Comparison of prognosis of implant supported crown and root canal treated single tooth supported crown in diabetic patients

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ABSTRACT
Background: The present study was undertaken for comparing the prognosis of implant supported crown and root canal treated single tooth supported crown in diabetic patients.

Materials & methods: A total of 100 diabetic patients were enrolled. Complete demographic and clinical details of all the patients were obtained. All the patients were randomly divided into two study groups: Group A- patients treated with implant supported crown and Group B- Patients treated with root canal treated single tooth supported crown. Radiographic prognosis was assessed. All the results were analysed by SPSS software.

Results: Among the patients of Group A, radiographic success was seen in 96 percent of the patients while among Group B, it was seen in 58 percent of the patients. Non-significant results were obtained while comparing the prognosis of implant supported crown and root canal treated single tooth supported crown in diabetic patients.

Conclusion: Prognosis of both implant supported crown and root canal treated single tooth supported crown in diabetic patients is similar.

Key words: Implant, crown, Root canal

INTRODUCTION
Diabetes mellitus is a chronic disorder of carbohydrate metabolism characterized by hyperglycemia, reflecting distortion in physiological equilibrium in utilization of glucose by tissue, liberation of glucose by liver and production-liberation of pancreatic anterior pituitary and adrenocortical hormone. The debilitating characteristic of diabetes mellitus was known as early as in second century AD, when Areteous named it as diabetes means “a siphon” as he perceived that the condition was characterized by melting down of flesh and limb into urine. Various modern research and discoveries have shown that diabetes mellitus, more or less, affects every tissues of body directly or indirectly through late complication.¹ ³The survival and/or complications of single implant-supported crowns have been compared to implant-supported bridges (fixed dental prostheses) and reviewed systematically. The survival of single implant-supported crowns over 5 and 10-years was reported to be 94.5% and 89.4% respectively, which was greater than implant-supported prostheses at 10-years (86.7%). Studies have compared biological and prosthetic complications of implant-supported crowns with tooth supported prostheses but few studies have compared single implant-supported crowns with the 3-unit fixed–fixed implant-supported bridge or FDP (fixed dental prosthesis). Pooled success rates at 5 years for
implant-supported single crowns was higher at 95% compared to natural tooth supported FDPs at 84% (95% CI 79–89%). Hence; the present study was undertaken for comparing the prognosis of implant supported crown and root canal treated single tooth supported crown in diabetic patients.

MATERIALS & METHODS
The present study was undertaken for comparing the prognosis of implant supported crown and root canal treated single tooth supported crown in diabetic patients. A total of 100 diabetic patients were enrolled. Complete demographic and clinical details of all the patients were obtained. All the patients were randomly divided into two study groups: Group A- patients treated with implant supported crown and Group B- Patients treated with root canal treated single tooth supported crown. Radiographic prognosis was assessed. All the results were analysed by SPSS software.

RESULTS
In the present study, a total of 100 diabetic patients were enrolled. Mean age of the patients of the group A and Group B was 46.8 years and 44.2 years respectively. There were 32 males and 18 females in group A and there were 30 males and 20 females in group B. Among the patients of Group A, radiographic success was seen in 96 percent of the patients while among Group B, it was seen in 58 percent of the patients. Non-significant results were obtained while comparing the prognosis of implant supported crown and root canal treated single tooth supported crown in diabetic patients.

Table 1: Demographic data

<table>
<thead>
<tr>
<th>Variables</th>
<th>Group A</th>
<th>Group B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Age (years)</td>
<td>46.8</td>
<td>44.2</td>
</tr>
<tr>
<td>Males (n)</td>
<td>32</td>
<td>30</td>
</tr>
<tr>
<td>Females (n)</td>
<td>18</td>
<td>20</td>
</tr>
</tbody>
</table>

Table 2: Comparison of prognosis

<table>
<thead>
<tr>
<th>Prognosis</th>
<th>Group A (n)</th>
<th>Group B (n)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Success</td>
<td>48</td>
<td>49</td>
<td>0.128</td>
</tr>
<tr>
<td>Failure</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

