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CORRECTION OF MALALIGNED IMPLANT IN CONJUNCTION WITH CASTABLE ABUTMENT AND SMILE DESIGNING-A CASE REPORT

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Abstract

INTRODUCTION: The aim of this paper was to present a rehabilitation of a patient with a dynamic universal castable long abutment (UCLA) for a single tilted implant in the anterior maxillary area in conjunction with smile designing.

PRESENTATION OF CASE: A 23-year-old male patient attended the dentistry college clinic complaining of a complaint of fractured teeth of the dental element 11. The implant was misaligned and it was planned to correct it in a two-stage surgical protocol, and an external hexagon implant(3.75×11.5mm) was placed. After a six-month healing period to correct the implant position, a dynamic UCLA was set in place, rectifying the implant emergence profile at 20◦. The Emax ceramic structure construction and fitting was performed and, after the patient's consent, the prosthesis was finalized and installed.

DISCUSSION: After a follow-up period of twenty months, no complications were observed.

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CONCLUSION: The installation of tilted implants with a dynamic UCLA may be a viable option, faster and less invasive than bone grafts.

Introduction

In cases when dental implants are not positioned parallel to adjacent teeth or contiguous implants, the clinician can opt for angled abutments to in order to achieve appropriate restorative contours. But increased stresses on implants and bone have been the side effect with use of angled abutments. In this regard, there are unresolved issues concerning implant survival and potential prosthetic complications that can arise when angled abutments are used to align prosthetic positions.

To compensate for ridge topography that is less than ideal, the clinician can follow one of several scenarios to enhance placement of implants: augment the ridge, change the intended location of animplant or insert an implant with an angled trajectory.Owing to anatomic considerations, implants could be inadvertently placed in less than ideal positions. These misaligned Implants in partially edentulous arches can be difficult to restore with conventional abutments and may necessitate implant removal in severe angulations.[1]

Now, with a high success rate of osseointegration, implants are widely used to restore the partial edentulism and single tooth missing.[2]

Case report

Figure 1A and 1B-Pre-operative pictures of the patient

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A 20-year-old male patient approached to the department of Prosthodontics D.Y Patil dental college and Hospital, NaviMumbai in 2021 with a chief complaint of fractured teeth in upper front region of jaw and a past history of traumatic accident one year back.The patient had a dental history of implant placement in 11 region six months back and multiple teeth were root canal treated. The patient had norelevant medical history and denied any adverse habits. He wanted to get the final restoration done on the implant and also wanted to get his smile corrected. Clinical examination showed presence of temporary Maryland bridge with area of interest 12,11,21 (Figure 1A-1B).Intraoral radiograph revealed decent osseointegration with no translucency around the implant and the implant was placed too close to the adjacent lateral incisor 12. After proper assessment and treatment planning, it was decided to take out the temporary crown. a second‑ stage surgery was done by opening the implant site, there was bone formation seen on the implant so it was trimmed using a round bur and healing abutment was placed of appropriate height(S4). (Figure 2A- 2B)

