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## Review Article

### COMPLICATIONS OF DENTAL IMPLANTS -A REVIEW

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#### ABSTRACT

Implant surgery complications are frequent occurrences in dental practice and knowledge in the management of these cases is essential. The aim of this review was to highlight the challenges of soft tissue around the implant, anatomy related and procedure-related surgical complications as well as to discuss the etiology, management and treatment options to achieve a satisfactory treatment outcome. (Implant Dent 2008; 17:159-168)

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#### INTRODUCTION

Soft tissue complications with dental implants can be seen in areas where the quantity of keratinized soft tissue is minimal. As with natural teeth, implant restorations rely on attached and keratinized tissue for long-term maintenance. Soft tissues may also be compromised in sites where implant angulation is not ideal in an esthetic area. Finally, soft tissue depths surrounding implants exceeding 5 to 6 mm may present problems with long-term maintenance. This can be especially true for areas grafted with soft tissues or in osteomyocutaneous flaps where dermis is quite thick. In these cases it may be wise to reduce the soft tissue thickness surgically prior to making a restoration or even placing the implants.

##### **Radiographic Bone Loss**

Bone loss is expected with the placement of any implant; however, this loss should not exceed 1.5 mm in the first 12 to 18 months. Bone loss in excess of this value exposes a significant portion of the implant surface, making hygiene procedures difficult. If the choice of implant is a machined titanium screw, this problem is less than with implants having a textured surface, but in either case it is desirable to see bone loss of no more than 0.2 mm/yr. Evaluation of implants in edentulous patients by panoramic radiograph maybe more formidable than when using periapical examinations. However, partially dentate patients may benefit from periapical

radiographs made with a silicone putty standardized bite block. In this way radiographs would be standardized at each exposure, allowing interpretation at a consistent incident beam angle.

##### **Screw Loosening**

Abutment and prosthetic screw loosening can be a recurrent problem seen often with single-tooth restorations. The incidence of screw loosening is sizable in cases restored with standard external hex platforms and gold screws. A method of reducing screw loosening is to use a new abutment or prosthetic screw, torque once to the recommended torque application, wait 5 minutes, and then torque again.<sup>(1)</sup> In these circumstances screw loosening is minimized. Repeated loosening of screws should bring to mind occlusal overload, heavy contact in lateral excursions, or implant mobility.

##### **Abutment Fracture**

Abutment fracture is a relatively uncommon occurrence but can be problematic, particularly for cemented restorations. Material choices for implants subjected to heavy occlusion or unavoidable lateral loads should be carefully selected. Although strong, ceramic materials are used with caution in areas of high stress application. Pre-machined abutments used for screw-retained restorations can usually be replaced if they fracture.

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### Porcelain Fracture

Porcelain fracture is sometimes seen with implant prostheses owing to dynamic fatigue or contact overload.<sup>(3)</sup> Proprioceptive feedback is not present with implant restorations and impacts during the chewing cycle should be slightly less than those of natural teeth. This can be verified using 0.001-inch stainless steel shimstock. Resin Base Fracture Resin base fractures are fairly common occurrences because of unfavorable stress distribution, occlusal overload, and a lack of proprioception. The incidence can range from 1 to 16% over 5 years.<sup>(4)</sup> Ways to combat this problem are to reinforce the base with a cast metallic housing.

### DISCUSSION

Patients restored with osseointegrated implants should receive regular and frequent include bone loss, mobility, and pain. Clinical examination should include light percussion and gentle evaluation of soft tissue, which may include a standardized peri implant probing using nonmetallic standardized force probes. Radiographic evaluation includes both periapical and panoramic radiographs. If the restoration is screw retained, it can be removed every 2 years, cleaned, and re secured, or cleaned in position. Cleaning of implant and titanium abutment surfaces should be done with either gold or polyethylene (Teflon) instruments so as not to scratch these biologically critical surfaces and make them prone to plaque accumulation<sup>(4)</sup> any scratches or crevices created by this or other processes impose a nidus for plaque and calculus accumulation. After cleaning, polishing with either toothpaste or a light prophylaxis paste is recommended. Since a perimucosal seal exists between the implant and abutment and tissue, it is not suggested that cemented restorations be removed routinely as this may jeopardize the integrity of the restoration and surrounding tissues. However, if the restoration is retrievable, the prosthesis and/or attachment should be removed every 18 to 24 months for débridement, inspection, and polishing.<sup>(5)</sup> If abutment or coping screws have been torqued previously, it is generally suggested that they be replaced to avoid future fatigue fracture follow-ups in the first year following implant placement.

The criteria of success have involved one of quantification of pain, mobility, and peri-implant radiolucency. These criteria were established by Albrektsson and colleagues and remain one of the standards in long-term evaluation of dental implants<sup>(6)</sup>

### CONCLUSION

Mobility, if present, should be tested on an individual basis to best assess a true measure. Therefore, removing the prosthesis (especially if it is splinted with other implants) and gently percussing with either a blunt instrument or a standardized torque instrument will give an indication of mobility. Other methods involved the use of Periotest instruments or nanodevices that promote radiofrequency response from the osseointegrated implant to give an indication of mobility

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