

SPLINTED DYNAMIC UCLA FOR THREE PROSTHODONTICALLY UNFAVOURABLE IMPLANTS IN AN ESTHETIC REGION: A CASE REPORT

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ABSTRACT:

Introduction: The aim of this paper was to present rehabilitation of a patient with rigidly splinted dynamic universal castable long abutments (UCLAs) for three prosthodontically unfavourable implants in the maxillary anterior region.

Case Detail: A 41-year old male reported to the Department of Prosthodontics, Government Dental College and Research Institute, Bangalore with a chief complaint of missing teeth in the maxillary anterior region. Due to the decreased available bone height, three implants installed were prosthodontically unfavourable. It was done in a two-stage surgical protocol. After 4-months healing period to correct the implant position, rigidly splinted dynamic UCLAs were screwed in place. After the patient's consent, the ceramic fixed dental prosthesis was finalized and installed.

Discussion: After a follow-up period of three months, no complications were observed.

Conclusion: The installation of prosthodontically unfavourable implants with rigidly splinted UCLAs may be a viable option which is faster and less invasive than bone grafts.

Key Words: dental implant, UCLA abutment, osseointegration, esthetics, angulated implants.



INTRODUCTION

The osseo-integrated implants are currently overruling other prosthetic solutions in modern dentistry, even in critically esthetic zones of the oral cavity. The major reason being the increased stability of the prosthesis during the masticatory function thus improving the quality of life of the patients. ^[1]

The maxillary arch is composed of trabecular bone, type 3 and 4 according to the Lekholm and Zarb classification, and, proximity to some critical areas such as maxillary sinus and the nasal cavity. ^[2]

Additionally, the anterior maxillary region has a thin cortical bone from both buccal and palatal sides. The resorptive pattern of the maxillary alveolar crest leads to hard and soft tissue defects which may complicate the installation of parallel implants with adequate height. ^[3-5]

When there are deficiencies in the horizontal plane of the bone, tilted dental implants may be placed to preserve the important anatomical structures and to assure proper retention and primary stability. ^[1, 6, 7] Tilting aims to improve the position of the implant as it gets placed in the area that presents with the greatest

amount of bone ^[8,9], since increased contact with trabecular bone allows a better implant anchorage and allows the usage of longer implants. ^[1, 10-12] Also, it is a simpler process with less complication rates and causes less morbidity than bone grafting surgeries, thus leading to higher patient acceptance. ^[6, 7, 10]

Tilted or angulated implants pose esthetic dilemmas and also challenges the principle of loading the implants in the long axis, this becomes even more challenging when a fixed dental prosthesis is planned. ^[13] Angulation correction may be possible with either pre angled or custom made abutments like the dynamic universal castable long abutment (UCLA). The UCLA allows correction of the implant emergence profile up to 20°, turning it to a favourable position. ^[14]

The aim of this paper is to present fixed dental rehabilitation of a patient with dynamic universal castable abutments that were splinted together for three differently angled implants in the anterior maxillary region.

CASE DETAIL

A 41-year old male patient reported to the Department of Prosthodontics of the Government Dental College and Research Institute, Bangalore, India with the chief complaint of missing 11, 21 and 22. The patient reported a history of extraction of the root stumps 6 months back followed by rehabilitation with a partial removable prosthesis (Figure-1). He expressed discomfort with the movement of the removable prosthesis during speech,

mastication and other functional movements. The patient presented a good general health. The clinical exam indicated a lack of gingival smile, fair periodontal health and FDPs with respect to posterior teeth. The patient assigned an informed consent for proposed oral rehabilitation.

The treatment plan established was to replace the partially edentulous maxillary anterior region with three single implants using the two-stage protocol followed by rehabilitation by fixed dental prosthesis. The CBCT scan revealed unsatisfactory quantity of bone present in the maxillary anterior region. So, the three implants (4mm diameter, 13mm length, Osstem, Mumbai, OSSTEM IMPLANT India Pvt Ltd.) were installed using the punch technique at different levels and more towards the labial side with a 20N torque for primary stability. The top of the three implants were at crestal bone level (Figure-2). A provisional removable prosthesis was fabricated prior to the surgery and was inserted after implant placement.