DISCUSSION
Patients with poor dental treatment compliance due to mental disability are known to have poor oral hygiene. Studies have reported that patients with intellectual disability have a higher prevalence and greater severity of periodontal diseases than the general population. These patients require comprehensive dental treatment, but do not appear to be receiving proper dental treatment at the proper time. This is supported by various studies reporting that patients with mental disabilities have more decayed teeth than the general population, but fewer filled teeth and more missing teeth. Consequently, prosthetic treatments are needed for recovery of missing teeth in patients with mental disabilities. However, they have greater difficulty with use of a removable prosthesis than the general population. Acclimation to a removable prosthesis is more difficult than for a fixed prosthesis, and the wear and removal maneuvers that patients must perform may be challenging. Therefore, use of fixed partial dentures after implant placement may be recommended as a method for providing high quality dental care for these patients. Hence; the present study was undertaken for comparing the prognosis of implant supported crown and root canal treated single tooth supported crown in diabetic patients. In the present study, a total of 100 diabetic patients were enrolled. Mean age of the patients of the group A and Group B was 46.8 years and 44.2 years respectively. There were 32 males and 18 females in group A and there were 30 males and 20 females in group B. Among the patients of Group A, radiographic success was seen in 96 percent of the patients while among Group B, it was seen in 58 percent of the patients. Alhammadi SH et al compared the clinical outcomes of single implant-supported crowns and implant-supported fixed dental prostheses (FDPs). The primary outcome measure was marginal bone loss, measured on digital radiographs taken after prosthesis placement at baseline and one year after implant loading, whilst peri-implantitis and technical complications were secondary outcomes. A total of 454 patients (152 males; 302 females) had 1673 implants. The mean
age of males (53.7 years, SD 14.6) was significantly greater than females (49.3 years, SD 12.9, p < 0.001). Mean mesial bone loss on the FDPs was significantly greater at 1 year (1.14 mm, SD 0.63) compared with the mesial surface of single implant-supported crowns (0.30 mm, SD 0.43, p < 0.001). Mean distal bone loss was also significantly greater at 1 year on the distal surfaces of implants supporting bridgework (1.29 mm, SD 0.71) compared with distal surfaces on single implant-supported crowns (0.36 mm, SD 0.54, p < 0.001). Mean marginal bone loss mesially and distally around implants placed in the lower anterior sextant was significantly greater compared to all other sites (p < 0.001). Bone loss by gender, patient’s age and medical condition was not different between the 2 implant groups. Screw loosening was the main technical complication (11.5%) whilst peri-implantitis occurred rarely (0.5%). The 66 cement retained implants had significantly more complications compared to the 1607 screw retained implants (p < 0.001). Mean marginal bone loss around the supporting implants of FDPs (3-unit fixed bridgework) was greater than on single implant-supported crowns at one year after implant loading.2

In the present study, non-significant results were obtained while comparing the prognosis of implant supported crown and root canal treated single tooth supported crown in diabetic patients. Mahmoud Torabinejad et al compared the outcomes, benefits, and harms of endodontic care and restoration compared to extraction and placement of ISCs, FPDs, or extraction without tooth replacement. Searches performed in MEDLINE, Cochrane, and EMBASE databases were enriched by hand searches, citation mining, and expert recommendation. Evidence tables were developed following quality and inclusion criteria assessment. Pooled and weighted mean success and survival rates, with associated confidence intervals, were calculated for single implant crowns, fixed partial dentures, and initial nonsurgical root canal treatments. The 143 selected studies varied considerably in design, success definition, assessment methods, operator type, and sample size. Direct comparison of treatment types was extremely rare. Limited psychosocial data revealed the traumatic effect of loss of visible teeth. Economic data were largely absent. Success rates for ISCs were higher than for RCTs and FPDs, respectively; however, success criteria differed greatly among treatment types, rendering direct comparison of success rates futile. Long-term survival rates for ISCs and RCTs were similar and superior to those for FPDs. Lack of comparative studies with similar outcomes criteria with comparable time intervals limited comparison of these treatments.11

CONCLUSION

Prognosis of both implant supported crown and root canal treated single tooth supported crown in diabetic patients is similar.

REFERENCES

1. Pjetursson BE, Brägger U, Lang NP, Zwahlen M. Comparison of survival and complication rates of tooth-supported fixed dental prostheses (FPDs) and implant-supported FPDs and single crowns (SCs) Clin Oral Implants Res. 2007;18(Suppl. 3):97–113.

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