IMPLANTS IN MAXILLOFACIAL

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Abstract:
Tumour resection, congenital malformation, trauma, inflammation and injuries are the common causes of maxillofacial defects. Such abnormalities can subject the individual to social ostracism and ridicule, thus resulting in low self-esteem. Treatment option for such patients can be either surgical or prosthetic or combined (implant supported prosthesis). Criteria for the successful prosthesis include esthetics acceptability, functional performance, biocompatibility, retention longevity, and lack of morbidity.

Key words: Maxillofacial, Dental implant, Nasal, Orbit, Auricular, Zygomatic

INTRODUCTION

Face is the most noticeable part of the body, and many who suffer facial tissue defects, in addition to functional impairments, have an impaired social life stemming from aesthetic problems. Aesthetic repair for facial tissue defects, therefore contributes greatly to improving such patients quality of life. Maxillofacial defects may be the result of trauma, oncological therapy or congenital abnormalities. With the advent of extra-oral implants in Prosthetics, Osseointegration concept came; which offers better predictability, prosthetic adaptability, and esthetics, resulting in higher convenience for patients.

HISTORICAL BACKGROUND

Maxillofacial prosthetics comes of age during World War I. During the war trench warfare produced strategic volume of horrifying maxillofacial injuries. Kazanjian played a major role as maxillofacial surgeon and Prosthodontist. Recently facial implants have become popular around the century, but Rousett has used gold implants in the nose as early as 1828. The use of external titanium cranial implants for prosthetic reconstruction in the head and neck region was developed from the pioneering work of Branemark, Briene, Adell, Lindstorm and other investigators in the late 1960’s and early 1970’s. Because of this technology, it emerged as a reliable reconstruction method for the maxillofacial oral region.

VARIOUS SITES OF EXTRAORAL IMPLANT

In the various facial deformities, the following are the sites where the extra-oral implants are placed:

1. Zygomatic Implants
2. Orbital
3. Auricular
4. Nasal

ZYGOMATIC IMPLANTS

Restoration of the atrophic maxilla or a maxillary defect following tumour resection presents a challenge to the surgeon and prosthodontist. The atrophic
maxilla has an inadequate denture-bearing area and also a reduced bone volume, which may contraindicate the placement of endosseous implants\(^5\).

Zygomatic implants are also used in the treatment of maxillary defects secondary to trauma, tumour resection, or congenital defects\(^1\). If a zygomatic implant is used, onlay bone grafting or sinus augmentation may not be necessary\(^6\).

SITE

The zygomatic implant can be placed from the alveolar crest and pass through the maxillary sinus close to the crest of the zygomatic bone.

ORBITAL IMPLANTS

In cases with devastating loss of orbital structures because of tumour, trauma or burns or from congenital reasons; implant supported prosthesis is a viable option to an extensive and multi staged tissue reconstruction\(^2\).

These are two major factors that are pertinent when reconstructing the internal orbit, the ability to recreate the normal anatomy with and the reaction of the orbital soft tissue to the biomaterial used in the reconstruction\(^7\).

There are clear advantages to implant supported orbital prosthesis over reconstruction with autogenous tissue\(^2\):

1. Vastly shorter and simpler operation which lessons surgical morbidity.
2. Obviates the need for a separate donor site, which carries its own set of morbidities.

DISADVANTAGES

1. Considerable cost of the implants and prosthetics, which is infrequently covered by insurance.
2. Necessity of maintenance and replacement of prosthesis because of normal wear and discolouration.
3. Necessity of peri-implant hygiene throughout the life time of implant.
4. Possible implant failure and need for replacement when indicated.
5. Potential for prosthesis dislodgement at inopportune time such as social events.
6. Possible psychological issues related to prosthesis.

AURICULAR IMPLANTS

Osseointegration has been in clinical use in the oral cavity since the 1960s and in extra-oral craniofacial sites since the 1970s\(^8\). Surgical reconstruction of an ear with severe microtia (grade 3 malformations) is difficult and usually involves several stages. The cosmetic results are not always satisfactory, so alloplastic reconstruction with silicone auricular prosthesis is an attractive alternative procedure\(^9\).

CLASSIFICATION:

According to the classification by Holger’s et al (1989), the peri-implant soft tissue condition is recorded by 5-point scale (Likert scale)\(^10\):

1. Grade 0 – No irritation.
2. Grade 1 – Slight redness.
3. Grade 2 - Red and slightly moist tissue.
4. Grade 3 – Granulation and red and moist tissue.
5. Grade 4 – Infection.

NASAL IMPLANTS

The skin of the nose is the common site for basal cell and squamous cell carcinoma, which makes up to 12% of the skin tumours\textsuperscript{11}. Traditionally, defects created have been reconstructed using rotational flaps from the forehead such as seagull flaps or nasolabial flaps. Although many consider these to be satisfactory, it is technically difficult to produce a satisfactory, cosmetic result and surgical reconstruction has the disadvantage that the flap may fail, the result may be poor and recurrence of the tumour may necessitate removal of the flap\textsuperscript{11}.

CLASSIFICATION:

The nasal defects were classified in to\textsuperscript{3}:

1. Partial
2. Standard
3. Total (soft or hard tissue)
4. Extended rhinectomies

CONCLUSION

In 1979, Branemark proposed craniofacial implants that have been used worldwide in facial prosthesis. Nowadays, the extra-oral use of osseointegrated implants for the retention of maxillofacial prosthesis has been used for better support, stability, retention and cosmetics\textsuperscript{10}.

By providing implant supported maxillofacial prosthesis, there is a great improvement in patient’s quality of life as they get the confidence to face the world with courage and enthusiasm.

REFERENCES


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