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Case Report

Maxillary over Denture Supported by Customized Implant Abutments-A Case Report

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Abstract: Implant supported Over dentures are prescribed in order to enhance retention, support and stability. Over denture is the treatment of choice when lip or facial support is required. Implant supported over dentures have been found to be very useful prosthodontic treatment modality. A number of case reports suggest the use of customized implant abutments in order to enhance esthetics as well as to rehabilitate excessively angulated implant fixtures. Several studies have indicated the use of stress breaking as well as soft relining material which would have a protective effect on perimplant tissue. This article will throw a light on the use of customized implant abutments as well as soft relining material in an maxillary implant supported over denture.

Keywords: customized implant abutment, soft relining, maxillary implant supported over denture

INTRODUCTION

Implant supported over dentures have remarkable advantages over tooth supported over dentures mainly because of the absence of caries and periodontal disease in the former. Implant supported over dentures offer better retention, support and stability [1]. In simulation studies ,it was found that relined dentures exerted least amount of stress on peri-implant bone tissue than conventional dentures [2].

Mandibular implant supported over dentures with antagonist maxillary natural teeth have better prognosis than maxillary implant supported over dentures with antagonistic mandibular natural teeth, but certainly not a contraindication [3]. The following case report will describe a technique of fabricating a customized implant abutments together with relining of the maxillary over denture.

HISTORY

Patient aged 55 reported to the Prosthodontics clinic, College of dentistry, King Khalid university, Abha, Saudi Arabia with the chief complaint of loose dentures. His medical history revealed no relevant medical conditions/diseases. His past dental history indicates that he had undergone dental implant treatment in relation to missing teeth 14 and 15, four years ago in a private clinic in Yemen. Patient complained of implant abutment loosening which subsequently got dislocated from the fixture and at present patient has lost the abutment.

On examination it was found that the implant abutment along with abutment screw where not present secured along with the implant fixture (Fig 1). Hence an implant abutment screw failure was suspected. Patient was enquired which system of implant was used but the patient was unaware as oral and maxillofacial surgeon has not documented the treatment properly and has not given treatment summary to the patient after the placement of implants.

Fig-1: Intraoral view

Hence it was decided that a customized implant abutment has to be fabricated in order to support the maxillary complete denture.

CLINICAL PROCEDURES

Adequate irrigation of the implant fixture done with normal saline followed by injection of light body silicone impression material (3M ESPE Express, VPS impression material)in to the fixture. In order to properly coat the light body onto the inside surface of fixture, lentulospiral was used. Then a pick up impression (Fig 2) made with putty impression material (3M ESPE Express, VPS impression material). Then impression was poured with die stone (GC Fuji rock EP, Illinois) and wax pattern fabricated. Then wax pattern was invested and casting procedures were done. After retrieving the casting , the fit was checked on to the die and the height of the abutment was reduced to a maximum of 5 mm in order to accommodate the abutment on to the abutment .

Fig-2: Final impressions

The abutments were milled using the milling machine (Fig 3) in order to make them parallel to each other as well as to create retentive grooves. After this the customized abutments were finished and polished (Fig 4).

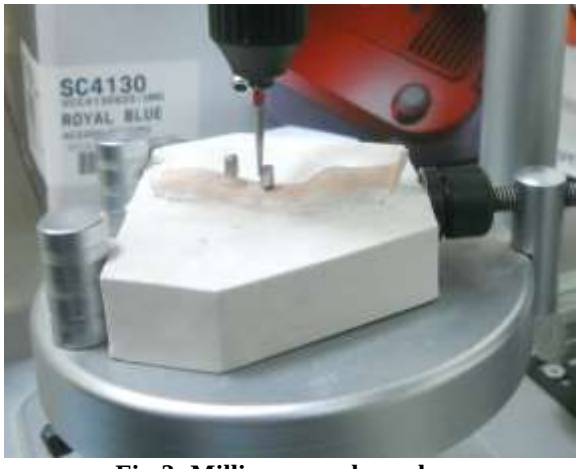

Fig-3: Milling procedure done

Fig-4: Finished and polished customized abutments

TRY IN/CEMENTATION

The customized abutments were tried on to the implant fixture . After verifying the fit the abutments were cemented using the dual cured resin cement (3M ESPE Relyx ARC cement) (Fig 5).