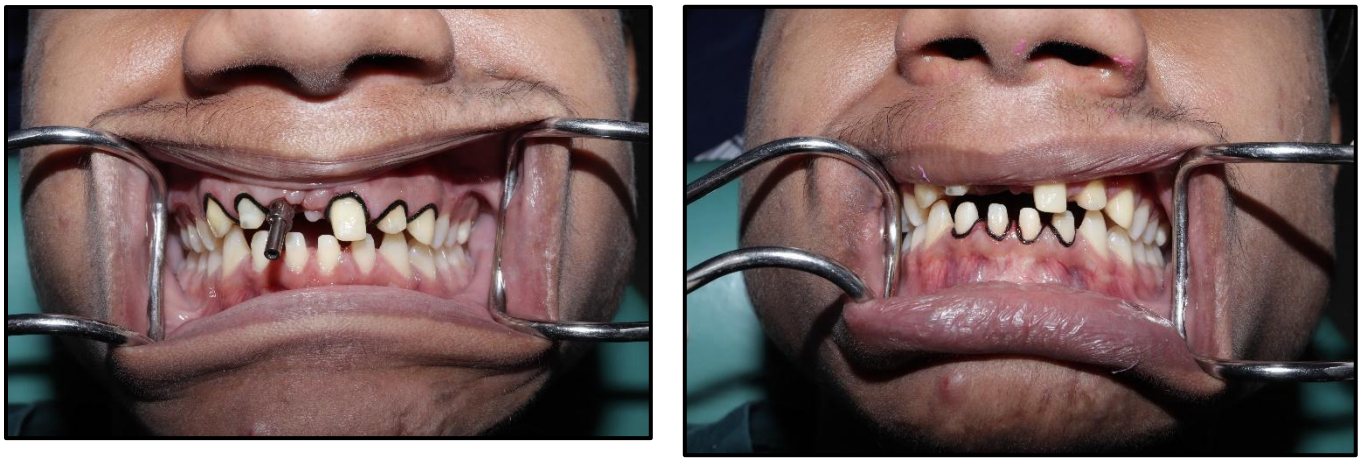

Figure 2A and 2B- Gingival retraction for Final Impression

We followed up the patient after 1 week and made an open tray impression of maxillary arch with adjunction of open tray impression post using addition silicone material (hydrorise), mandibular impression was made using irreversible hydrocolloid material. During the exposure given to the implant we found that the implant was labially tilted and needed a correction. We thus used the UCLA castable abutment[3] to correct the angulation.(Figure 3)

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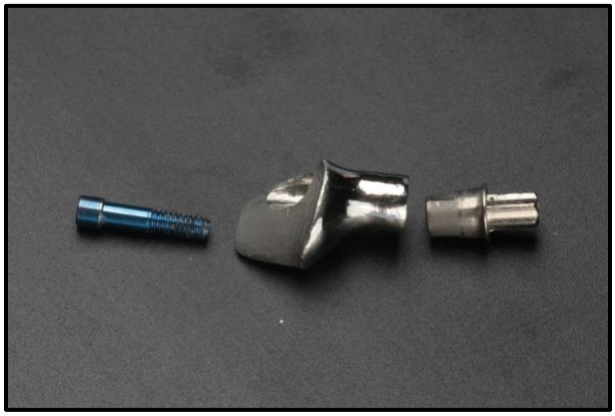

abutment

Figure 3- UCLA castable abutment

The implant was placed 6mm subgingival. The depth and thickness of the gingival tissue was assessed in adjunction with the height of the abutment collar is not visible clinically. The abutment was casted with nickel chromium to customize the crown according to the occlusion and correct the maligned implant. (Figure 4A-4B)

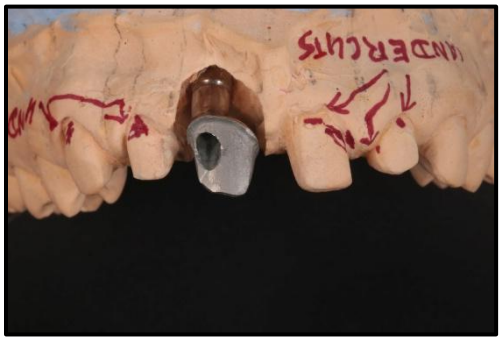

Figure 4A-4B- the casted abutment and the metal coping

After casting the abutment, the casted abutment and the metal coping were bonded in the laboratory itself with multilink followed by a metal try-in of the entire assembly done in the patients mouth to assess for the fit through radiographs. Since the axis inclination was labial and also there was an issue of gingival recession, we fabricated a zirconia layered with Emax cement

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retained crown with pink ceramic to provide the best treatment alternative. The abutment was torqued with 25Ncm torque with a rachet in the patients mouth and the access hole was filled with composite. (Figure 5A-5B)