After a 4-month healing period, osseointegration was assessed through a radiographic analysis which revealed no radiolucent line around the implants. Then, the implant sites were reopened and the healing caps placed (Figure-3). After one week's time for tissue remodelling, the transfer coping were positioned and its setting to the implants confirmed through a radiograph. A combination of open and closed tray impression was made with addition silicon (Aquasil Ultra, Dentsply India) (Figure-4)

along with alginate (Hydrocol, Dentspec India) impression of the opposing arch. The implant impression was made using the combination method because of the non-availability of open-tray implant analogs.

After the implant verification jig trial, it was noticed during the wax-up phase for the proposed nickel-chromium splinted UCLAs that the implant access holes were labially placed. Hence, for esthetic reasons it was planned to fabricate the splinted UCLAs in the same manner in which splinted metal framework for prepared teeth is fabricated.

After the metal casting, the setting of the abutment framework was assessed through radiograph so the ceramic cover (both tooth colored and gingival colored, Vita) could be applied. In the next session, a prosthesis try-in was performed, the occlusal and proximal contacts were evaluated with a carbon paper and, with the patient's informed consent, the prosthesis was finalised.

During insertion, the metal framework was screwed onto the implants, the access holes present labially were blocked using utility wax to prevent flow of cement (Figure-5). The final all ceramic fixed dental prosthesis was then cemented on the metal framework using combination of zinc oxide eugenol cement and Vaseline, as it would help in easy retrieval of the prosthesis in future (figure-6).

The patient was pleased with the final clinical outcome. After a three-month

follow-up, complications such as loosening or fracture of the prosthesis screw and implant fracture were not observed. Additionally, no bone loss was observed in the peri-implant bone area. The patient is pleased with the rehabilitation.

DISCUSSION

A few clinical reports have presented acceptable success rates with the placement of implants at different levels or with varied angles. These implants minimize the need of bone grafting surgeries thus decreasing the length and complexity of the procedure, hence, increasing the number of patients willing to undertake prosthodontic rehabilitation with such procedures. [7]

Implants at different levels or with varied angles are majorly used in cases with atrophic maxillary or mandibular bone where the proximity to important anatomical structures restrict the amount of bone available to the anchorage of dental implants. [11] There have been reports of successful placement of prosthodontically unfavourable implants in the anterior regions with no compromise of an esthetic result. [15] Also there have been no significant difference in bone loss or evidence of any kind of complications with respect to conventionally or unconventionally placed implants. [12, 16, 17]

According to a series of clinical reports on 13 patients, Naert et al obtained a success rate of 88.6% at the end of 4 years where four rigidly splinted endosseous maxillary

implants were used to retain hinging overdenture to rehabilitate resorbed maxilla.^[18]

In another clinical report by Pelekanos et al, severely resorbed maxilla with 6 sub optimally placed divergent implant was restored using an implant-supported 2-piece screw retained fixed, complete dental prosthesis. The patient had no complications at the fourth month follow up session.^[19]

CONCLUSION

The use of a dynamic UCLA to correct sub optimally placed dental implants is a

viable treatment option for patients with resorbed maxillae, and may be faster and less invasive than bone grafts. Such a treatment procedure can result in increased levels of patient satisfaction along with reestablishment of function, esthetics and longevity of prosthetic rehabilitation.

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FIGURES:



Figure-1 Intraoral picture showing removable prosthesis being used by the patient.

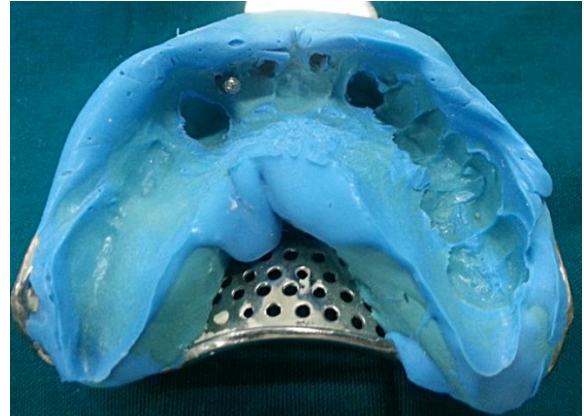


Figure-4 Implant level impression using closed tray and open tray technique showing closed tray impression coping and implant analog.



Figure-2 Orthopantomogram showing position of the implants.



Figure-5 Intraoral view of the splinted UCLA framework.



Figure-3 Intraoral picture with healing caps in position.



Figure-6 Frontal aspect of the clinical aspect after prosthesis insertion.