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ARTICLE

Comparative Clinical Study of Conventional Dental Implants and Mini Dental Implants for Mandibular Overdentures: A Randomized Clinical Trial

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Abstract

Background

Dental implant-retained overdentures have been chosen as the treatment of choice for complete mandibular removable dentures. Dental implants, such as mini dental implants, and components for retaining overdentures, are commercially available. However, comparative clinical studies comparing mini dental implants and conventional dental implants using different attachment for implant-retained overdentures have not been well documented.

Purpose

To compare the clinical outcomes of using two mini dental implants with Equator® attachments, four mini dental implants with Equator attachments, or two conventional dental implants with ball attachments, by means of a randomized clinical trial.

Materials and methods

Sixty patients received implant-retained mandibular overdentures in the interforaminal region. The patients were divided into three groups. In Groups 1 and 2, two and four mini dental implants, respectively, were placed and immediately loaded by overdentures, using Equator® attachments. In Group 3, conventional implants were placed. After osseointegration, the implants were loaded by overdentures, using ball attachments. The study distribution was randomized and double-blinded. Outcome measures included changes in radiological peri-implant bone level from surgery to 12 months postinsertion, prosthodontic complications and patient satisfaction.

Results

The cumulative survival rate in the three clinical groups after one year was 100%. There was no significant difference ($p<0.05$) in clinical results regarding the number (two or four) of mini dental implants with Equator attachments. However, there was a significant difference in marginal bone loss and patient satisfaction between those receiving mini dental implants with Equator attachments and conventional dental implants with ball attachments. The marginal bone resorption in Group 3 was significantly higher than in Groups 1 and 2 ($p< 0.05$); there were no significant differences between Groups 1 and 2. There was no significant difference in patient satisfaction between Groups 1 and 2 but it was significantly higher than that in Group3 ($p<0.05$).

Conclusions

Two and four mini dental implants can be immediately used successfully for retaining lower complete dentures, as shown after a 1-year follow up.

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