ABSTRACT

Background: Implant treatment is an attractive alternative to traditional fixed or removable partial dentures. Periodontists are extensively trained in implant surgical procedures to treat and maintain edentulous and partially edentulous patients. The aim of the present case report is to assess the implant success rate in epileptic patient.

Case description: A 45-year-old male patient provided with 6 endosseous dental implants who is an epileptic by two-stage surgical technique. Six dental implants were rigidly connected with a bar, which were then loaded with a maxillary overdenture after the completion second surgery. The patients were followed clinically and radiographically for 1 year after loading. The implant outcome with regard to survival and success was analyzed. Visual analog scale questionnaires were used to record patient function and satisfaction before and after implant treatment.
Clinical importance: Osseointegration can be successfully achieved in epileptic patients. The use of antiseptic mouthrinses and simple oral-hygiene measures helped in achieving a successful dental implant osseointegration in an epileptic patient.

**KEY-WORDS:** Implants, epilepsy, overdenture

**INTRODUCTION**

Edentulous patients cannot tolerate complete denture, as the patient experience considerable difficulty in adapting their prosthesis. These situations are very frustrating for both patient and the dentist and permanent means were identified to treat the maladaptive denture behavior.¹

A dental implant is a foreign object inserted within or over the bones of maxilla or mandible to support a fixed or removable prosthesis for restoration of lost function with the loss of natural teeth.¹²

An implant supported overdentures a complete or partial denture supported by mucoperiosteum and by means of inserted implants.

According to epidemiologic data patients with epilepsy generally have more caries, more missing teeth and worse periodontal status than the normal population. Epilepsy patients have a great risk of injury during their seizures or aspiration of foreign bodies such as removable dental prosthesis or fragments of prosthesis.³⁻⁵

Fixed dental replacements are therefore recommended to reduce this risk. In cases where the anatomic restrictions enable only a conventional removable prosthesis, an implant prosthetic treatment offers helpful alternative for the epileptic patient.⁶⁻¹⁰

Over the past 30 years, research has validated the success of osseointegrated implants as a viable alternative to fixed or removable prosthetics restorations. The success of implants has been attributed to their firm anchorage, referred to as osseointegration.¹¹,¹²

Osseointegration has been defined as a direct structural connection at the light microscopic level between the bone and the surface of a load carrying implant. The osseointegrated implant functions without mobility.¹³⁻¹⁶

Placement of endosseous dental implants has become a choice in comprehensive periodontal treatment plans for both partially and fully edentulous patients.

**CASE REPORT**

A 45-year-old male, epileptic patient visited the Department of Periodontics, C.K.S Teja Institute of Dental Sciences and Research, Tirupathi, India, with the chief complaint of “missing teeth”. With the loss of confidence and embarrassment within their peer groups, this patient requested for any permanent therapy that would replace the lost teeth, regain the
masticatory function and finally enhance the esthetics on smiling and during speech.

As the prime complaints of the patient with conventional complete denture were instability of mandibular denture, low retention, oral discomfort and migrating pain we chose implant supported overdenture in this patient.

PRESURGICAL EVALUATION:

Quantity and quality of available bone should be evaluated before implants are selected as a treatment option. Radiographs, including periapical and orthopantomographs may be necessary to determine the height of available bone and for selection of the dimensions of the implants. They also may be needed to determine the proximity of complicating structures including mental foramen and mandibular canal.

Dental procedures for which antibiotic premedication is indicated include those in which bleeding is likely. They include: Dental extractions, periodontal procedures including surgery, scaling and root planing, probing, and periodontal maintenance and dental implant placement.

Prophylactic antibiotic premedication is the practice of prescribing limited antibiotic therapy to dental patients who are at risk of contracting microbial disease as a result of invasive dental procedures.

Oral bacteria can enter the bloodstream during dental procedures and are normally destroyed by the body's immune system. In certain cases, however, bacteria may settle on abnormal tissues that has been weakened by surgery and results in complications. Prophylactic premedication with approved antibiotics manages and reduces the risk of infection.

After reevaluation of the patient with by his physician and a review of needed surgery for dental implant placement, the physician provided clearance. According to the American Heart Association, the pharmacological protocol consisted of 4 tabs of 500 mg amoxicillin and 800 mg of ibuprofen one hour prior to the surgical appointments were recommended as directed.

