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Fracture Body of Implant - Case Report.

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ABSTRACT

This case report describes the management of a loose cement-retained implant supported sectional bridge prosthesis where the thread of the abutment screw had fractured away from the body of the screw.

Keywords: dental implant, screw loosening, osseointegration.

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INTRODUCTION

Implants have become increasingly popular in the dental profession due to their predictability for the replacement of missing dentition [1]. Complications and failures do occur with dental implants [2]. Complications may arise at the time of implant placement or at the time of prosthesis fabrication. Fracture of screw takes place when excessive mechanical force on mastication, thus preventing damage to the bone implant interface [3,4]. Fracture may be of crown, framework, and screw fracture.

A less common cause is fracture of the body of the implant; a study shows a 0.6% of failures [5]. Screw loosening is more often associated with single-unit restorations. . Screw loosening occurs when compressive occlusal forces are higher than the tension in the screw-implant assembly that holds the components together [6]. Complications from screw loosening can result in screw fracture, failure of implant or dislodgement of the prosthesis.

CASE REPORT

A 46years old patient complains of dislodged bridge in relation to implants on his upper teeth. History revealed that 3 years back he underwent implant supported sectional bridge treatment. On intraoral examination revealed an implant at 13 retaining the fractured segment of abutment screw within and below the head of the implant (fig 1). The other half of the fractured screw along with the abutment and fractured implant was in the dislodged crown. Fracture was in the body of the implant which resulted in failure of implant. The loose bridge was removed under local anesthesia together with implant fragment. The removal of the remaining implant fragment using bone trephine was done, followed by adequate quantity of bone graft for second fixture. An immediate temporary removable partial denture was given for replacement. Later after 6 months patient was reviewed, full thickness flap raised for placement of implant. Implant of length 13mm and diameter 3.75 mm was placed over the site and healing was complete. After 2 months abutment was placed, impression was made followed by ceramic- metal bridge prosthesis .



Figure 1: Fractured Prosthesis with Body of Implant

DISCUSSION

Implant body fracture is a rare complication of implant treatment occurring only in 0.6% of implant cases [5]. Damage of the internal implant thread can lead to failure of implant due to failure to restore. Occlusal overload is also a cause. Bridge with cantilever design will further increase bending forces on implants and the supporting bone leading to bone loss.

Rangert *et al.* [7] found that partial bridges with cantilever designs accounted for 83% of implant fractures and that 90% of fractures occurred in the posterior regions. It has been shown in animal studies that crater-like bone loss will occur around implants with excessive dynamic loading [8] and this loss of bone support will allow flexing of an implant under loading and possibly contribute to a fatigue stress

fracture. Planning the treatment and proper occlusal adjustment usually ensure that the implant crown is not overloaded by occlusal forces.

Tightening the abutment screw to the correct torque will minimize the incidence of screw. Before prosthetic screw loosening leading to screw fracture use to occur when occlusal overloading is done, but in recent days improved screw design can overcome the problem by allowing higher preloads. This may however has led to failure elsewhere in the system as fracture of the body of the implant. Fracture of the body of an implant is a major cause of late failure⁵ which may be avoidable with careful planning.

CONCLUSION

Adequate planning of treatment, good occlusal adjustment, and tightening screw to the correct torque will minimize the incidence of loosening and fracture of abutment screws and leading to fracture of the implant body.

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