



Oral Implantology Isn't Safe from Complications

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Introduction

Complications in oral implantology are not rare or exceptional, giving the findings of a retrospective study by McDermott et al. where 677 patients (2379 implants) were investigated, and the total rate of complications was 13.9%. what are the categories of these complications? what are the risk factors? and how to avoid their occurrence?

According to 4th European Workshop in Periodontology:

Failure in implantology is:

- Before loading: 2,5%
- After loading
 - Implant-Fixed prosthesis: 2-3%
 - Removable implant supported prosthesis > 5%

In general, implant complications may be categorized and summarized into:

1. Intraoperative complications:

To avoid them it is necessary to conduct a good treatment plan and study before the surgery, a good interpretation of the cone beam is crucial with a good lecture of all anatomic elements, biotype of bone and a well-designed planification of the implant positioning (radiologic and surgical guide can be very useful), besides, the surgical act must be atraumatic, the bone heating must be prevented (good drills, adequate speed and good irrigation)

and the sutures should be hermetic to avoid any hemorrhagic complication. Furthermore, a high primary stability must be searched to ensure a good osseointegration, a good initial stability is reached by higher torque insertion superior to 35Nm, a favorable bone type. Moreover, slightly tapered implant design and adjusted implant surface texture, has revealed to be an effective treatment substitute in sites exhibiting bone of poor quality. Also, the use of progressive thread implant design was shown to be a successful way to achieve good primary stability in these areas [1, 2]. (otherwise there will be a fibro-integration that leads to failure).

2. Postoperative complications: which can be divided into esthetic, mechanic and biologic ones.

- a. Biologic:** can be divided into soft-tissues complications and hard tissue complications:
- i. Soft tissue ones concern the reopening of the site, infection, suppuration, exposure of the threads... The principal remedy is a good oral hygiene and plaque control. Also, the clinician must be aware of the mucositis due to the persistence of provisional sealing cement.
 - ii. Hard tissue form relates to: periimplantitis which can be avoided by following the previous recommendations, and once installed can be treated by non-surgical (Ultrasound, laser, Chlorexidine, Ti-Brush....) or surgical procedures (open flap debridement, resection, bone regeneration, elimination of pockets...). If there was a previous periapical lesion the risk

of developing a retrograde periimplantitis is high, this can be prevented by Preventive: Taking an antibiotic and delayed implantation of the extraction is to be preferred. Once installed the curative option is: a debridement and a curettage of the lesion and a resection of the apical part of the implant. In this case Total healing of the bone can be observed within 2 years after the intervention [3].

The alarm should be also triggered towards the risk of bone fenestration, which can be prevented by preserving a minimum of 2mm thickness of the vestibular cortex in the anterior sector, and 1mm in the posterior sector, Good 3D positioning (the use of surgical guides) avoids bone fenestrations. Otherwise, an alternative is the socket shield technique proposed by Hurzeler, et al. [4] that consists of preserving a vestibular portion of the root in the socket before implanting so that the periodontium along with the bundle bone and the buccal bone remains intact. The curative treatment is bone regeneration or bone grafting.

b. Mechanic complications:

i. Major mechanic complications:

Implant fracture is the most dreadful complication, to avoid it many factors have to be controlled: Adapted occlusal scheme, narrowed occlusal table, occlusal face in resin or composite, stamped inclination and cusp height, avoid cantilever (maximum possible in implant supported-bridge is =10mm), splint port...

there is no curative solution but the removal of the implant and resuming treatment.

ii. Minor mechanic complications:

Provisional, abutment, or screw fractures... are easily managed by changing and/or repairing these elements.

c. Esthetic complications:

Are related to the pink esthetic score, lack of papilla, absence of the convexity of the supporting tissues, inadequate emergence profile visibility of threads, visibility of the implant by transparency, all these complications can be managed by a good tridimensional positioning of the implant [5], and the periodontal recovering and thickening procedures (buried connective graft, regeneration, graft....)

The bases of aesthetic success in implant prosthesis are:

Good positioning

Good situation of the contact points

Correct placement of the implant

Platform switching

Zirconia implant, zirconia-Ti-base abutment

individualized abutment

tissue thickening....

According to Tarnow, et al. [5], when the measurement from the contact point to the crest of bone was 5mm or less, the papilla was present almost 100% of the time. When the distance was 6mm, the papilla was present 56% of the time, and when the distance was 7mm or more, the papilla was present 27% of the time or less.

At the end, the predictability of implants is so high that some practitioners go so far as to give up, sometimes too quickly, on treating compromised teeth to replace them with implants. Nevertheless, any implant therapy presents a risk of complications, and even failures. The dental surgeon must carefully assess the case and the risk/ benefit therapeutic ratio must be explained to the patient.

“The best way to deal with failure is to avoid it”

Acknowledgment

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Conflict of Interest

No Conflict of Interest.

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