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Rapporteurs:

Naomi Østergren Aarbu, Siren Abrahamsen, Minh Khai Le Thieu, Toma Betancur, and Tonje Moen Eckhoff, supervised by Anders Verket and Mario Romandini

Affiliation:

Postgraduate programme in periodontology, University of Oslo, Norway

study

Bar or locator for implant-supported overdentures?

Authors:

Jana Kostunov, Regina Menzel, Justo Lorenzo Bermejo, Peter Rammelsberg, Nikolaos Nikitas Giannakopoulos, Stefanie Kappel

Background

Oral health has improved in recent decades, but edentulism is still a significant challenge for both patients and dentists. Edentulousness is associated with poor chewing ability and with both psychological and social disabilities. Patients wearing complete dentures may experience deterioration in denture retention over time because of hard-tissue resorption and soft-tissue alterations.

An implant-supported overdenture is a well-documented rehabilitation solution that has been shown to improve retention of dentures, consequently enhancing the quality of life and satisfaction of patients with edentulous jaws.

Studies have demonstrated that, in the mandible, dentures supported by two implants are effective, and high survival rates have been reported. Furthermore, immediate loading of implants with an overdenture reduces dental chair-time and cost and may increase patient satisfaction.

Different means of implant-denture fixation are available, such as ball, bar, locator, and magnetic attachments. However, there is a lack of long-term data regarding the type of attachment used to retain overdentures on two implants in the edentulous mandible.

The type of attachment used may potentially have an impact on technical and biological complications, implant survival, and oral-health-related quality of life in the long term.

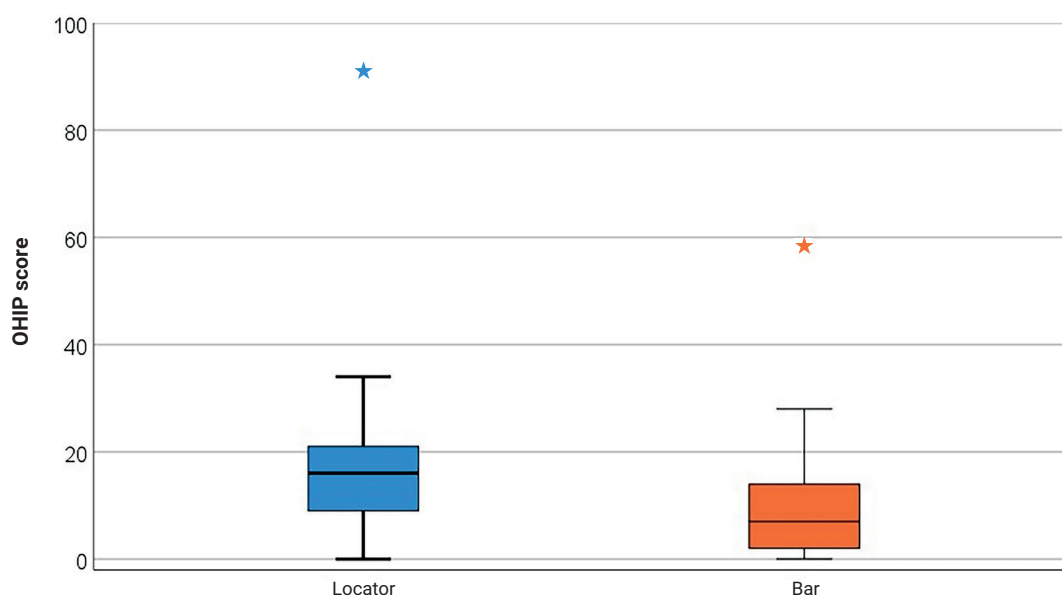
Aim

To evaluate long-term quality of life, implant survival, and technical and biological complications in patients with an edentulous mandible rehabilitated with two implants supporting an overdenture with either locator or bar attachments.

