

Dentist's Ordeal: Implant Failure

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Abstract

Now a days, Dental implants are widely used in dental practices for replacement of tooth or teeth as a great alternative. In spite of numerous advances dental implant failure is also a major factor. Peri-implantitis and lack of osseointegration are signed as the major factors prompting for implant failure. Success of dental implant mainly depends on loading of implant, occlusion and patient parafunctional habits like grinding, smoking, alcoholism and socioeconomic status. The purpose behind this succinct survey is to create awareness for knowing about the aetiology of dental implant failure because after seeing tremendous successes of dental implant, the failure of dental implant is also a most important topic to minimize this and lead towards the success.

Keywords: Peri Implantitis; Dental Implant Failure; Overloading; Osseointegration; Implant Prosthesis

Introduction

Dental implants are metal posts or man-made artificial roots, which surgically placed into the maxillary or mandibular jaw bone for replacing the missing tooth or teeth. Dental implants are used as replacement of Single tooth, Partially or Totally edentulous arches to support fixed or removable dental prosthesis. They are made up of alloplastic materials, pure titanium or titanium (Ti-6AL-4V) alloy and recently new material – Zirconia, is also used [1]. Depending on their placements, they are characterized into Endosteal, Transosteal or Subperiosteal [2,3]. The most widely accepted one is Endosteal (screw formed or round and hollow). Dental implants have two parts: Implant Body (which is placed into the bone and covered with screw) and Abutments (Over the dental implant) are attached to implant body for the placement of prosthesis [1,2].

After placement of implant, the healing process between the implant system and bone begin (which is similar as primary bone healing), where osseointegration process start and maintained in bone during functional loading, without intervention of fibrous or connective tissue between the bone and implant surface to provide stability to the implant and prosthesis. Prosthesis is attached to the fixture after completion of healing due to which bone remodeling occurs, occlusal stress simulates with the bone [3].

Discussion

The successful outcome of Dental implant procedure is dependent on the inter relationship of the various components that includes;

- The biocompatibility of the implant materials,
- Macroscopic and microscopic nature of the implant surface and designs of the implant,
- The status of the implant bed in both a health and a morphologic (bone quality),
- The surgical technique used for placement of implant,
- The undisturbed healing phase and
- Loading conditions of the prosthesis [4].

Determining factors of failure of implant

Failure is a scary word for the patient as well as for the dentist. Several factors increase the chances of dental implant failure but only some of these factors can be controlled by patient.

The main risk factors for dental implant failure are:

- **Plaque control:** As all knows, the oral hygiene plays an important key role. Patient should maintain the proper oral hygiene which can lead to success of dental implant. However, its not easy to maintain because presence of

dental implant but its necessary also and can be done by patient only on their daily basis [5].

- **Smoking habits:** Use of tobacco as – cigarette, cigar, pipe smoking or even smokeless tobacco significantly contribute to development of periodontal diseases, which can further lead to failure of dental implant as they promote growing of periodontal pathogens in peri-implant region [3].
- **Osteoporosis:** Changes into the bone surface/structure can seriously affects the success of dental implant. Patient with osteoporosis found that they take Bisphosphonate to treat the condition, which create serious other complication due to they cause increase cortical bone thickness and higher bone mineral density, which affects quality and quantity of cortical bone and leads to lack of osseointegration between the bone and implant surface and leading to failure of dental implant. This factor can be eliminated by considering this condition prior to plan dental implant as treatment option for such patients [6].
- **Diabetes:** Its is proved that there is increased prevalence of gum diseases in patient with diabetes because diabetes patients are more susceptible to bacterial infections due to uncontrolled blood sugar levels cause inability to fight the bacteria invading the gums [7]. They also have high risk of oral health problems like: gingivitis, periodontitis, oral thrush, dry mouth leads to soreness, ulcers [8].

Patients with diabetes also postponed wound healing which hinders osseointegration process. Uncontrolled diabetes can cause dental implant failure [4,6].

Age

Success of the implants are decreases with the increasing age of the patients as age more than 40 year is less favourable than the younger [9].

Type of bone

Most favourable type (dense type) of bone for successful dental implant is present in the anterior mandible. Opposite to this type of bone, that is porous bone present in the posterior part of maxilla is least favourable for the dental implants [10].

Jaffin and Berman (1991) did a study and concluded that dental implant failure is more in the posterior maxilla, due to thin cortex or porous bone type in this region, which is not suitable for the osseointegration of dental implant [8].

Surgical technique

Main objective for success of dental implant minimal tissue injury during the surgery lead to good osseointegration, which only depends on continuous and careful cooling while surgical drill-

ing is performed at low speed. If too violent a surgical technique is used, frictional heat will cause a temperature rise in the bone and the cells that should be responsible for bone repair will be destroyed. However, the time/temperature relationship for bone tissue necrosis is around 47°C applied for 1 min [10].

Post-operative care

Common cause of implant failure during healing is parafunction in a patient wearing implant supported prosthesis. The dental implant compressed the overlying tissue during the parafunctions. The premature loading may cause micromovement of the implant body in the bone and may compromise osseointegration [11].

Conclusion

Although survival rates of dental implants are now high, there still remains a seemingly unavoidable number of failures. Dental implant failure can be because of most of the factors. Each dental specialist needs to recognize the reason to treat the condition. Appropriate information accumulation, quiet criticism, and precise demonstrative devices will help bring up the purpose behind the failure.

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