Fig-5: Cemented implant abutments

RELINING AND DELIVERY OF DENTURE

Maxillary denture which the patient had previously was selectively relieved at the region were implants were present i.e. 14 and 15 region . The denture was trimmed so that maximum of 3 to 5 mm of denture soft reliner (Perma easy soft reliner, Canada) could be accommodated on to the denture.

Then the primer of the relining material is applied on to the denture and dried for 2 minutes. This was followed by application of relining material on to the relieved denture. Subsequently the denture along with the unset relining material was inserted in to the patients mouth and seated in place till the relining material has set.

After the of relining material has set the denture was removed and checked for accuracy for flow of material and presence of voids .The margin of the relining material with the denture material was finished with the help of the relining material primer (Fig 6).

Fig-6: Relined denture

The denture was re-inserted in to the patients mouth . It was found that the denture had better retention than before (Fig 7). The patient was followed up after 2 days which was uneventful.

Fig-7: Denture insertion

This technique of using non splinted maxillary implants together with custom made/milled cemented individual abutments in addition to resilient liner applied to the maxillary over dentures is unique and novel. This technique is intended to purely protect the implants for a temporary duration from inadvertent unilateral occlusal forces till additional implants could be placed to support the over denture.

DISCUSSION

Fabrication of custom waxed abutment has been discussed in the literature and it has been found to be successful [1, 4]. The amount of stress exerted on the implant –bone interface has been reduced by using stress breaking materials of 3 mm thickness [5]. In our study 3 mm thickness of soft reliner material was used as a resilient and stress breaking material. The amount of stress exerted on peri-implant bone tissue has been remarkably reduced by using relined dentures [2]. Implant supported maxillary over dentures have been found to enhance retention , stability, support as well as phonetics [1].

The splinted maxillary implants used as over denture abutments offer better support than unsplinted implants [6-8]. The implants in this case were not splinted because of maxillary sinus proximity to the implants and more likely to involve one or both the implants. Hence the implants were kept separate without splinting.

Mandibular implant supported over dentures with antagonist maxillary natural teeth have better prognosis than maxillary implant supported over dentures with antagonistic mandibular natural teeth, but certainly not a contraindication [9, 10]. Hence, the patient was suggested with the above said treatment plan.

Mandibular implant supported over dentures have been found to have better prognosis when compared to maxillary implant supported overdentures [11]. The patient was well informed about the present situation of less number of implants in maxilla and unsplinted implants. The patient was given the treatment plan of keeping the implants just as temporary implants supported over denture which ideally has to be replaced with multiple implant supported over denture with splinting in between the implants.

CONCLUSION

The fabrication of customized implant abutments is a viable option if the original abutments have been lost due to abutment screw failure. They are also an effective alternative if the implant system is unknown. Since the patient requires more number of implants especially on the contralateral side for effective fabrication of implant and tissue supported complete denture, the existing complete denture is relined with resilient liner which acts as an attachment for the implants as well as imparts a cushioning effect to the existing implants.

CLINICAL RELEVANCES TO INTERDISCIPLINARY DENTISTRY

1) This is a technique which has been initiated due to the non-availability of data relevant to the implant fixture placed by oral and maxillofacial surgeon.
2) This article gives an innovative technique of fabricating implant abutment but for the success of implant treatment proper co-ordination between prosthodontist, oral and maxillofacial surgeon and periodontist is of utmost importance.
3) Failure to co-ordinate during implant treatment could complicate the entire treatment process

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