Materials & methods

- Out of the 78 patients examined, 46 were included in the original randomised clinical trial (RCT). The main reason for exclusion was inadequate bone volume in the vertical and/or horizontal dimension.
- All included patients received two BEGO-System implants (BEGO Semados, BEGO Implant Systems GmbH & Co.KG, Bremen, Germany) with a length of 10mm.
- The randomisation of the attachment type (egg-shaped Dolder bar vs. locator attachments) was performed after implant insertion.
- Following rehabilitation, the patients were monitored at three, six, 12, and 24 months in the original RCT.
- The present study is based on a long-term follow-up of the original RCT.
- Patients were contacted and invited to the clinic for a follow-up examination.
- The examination included an assessment of the modified gingiva index (mGI) and the modified plaque index (mPI), recorded at four sites per implant, with the highest score per implant recorded.
- Implants were evaluated for presence of peri-implant diseases according to the 2017 classification. Implant success was determined based on Albrektsson's criteria and radiographic estimation of bone loss was also performed.
- Oral-health-related quality of life was assessed with the German version of the Oral Health Impact Profile (OHIP-49).
- Patient records were reviewed for any complications that may have occurred since the implant rehabilitation.

Figure: Comparison of oral health impact profile (OHIP) scores from one-year and long-term follow-ups



Results

- Out of the 46 patients included in the original RCT, 27 were available for a follow-up examination. The mean age of these patients was 76.5 years (SD \pm 8.7), and the majority (77.8%) were males.
- The mean follow-up time since restoration was 6.2 years (SD \pm 3.3).
- Eight implants were lost in the first three months, as described in the original RCT, but only one implant was lost after the three-month follow-up. The implant survival rate was 89.1% in the bar-group and 91.3% in the locator group ($p > 0.05$).
- Bone loss > 0.5 mm was observed in 53.9% of the implants in the locator group and in 76.9% of the implants in the bar group ($p > 0.05$). The implant success rate was 84.6% in the locator group and 76.9% in the bar group ($p > 0.05$).
- Significantly higher plaque scores (mPI) were found in the bar group compared to the locator group ($p = 0.004$), but the mGI did not differ between the groups.
- Technical complications were common in both groups. The most severe technical complications were the change of the bar because of fracture ($n = 7$) or replacement of the locator abutment ($n = 6$). The most common technical complications included changing or activating clips, refixing retention clips, and relining the mandibular dentures. In total, 60 technical complications were reported in the locator group and 92 in the bar group.
- The mean OHIP score was 17.08 (SD \pm 20.08) and no difference was found between the groups. The OHIP scores at the latest follow-up were not significantly different from the assessment at one year after rehabilitation. All patients in the locator group and all but two patients in the bar group would recommend the treatment to others.

Limitations

- Although reasons for dropouts were explained, this follow-up study was underpowered for most of the outcomes considered.
- It is unclear why patients who experienced implant loss were excluded from the follow-up study, as their patient-reported data and/or clinical data could have provided important information.
- The follow-up time was up to nine years (mean 6.2 years, SD \pm 3.3) with a wide range of 0.1-9.6 years.
- Reported data on the incidence of peri-implant diseases is difficult to interpret.
- There was limited information on supportive peri-implant care.

Conclusions & impact

- There was no difference in implant survival between groups, and only one implant was lost after the three-month follow-up.
- The oral-health-related quality of life did not differ between groups; furthermore, the OHIP scores did not change from the one-year follow-up to the last follow-up reported in this study.
- There was significantly less plaque at implants in the locator group, but no difference in mucosal inflammation between the groups.
- Technical complications were common regardless of attachment type, but most complications were minor.
- No solid conclusions could be made on the incidence of bone loss and of peri-implant diseases.
- Both bar and locator attachments seem reliable solutions for implant-supported overdentures in the edentulous mandible, as similar implant survival and oral-health-related quality of life were observed. There were slightly more technical complications in the bar group and a lower plaque score in the locator group.



JCP Digest 119, published in November 2023, is a summary of "Immediate loading of dental implants in edentulous mandibles using Locator attachments or Dolder bars: A 9-year prospective randomized clinical". *J Clin Periodontol.* 2023; 50(11):1530-1538. DOI: 10.1111/jcpe.13857



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