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CASE REPORT

Esthetic management of labial screw access channel with angulated screw channel abutment system – Case Report.

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ABSTRACT

This case report describes an alternative technique in the prosthetic management of angulated implant with angulated access channel abutment system with adequate esthetics. Virtual planning for implants in the maxillary anterior region using Cone Beam Computed Tomography of the patient revealed the placement of screw access on the labial surface. To prevent esthetic failure Angulated Screw Channel Abutment system was sought for. This system enables the correction of implant angulation up to 25 degrees with palatal screw access with good esthetics.

Key words: angulated screw channel abutment, esthetics in implants, screw retained implant prosthesis

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INTRODUCTION

Screw retained implant prosthesis is mainly used to prevent the problems associated with residual excess cement and for the ease of retrievability.[1,2]Screw access channel in the anterior region is preferable on the cingulum, as it is in anatomically favourable bone angulation. In the present case scenario, the design of conventional screw retained prosthesis would have jeopardized the esthetics because of the presence of screw channel in the labial aspect. Techniques have been described in the literature for the management of angulated implants with screw retained implant prosthesis.[3,4] Angulated Screw channel abutment systems were introduced as an alternative to this problem. This enables the screw retained prosthesis fabrication possible in cases of angulated implants.[4-6] Berroeta et al described this type of angulated abutments as dynamic abutments which can be used to correct angulation up to 28 degrees.[4]

This case report describes the technique of using angulated screw channel abutment for achieving esthetics in angulated anterior implant.

CASE DESCRIPTION

A 58-year-old female patient reported to the clinic with pain in the upper front teeth. On examination, the patient had grossly decayed 21 and 23 along with missing 14, 16 and 26. The patient was planned for full mouth rehabilitation of the maxillary arch. Treatment plan involved immediate implant placement in 21 and 23 after extraction of grossly decayed 21 and 23; implant placement for missing 14, 16 and 26; and crowns in 11, 12, 13, 22. Implant treatment planning was done after evaluation of bone levels using Cone Beam Computed Tomography (CBCT). Anterior region is of interest to us. Virtual planning was done using CBCT which showed that the screw channel of the prosthesis will be in the labial surface instead of the cingulum. So, the prosthetic option of angled screw access channel was chosen for this case using GM Titanium Base Angled Solution (AS) (Neodent, Straumann). (Fig 1)

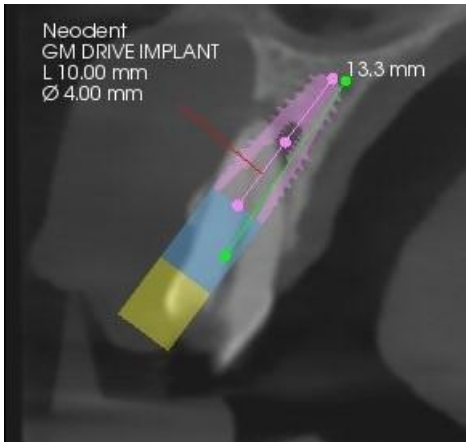

Figure 1: CBCT planning reveals labial access channel of the abutment

Immediate implants were placed (Neodent, Straumann) in 21 and 23 along with bone grafting (Bio – Oss, Geistlich) with a membrane (Bio-Mend,

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ZimVie) after the extraction of 21 and 23. Chairside temporary was given using a temporary abutment on the same day of implant placement and the labial screw access on the temporary crown was filled with composite. (Fig 2).

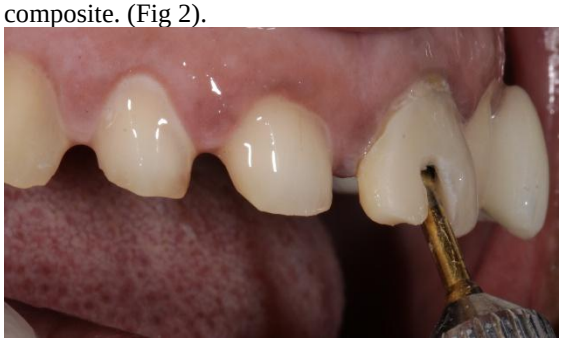

Figure 2: Screw retained Temporary with labial access channel

After three months of healing, final restoration was planned. Maxillary Open tray impression was made using addition silicone monophase impression material (Hydroise Monophase, Zhermack) with customized impression post. The master cast was scanned (Medit T500 Lab scanner) with the scan bodies and data was exported to designing software (Exo CAD). Digital planning and prosthesis were fabricated with GM Titanium Base Angled Solution (AS) from Neodent, Straumann as per virtual planning (Fig 3a, 3b).