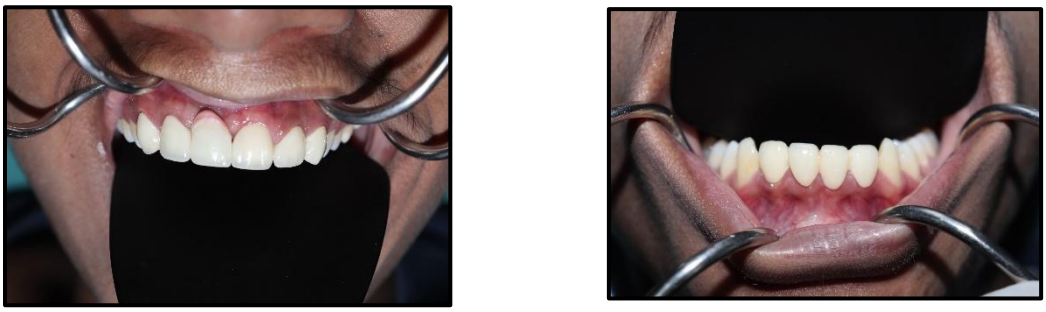

Figure 5A-5B-Emax cement retained crown with pink ceramic

An important aspect for patient further was his esthetics. He had root canal treated teeth with respect to 12,21 and 22 as well as in lower jaw as 31,32,41 and 42. With the ultimate goal of smile designing, we did an intentional root canal treatment for upper both canines. The teeth were prepped and a final impression for (11,12,13,21,22,23,31,32,41,42) was recorded with Addition silicone and temporized in cold cure acrylic. Zirconia layered withEmax crowns were the choice of prosthesis for upper and lower teeth. Try in of the prosthesis was done, occlusal and proximal contacts were checked and corrected. In this case the implant crown was in light contact and with the patient's approval the prosthesis was finalized and cemented with fujicem (resin modified Glass ionomer cement).The patient was kept on ½ yearly recall for the 1st year and later was called annually.(Figure 6)

Figure 6-Final smile

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Discussion

The angulation of alveolar bone initially reflects tooth positioning with regard to the occlusal plane.[4]A limited number of studies have addressed the survival of implants and prostheses involvingthe use of angled abutments to restore implants. Hence we found this case one of a kind which had the combination of prosthetic aspect and endodontic aspect.

Literature suggests that angled abutments contribute forrestoration of implants placed with buccolingualor mesiodistal misalignment stating that the implant may be placed in the correct position, but its trajectory may be misaligned.This may result in a minor misangulation (0–15°) or asevere misangulation (>25°). Misangulations up to 15°are easy to manage. Most prefabricated abutments areavailable in 0–15° configurations. Components can becustom cast to correct more extreme implant angulationissues (e.g., 25°, 35°).

Significantly, when using angledabutments inan ultimate to obtain good prosthetic result, the clinician should toensure a gradual emergence profile of therestoration.

Eger and colleagues[5]compared the survivalof straight and angled abutments and notedthat after one year, they found no statisticallysignificant differences with respect to probingdepths, gingival inflammation or attachmentlevels around straight or angled abutments.

The original design for theUCLA abutment was a plastic burnout pattern. The dentallaboratory technician modified the burnout pattern withcombination plastic‐ wax pattern thenwas invested and cast. The UCLA abutment has been used over the past 24 years[6]in the restoration of osseointegratedimplants. The design of the abutment allows fabrication ofthe restoration directly to the implant fixture, bypassingthe trans-mucosal abutment cylinder. This technique isvaluable in overcoming problems of limited inter-occlusaldistance, interproximal distance, implant angulation, andsoft tissue response.Another major advantage with the UCLA abutment is that of improved esthetics. UCLA system has a subgingival margin allowing this abutment to be used in cases with a minimal inter-occlusal clearance with proper esthetics.[7]

The method for restoration of the labially placed implants with the use of UCLA abutment and combined with smile restoration was the challenge for us in this case. But ultimately using a customized crown placement and endodontic supported help us to achieve a successful outcome and a happy and content patient with the end result.

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Conclusion

UCLA have been an innovative and excellent alternative to correct tilted implants for patients with atrophic maxillae, and may be results in faster and less invasive results than bone grafts. The dynamic UCLA allows dentists to rectify up to 20◦ of the implant emergence profile, which ensure an aesthetic result.There is patient satisfaction with this treatment along with reestablishment of function and aesthetics and longevity of prosthetic rehabilitation.

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