grafts in the jumping gap the ridge width often diminishes . Simultaneous connective tissue grafts at the time of implant placement in the aesthetic zone can counteract these dimension changes and maintain the ridge architecture regardless of the soft tissue phenotype at the site.

Free gingival grafts and subepithelial connective grafts have been proposed as effective in increasing soft tissue volume around implants.[5] As a two-stage implant surgery soft tissue grafts such as CTG can be placed and primary surgical closure can be achieved. This provides an excellent environment for graft revascularization and allows the operator a ‘second’ opportunity to further improve the soft tissue if required at the second stage implant surgery.

The careful management of soft tissue around implants is universally preferred even though there is no consensus on the importance of keratinized tissue.[6]

Soft tissue augmentation procedures for one stage implant placement are similar for strategies to gain soft tissue volume at the implant uncover stage.

In this case report, soft tissue augmentation has been performed in the implant uncover stage. Hence, it was possible to attain adequate soft tissue volume during the prosthetic phase. This has improved the esthetic and functional outcome in the patient.

CONCLUSION

Soft tissue deficiencies can be predictable managed at multiple time points in the implant planning and surgical phases. Early management is recommended to improve the surgical and prosthetic outcomes of implant therapy. Soft tissue augmentation either at implant placement, or at the second stage or after the implant placement as rescue operation can be predictably achieved with various innovative graft designs, and their modifications.

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