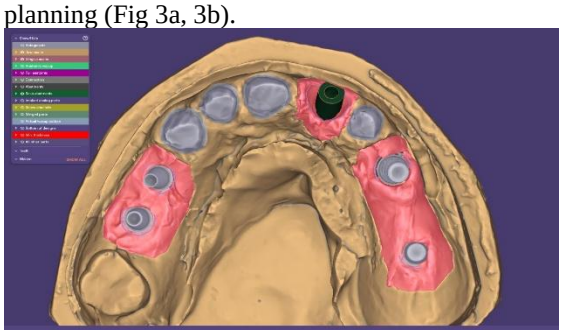

Figure 3a: CAD Planning for prosthesis – Conventional abutment in 21 resulted in labial screw access

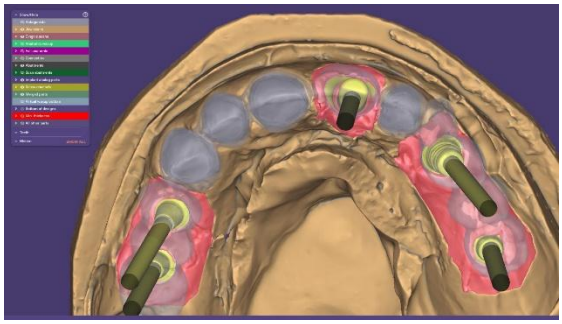

Figure 3b: CAD Planning for prosthesis - Design for Angulated Screw access abutment with palatal screw access

Zirconia crown is milled from the CAD design and cemented over the Titanium base provided for the AS abutment with resin cement (Relyx U 200, 3M ESPE) in the laboratory after protecting the screw access. The final zirconia crown was tried by torquing with the special screw driver (Angled solution screw driver, Neodent Straumann) provided with the abutment (Fig 4). The restoration fit and esthetics was evaluated and was screwed in with 20 Ncm torque; and finally filled with composite resin (Fig 5)

Figure 4: Final restoration with the special screwdriver for torquing the crown

Figure 5: Final restoration with palatal screw access channel

All ceramic crowns were cemented 22, 11, 12 ,13 using resin cement (Relyx U 200, 3M ESPE) and screw retained implant prosthesis was given in 14,

15, 16, 23, 24, 25 and 26. The patient was followed up for 1 year with no post operative complaints.

DISCUSSION

Esthetic management of anterior implants is always a challenge. The choice of prosthesis can be either screw retained, or cement retained. Screw retained prosthesis is preferred over cement retained prosthesis because of the advantage of retrievability though screw loosening is one of the major drawbacks.[2] Screw retained prosthesis in severely angulated cases might result in prosthesis with labial screw access which might affect the esthetics in anterior implants. Conventional treatment options available are 1. Angulated abutment with cement retained crown, 2. Customized abutment with cement retained crown, 3. Angulated screw retained crown with labial channel composite restoration. With advancement in technology the digital planning with Exo CAD and angulated Ti base solution allows us to plan the restoration digitally which will make the fabrication much simpler and lifelike. In this case, a novel angulated channel solution abutment was chosen to eliminate this problem. This abutment enables the correction of angulation up to 25 degrees with palatal positioning of access channel.[4-6] The Angled channel abutment consists of a titanium base, the position of which can be adjusted to achieve the angulation correction. Over the Titanium base, CAD milled ceramic crown will be cemented with the patent screw access using a resin cement in the laboratory. Studies have proven that use of angulated abutments does not affect the fracture resistance or clinical longevity of the prosthesis.[7-11] Studies also showed that the frequency of screw loosening was also not higher with angulated abutments when compared with straight abutments.[12] This technique can be well utilized for achieving esthetics in angulated anterior implants with angulation within 25 degrees.

CONCLUSION

The use of Angulated Screw channel abutments is an esthetic alternative in angulated anerior implants by helping in placement of the screw access channel palatally. This helps in providing the advantages of screw retained prosthesis without any compromise in esthetics.

CONFLICT OF INTEREST

There is no conflict of interest

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