SURGICAL PROCEDURE:

Surgical procedures may be performed under aseptic conditions. The three important guidelines governed during endosseous dental implant procedures include:

- Procedures that minimize surgical trauma to the bone.
- Primary healing period to permit osseointegration of endosseous dental
implants.

* Maintenance of no micromotion during healing period.

Before surgery, the patients were advised to rinse for 1 minute with 0.2% chlorhexidine mouthwash. The surgical procedure was performed under local anaesthesia using 2% lignocaine containing adrenaline 1:2,00,000. After achieving adequate anaesthesia, at the recipient implant site, the conventional flap was designed. The incisions were made with a Bard-Parker blade No. 15, and a mucoperiosteal flap was elevated with periosteal elevator (PICTURES: A; from Fig.1 to Fig.3).

The implant sites were prepared with standard drills. Drilling of the osteotomy site was done according to the manufacturer's instructions, starting from the smallest drill of 2mm, which is a pilot drill. The pilot drill was extended to the desired length. After the first drill, parallelism was checked using paralleling pin (guide pin) and a radiograph. A sequential drilling was carried out with drill sequences of 2.2, 2.8 and 3.2 with a speed ranging from 500-1200 rpm under copious irrigation (PICTURE: A; from Fig.4 to Fig.7).

Once the osteotomy site was prepared, the longest and widest possible implants were placed at the level of the bone crest and a healing cap was positioned.

All the implants placed had shown good primary stability. Prior to suturing, the surgical area was thoroughly irrigated and debrided (PICTURE: A; from Fig. 8 to Fig. 9). The flaps were then approximated and sutured using interrupted sutures (4/0 Mersilk, Ethicon, UK).

Amoxicillin 500mg thrice daily for 5 days and Ibuprofen 400 mg twice daily were prescribed for a patient for 3 days along with chlorhexidine mouthwash for 15 days. Sutures were removed after 7 days. Recall appointments were made at the 90th and 180th day. After the 180th day, the healing caps were removed and the abutment was attached to the implant for impression taking (PICTURE: A; Fig.10. and PICTURE: B; from 10 to Fig.17). Impressions were taken, and the superstructure was then fabricated in the laboratory to accurately fit the substructure with a small cementation space. The superstructure was cemented using Glass Ionomer type II cement. Recall appointments were made 3 months and 6 months post insertion and the necessary clinical and radiological measurements were made (PICTURE: B; from Fig. 18 to Fig. 20).

Patient is recommended for regular visits for periodontal maintenance procedures and to check for any clinical signs and symptoms of peri-implantitis.
Step By Step Procedure Of Endosseous Dental Implants In An Epileptic Patient – A Case Report.


FIGURE:11. Healing caps placed after second stage surgery FIGURE:12. OPG – Immediate post-operative view

FIGURE:13. Implant mounts prior to impression technique


FIGURE:16. Abutments placed FIGURE, 17. Metal framing prior to prosthesis

FIGURE:18. Immediate post-operative view with implant supported overdenture

FIGURE:19. Six months post-operative view, FIGURE:20. One-year post-operative view
DISCUSSION:

Future research on dental implants is on: 1) Edentulous sites with inadequate bone 2) Splinting of implants to natural teeth 3) Longitudinal studies on microbial effects and treatment of peri-implant infection and 4) Effects of occlusal stresses on endosseous implants and its effects on maintenance of alveolar ridges. The main area of research with clinical significance is by using growth factors to increase bone quality and quantity by its osteoinductive properties to enhance osseointegration and further research should be done on the ability of biomechanical markers which helps in identifying the peri-implant bone loss before it appears clinically. [17-20]

The implant prosthetic treatment of a 45-year-old epileptic patient is presented. Epilepsy patients have a greater risk of injury and aspiration of removable dental prosthesis or fragments of prosthesis during their seizures. Hence, fixed dental replacements like endosseous dental implants are therefore recommended as an alternative to reduce this risk with conventional prosthesis. [21,22]

A two stage surgical procedure was performed to bring about osseointegration. Both stages are performed under strict sterilization and surgical guidelines, with 6 months healing period in between.

Studies have shown that the placement of endosseous dental implants is a predictable procedure. Criteria for success of Dental implants include: [23,24]

- Absence of persistent pain and infection.
- Absence of mobility.
- No implant radiolucency.
- Negligible bone loss.
- Patient/Dentist satisfaction with the implant supported restoration.

