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About the Author : Dr. Amol Thorat completed his Graduation and Post-Graduation in Prosthodontics from the prestigious Govt. Dental College, Mumbai. He has worked as a resident at BJ Medical College, Pune. Dr. Amol completed his advanced training in implants from Sonthofen, Germany, in the year 2006. He is a Fellow and Diplomate, International Congress of Oral Implantologists, and Fellow and Diplomate, Indian Society of Oral Implantologists. He has also completed 1.yr externship at Stony Brooks University, NY USA. and Mastership in Clinical Implantology, also from USA. An academician, he is ex- faculty at GDC, Mumbai, and at present, heads the department of Prosthodontics and Implantology, Aditya Dental College, Beed. He also maintains a successful Practise in Pune and Mumbai with special interest in Implant and Prosthetic Dentistry.

Introduction: Edentulism can be a debilitating handicap. Conventional mandibular dentures pose maximum problems because: 1. Mobility of the floor of the mouth, 2. Thin mucosa lining the alveolar ridge, 3. Reduced support area, and 4. The mandibular movements.

Many articles have been written about improving the fit of mandibular dentures. However, there is still a population who cannot manage them.¹ In fact, some feel that conventional dentures are below the standard of care.

Keywords: Overdentures, Implant-retained, Implant-supported, hybrid dentures, metal-ceramic prosthesis.

This article attempts to describe the treatment planning aspects of therapy, rather than the technical aspects. The discussion will be based on patient needs, anatomical presentation, cost-benefit analysis, maintenance, and postoperative visits.

Treatment choices for the dentulous mandible include-

1. No treatment,
2. Conventional complete dentures
3. Implant retained overdentures,
4. Implant supported overdentures,
5. Implant-supported fixed prosthesis with processed acrylic teeth, and
6. Implant supported fixed metal ceramic restoration.

Implant retained overdentures:

This type of restoration is ideal for patients who complain of looseness or mobility of mandibular denture, but not soreness of mucosa.

The complete overdenture prosthesis is made to full extensions as conventional dentures, to maximize the area of support. This treatment modality has a very high success rate.² In its simplest form, two implants are placed interforaminally, generally in the region of lateral incisors.³ These implants need not be splinted unless they are too divergent, or too short. The prosthesis is retained over these implants with either a ball, or locator attachments. (Fig. 1, 2)



(Fig. 1)



(Fig. 2)

Advantages of this type of restoration are:-

1. Reduced number of implants,
2. Ability to convert existing prosthesis,
3. Ease of repair of prosthesis.

Disadvantages are:-

1. Implants need to be parallel,
2. Frequent relines are required
3. Prosthesis needs support from the underlying ridge,
4. Minimum 10-12 mm interocclusal space is required.

In spite of the increased cost as compared to the conventional denture, there is evidence that the patients benefit with better function, nutrition, and well-being.⁴

Generally, four implants are placed interforamenally. (Fig.3, 4) Anterior ones are placed in the region of lateral incisor, while the posteriors are placed as far posterior as possible, but, anterior to the mental foramen. These implants are rigidly connected with a bar, which can be cast or milled. (Fig.5) Retention is provided by clips, which are fixed to the prosthesis.(Fig.6) Position of implants is such that if the patient desires to go for a fixed restoration in future, one implant can be accommodated in the midline for increased support.



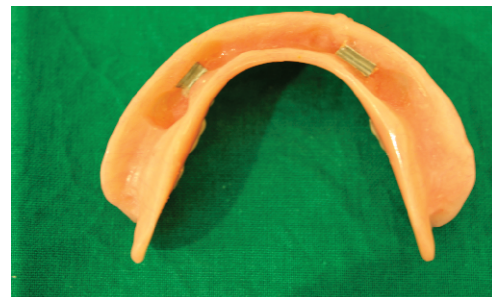
(Fig. 3)



(Fig. 4)



(Fig. 5)



(Fig. 6)

Advantages of Implant Supported Prosthesis are:-

1. Increased retention
2. complete support from implants
3. Since implants are splinted, they can be loaded immediately.

Disadvantages:-

1. Higher costs
2. Inter implant distance needs to be adequate to enable attachment of these clips.
3. Involves complicated clinical and laboratory procedures.

Implant Supported Fixed Prosthesis with processed Acrylic Teeth (Hybrid Dentures):-

When the anatomy of the edentulous mandible permits placement of more than four implants, the treatment of choice would be a fixed restoration. Four to six implants support a fixed restoration. They are placed between mental foramina, and have cantilevers posterior to the terminal implants.⁶

This type of restoration is solely dependent on implants for support, and can be provided to all patients who have sufficient bone to accommodate enough number of implants and minimum 15mm of interarch space.(Fig.7)



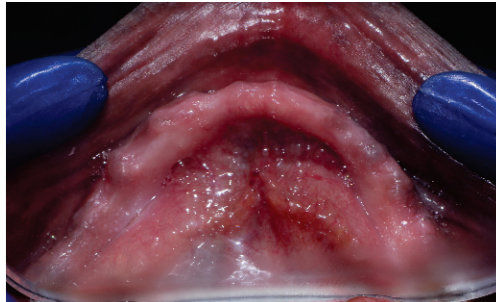
(Fig. 7)

With age, many medications reduce the salivary flow, making removable prosthesis extremely uncomfortable to wear. these are hybrid restorations. A metal framework is fabricated. Denture teeth are arranged over this framework, and prosthesis is acrylicized over this framework. Cost of the restoration is higher, but patient satisfaction is also more⁷. Depending upon the density of the bone and implant size, loading protocol can be decided. This prosthesis is essentially screw retained, allowing it to be removed for maintenance. Advantage of having such type of prosthesis lies in the fact that the bulk of the acrylic present over the metal framework compensates for the lost labial-buccal support, which occurs due to resorption of edentulous ridge.

Implant Supported Fixed Metal Ceramic Prosthesis:-

When sufficient amount of bone exists to allow 5-8 implants, and the resorption of alveolar ridge is less, we do not require the prosthesis to provide support for the labial and buccal tissues. (Fig. 8) In such cases, the interarch distance is usually less than 12mm. The prosthesis of choice is a metal-ceramic fixed bridge.

(Fig. 8)



This prosthesis can be screw or cement retained. A distance of minimum 7-8mm is required for a cement retained prosthesis. If it is less than that, a screw-retained restoration serves the purpose. Implants are not placed posterior to the mesial root of first molar, and cantilever is not given as far as possible. (Fig. 9) If the implants are placed more posterior, a split-frame prosthesis is advisable to counter the effect of mandibular flexure.

(Fig.9)



However, if all implants are placed anteriorly, they can be splinted with a single frame prosthesis, and one tooth on either side can be cantilevered. (Fig.10) This has shown comparable long term success rates as compared with split-frame prosthesis.

(Fig. 10)



Conclusion:-

There are four main choices of treating edentulous mandibles. minimum standard of care is to place two implants to aid in the retention of the denture. Implant supported prosthesis is preferred when patient complains of soreness of mucosa. patient satisfaction is greatly increased with a fixed implant supported prosthesis. The choice between hybrid and metal-ceramic type depends upon the degree of ridge resorption, and interarch space.

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