Evaluation of dental implant failure in 94 patients- A clinical study

Dr. Kankana Lahiri banerjee¹, Dr. Swati Patwari², Dr. Sagareka Choudhury³, Dr. Deboleena Saha⁴, Dr. Salmoli Ganguly⁵, Dr. Richa Swarna Neha Minz⁵

¹Reader, Department of Prosthodontics, Awadh Dental College and Hospital, Jamshedpur, Jharkhand, India
²Reader, Department of Prosthodontics, Awadh Dental College and Hospital, Jamshedpur, Jharkhand, India (Corresponding author) Email- swati.suhasarta@gmail.com;
³Senior lecturer, Department of Prosthodontics, Awadh Dental College and Hospital, Jamshedpur, Jharkhand, India
⁴,⁵PG student, Department of Prosthodontics, Awadh dental college and hospital, Jamshedpur, Jharkhand, India

Corresponding author: Dr. Swati Patwari, Email- swati.suhasaria@gmail.com

ABSTRACT
Background: Dental implants are one of the most successful treatment choices for edentulous areas. The present study was conducted to assess dental implant failures in 94 patients.

Materials & Methods: The present study was conducted among 94 patients who received 120 dental implants. Parameters such as peri-implantitis, mucositis, screw fracture, crown fracture and prosthetic base fracture was recorded.

Results: 54 males had 65 dental implants and 40 females had 55 dental implants. Common reason for dental implant failures was crown fracture in 6, mucositis in 4, peri-implantitis in 7, screw fracture in 2, and prosthetic base fracture in 3 cases. The difference was significant (P< 0.05).

Conclusion: Common reason for dental implant failures was peri-implantitis, mucositis, screw fracture and crown fracture.

Key words: Dental implant, peri-implantitis, screw fracture

I. INTRODUCTION
Dental implants are one of the most successful treatment choices for edentulous areas. The surgical and rehabilitation phases of dental implant surgery are greatly affected by the history and clinical examination of the patient.¹ Surgical procedure for dental implant requires minimal trauma and circumvent excessive bleeding and stress. Moreover, a patient requiring dental implant has a number of fears such as fear of pain during the procedure.²

Implant failure is the first instance at which the performance of the implant, measured in some quantitative way falls below a specified and acceptable level. Implant failure is defined as the total failure of the implant to fulfill its purpose (functional, esthetic or phonetic) because of mechanical or biological reasons. Implant failure is the inadequacy of the host tissue to establish or to maintain osseointegration.³

Early failure represents a failure to establish osseointegration of dental implants, while late failure is the failure of either the established osseointegration or function of dental implants.⁴ While early failure is solely biologic complications, late failure could have either biologic or mechanical complications. Biologic complications could be due to peri-implantitis, it usually involves the resorption of soft and hard tissue. Mechanical complications could be due to improper implant loading design, it could lead to the fracture of implant body, screw body or...
implant supra-structure. The present study was conducted to assess dental implant failures in 94 patients.

II. MATERIALS & METHODS
The present study was conducted among 94 patients who received 120 dental implants of both genders. All subjects were informed regarding the study and their written consent was obtained. Particulars such as name, age, gender etc. was recorded. Parameters such as peri-implantitis, mucositis, screw fracture, crown fracture and prosthetic base fracture was recorded. Results thus obtained were analysed statistically. P value < 0.05 was considered significant.

III. RESULTS

Table I Distribution of patients

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number</th>
<th>Implant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>54</td>
<td>65</td>
</tr>
<tr>
<td>Female</td>
<td>40</td>
<td>55</td>
</tr>
</tbody>
</table>

Table I shows that 54 males had 65 dental implants and 40 females had 55 dental implants.

Table II Dental implant failures

<table>
<thead>
<tr>
<th>Failure</th>
<th>Number</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crown fracture</td>
<td>6</td>
<td>0.01</td>
</tr>
<tr>
<td>Mucositis</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Peri-implantitis</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Screw fracture</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Prosthetic base fracture</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Table II, graph I shows that common reason for dental implant failures was crown fracture in 6, mucositis in 4, peri-implantitis in 7, screw fracture in 2, and prosthetic base fracture in 3 cases. The difference was significant (P< 0.05).

Graph I Assessment of dental implant failures
IV. DISCUSSION

Dental implants have become a common choice among the treatment options for missing teeth rehabilitation since they were first introduced by Branemark in the 1970s. However, this treatment modality has limitations, with previous reports of failure rates of dental implant ranging from 1% to 19%. These failures could be classified into early failure and late failure based on the time when the abutment was connected: early failures occurred before the application of functional loading, and late failures occurred after applying occlusal loading or the first removal of the provisional restoration in cases of immediate implant loading. Dental implants failure can be early failures, those that occur from weeks to few months after placement caused by factors that interfere with normal healing process or by an altered healing response and late failures, those that arise from pathologic processes that involve a previously osteo integrated implant. The present study was conducted to assess dental implant failures in 94 patients. We found that 54 males had 65 dental implants and 40 females had 55 dental implants. Sghaireen et al included 121 well-controlled diabetic and 136 healthy individuals. Post-operative evaluation was carried out for all patients for about three years to assess the immediate and long-term success of the procedure. From a total of 742 dental implants, 377 were placed in well-controlled diabetic patients (case group) and 365 in healthy subjects (control group). A comparable (9.81%), but non-significant ($p = 0.422$) failure rate was found in the case group in comparison to the control group (9.04%). A non-significant ($p = 0.392$) raised number (4.98%) of failure cases were reported among females in comparison to males (4.44%). In respect to arch, the mandibular posterior region was reported as the highest failure cases (3.09%; $p = 0.411$), with 2.29% of cases reported in the mandibular anterior ($p = 0.430$) and maxillary posterior ($p = 0.983$) each. The maxillary anterior region was found to have the least number (1.75%; $p = 0.999$) of failure cases. More (4.98%; $p = 0.361$) cases were reported to fail during the functional loading stage in contrast to osseointegration (4.44%; $p = 0.365$). A well-controlled diabetic status does not impose any additional risk for individuals undergoing dental implant therapy.

We found that common reason for dental implant failures was crown fracture in 6, mucositis in 4, peri-implantitis in 7, screw fracture in 2, and prosthetic base fracture in 3 cases. Singh et al included a total of 100 patients. 50 patients belonged to the study group, while the remaining 50 belonged to the control group. In the control group, dental implant failure occurred in a single patient while in the study group, dental implant failure occurred in 3 patients. Removal of dental implants occurred in 10 patients of control group; while it was done in 9 patients of the study group. Bhagat et al the study included a total of 40 subjects. The data was obtained from the records of the institute. The dental implants were placed by single experienced surgeon so that the surgeon’s effect on the rate of complications is minimised. The mean age of the study was 28.34±4.33 years. The study involved 27 males and 13 females. There were 32.5% (n=13) patients in whom 4 implants were placed. In 20% subjects 5 implants were placed. Mucositis were seen in 20% (n=12) subjects. Peri implantitis was seen in 22.5% (n=9) subjects. There were 20% subjects with poor oral hygiene. Crown fracture was seen in 20% (n=8) subjects.

V. CONCLUSION

Authors found that the reason for dental implants failure found to be peri-implantitis, mucositis, screw fracture and crown fracture.

REFERENCES