In this patient we have placed four implants of 3.0 × 13mm in relation to mandibular lateral incisors and canines. 3.3 × 10 mm implants were placed in relation to both mandibular second molars (Table:1). We obtained 100% success rate without any failure in all six implants (Table:2).
Table: 1  IMPLANT SIZE, SITE AND SUCCESS/FAILURE

<table>
<thead>
<tr>
<th>IMPLANT SIZE</th>
<th>SITE OF IMPLANT PLACED</th>
<th>SUCCESS / FAILURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.0 × 13 mm</td>
<td>Left mandibular lateral incisor</td>
<td>Success</td>
</tr>
<tr>
<td>3.0 × 13 mm</td>
<td>Right mandibular lateral incisor</td>
<td>Success</td>
</tr>
<tr>
<td>3.3 × 13 mm</td>
<td>Left mandibular canine</td>
<td>Success</td>
</tr>
<tr>
<td>3.3 × 13 mm</td>
<td>Right mandibular canine</td>
<td>Success</td>
</tr>
<tr>
<td>3.3 × 10 mm</td>
<td>Left mandibular second molar</td>
<td>Success</td>
</tr>
<tr>
<td>3.3 × 10 mm</td>
<td>Right mandibular second molar</td>
<td>Success</td>
</tr>
</tbody>
</table>

Table: 2  LIFE – TABLE ANALYSIS FOR IMPLANTS

<table>
<thead>
<tr>
<th>TIME PERIOD (years)</th>
<th>No. of Implants</th>
<th>Implants lost</th>
<th>Success Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Years</td>
<td>2</td>
<td>0</td>
<td>100 %</td>
</tr>
<tr>
<td>1 Year six months</td>
<td>2</td>
<td>0</td>
<td>100 %</td>
</tr>
<tr>
<td>1 year</td>
<td>2</td>
<td>0</td>
<td>100 %</td>
</tr>
</tbody>
</table>
### QUESTIONNAIRE FOR VISUAL ANALOGUE SCALE

<table>
<thead>
<tr>
<th>QUESTIONS AND PATIENT RESPONSES</th>
<th>SCORE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COMFORT</strong></td>
<td></td>
</tr>
<tr>
<td>KEY: 0= no, 1= yes, 2= very comfort</td>
<td></td>
</tr>
<tr>
<td>1. Is your maxillary prosthesis comfortable?</td>
<td>1</td>
</tr>
<tr>
<td>2. Are you satisfied with the stability and comfort of your lower prosthesis?</td>
<td>2</td>
</tr>
<tr>
<td><strong>ESTHETICS</strong></td>
<td></td>
</tr>
<tr>
<td>KEY: 0= no. 1=yes, 2= over and above</td>
<td></td>
</tr>
<tr>
<td>1. Are you satisfied with the tooth color, size and arrangement?</td>
<td>2</td>
</tr>
<tr>
<td>2. How do you find the appearance of your upper and lower prosthesis?</td>
<td>2</td>
</tr>
<tr>
<td><strong>ABILITY TO CHEW FOOD</strong></td>
<td></td>
</tr>
<tr>
<td>KEY: 0= not at all, 1=satisfactory, 2= good</td>
<td></td>
</tr>
<tr>
<td>1. Are you satisfied with the occlusion of your teeth?</td>
<td>2</td>
</tr>
<tr>
<td>2. How difficult is it for you to chew soft food?</td>
<td>2</td>
</tr>
<tr>
<td>3. How difficult is it for you to chew hard food?</td>
<td>1</td>
</tr>
<tr>
<td><strong>ABILITY TO SPEAK</strong></td>
<td></td>
</tr>
<tr>
<td>KEY: 0= not at all, 1=satisfactory, 2= good</td>
<td></td>
</tr>
<tr>
<td>1. How well can you talk with your upper and lower denture?</td>
<td>2</td>
</tr>
</tbody>
</table>
CONCLUSION:

Dental implant treatment in a patient with epilepsy seems to be a viable treatment option. Implant loss is rare. Although adequate plaque control measures needed to be taken for the success of the implant surgical procedure.

REFERENCES


Competing interest / Conflict of interest The author(s) have no competing interests for financial support, publication of this research, patents and royalties through this collaborative research. All authors were equally involved in discussed research work. There is no financial conflict with the subject matter discussed in the manuscript.

Source of support: NIL

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