

## Original Research

### COMPARISON OF IMPLANT SUPPORTED OVERDENTURES AND CONVENTIONAL DENTURES

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#### ABSTRACT:

**Background:** This study was conducted to assess the comparison of implant-supported overdentures and conventional overdentures. **Material and methods:** The trial involved 100 participants, of whom 50 received a mandibular overdenture supported by implants, whereas 50 received a typical mandibular denture in place of a conventional maxillary full denture. There were no restrictions on the implant type, the quantity of implants, or the loading technique. Furthermore, there were no limitations on how and when to evaluate post-treatment satisfaction. **Results:** In order to assess the primary outcome and secondary outcomes, information from 100 individuals, including 50 who received implants and 50 who received traditional treatment, was evaluated. The analysis's findings revealed a mean difference of -35.64 for the overall score, -29.45 for functional limitation, -33.64 for physical pain, -82.14 for psychological discomfort, -31.45 for physical disability, -53.77 for psychological disability, -14.23 for social disability, and -25.11 for handicap, all of which were statistically significant in favour of the implant group, with the exception of physical pain. **Conclusion:** In conclusion, based on the data analyzed, implant-supported overdentures are superior to traditional dentures at improving several facets of individuals who have lost all of their teeth's quality of life.

**Keywords:** implant, overdenture, conventional

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#### INTRODUCTION

The prosthetic management of the edentulous patient has long been a major challenge. Complete maxillary and mandibular dentures have been the traditional standard of care. However, most of the patients report problems adapting to their mandibular denture due to a lack of comfort, retention, stability and inability to masticate. Implant-supported overdentures have been a common treatment for edentulous patients for the past 20 years and predictably achieve good clinical results. Implant supported overdentures offer many practical advantages over conventional complete dentures and removable partial dentures. These include decreased bone resorption, reduced prosthesis movement, better esthetics, improved tooth position, better occlusion, increased occlusal function and maintenance of the occlusal vertical dimension.<sup>1</sup>

Several studies have indicated that the use of implant-supported overdentures in the mandible is an effective

treatment modality, especially in patients with excessive loss of residual bone.<sup>2,3,4</sup> The survival rate of implants in the front region of the mandible is excellent, and the rate of surgical complications is very low. Moreover, implants demonstrate a reduced rate of residual ridge reduction in the anterior mandibular area.<sup>5</sup> The treatment decisions depend on the patient's individual needs and treatment modalities together with their economic realities. The treatment of choice between fixed and removable implant-supported overdentures varies across cultures and countries. The literature suggests that patients who receive removable implant-supported overdentures have significantly higher satisfaction with their overdentures than those treated with fixed implant-supported prostheses.<sup>6</sup> Elderly people may have increased bone resorption, especially women after the age of menopause, and thus may have problems with denture use.<sup>7</sup> Hence, this

study was conducted to assess the comparison of implant-supported overdentures and conventional overdentures.

## MATERIAL AND METHODS

The trial involved 100 participants, of whom 50 received a mandibular overdenture supported by implants, whereas 50 received a typical mandibular denture in place of a conventional maxillary full denture. There were no restrictions on the implant type, the quantity of implants, or the loading technique. Furthermore, there were no limitations on how and when to evaluate post-treatment satisfaction.

## RESULTS

In order to assess the primary outcome and secondary outcomes, information from 100 individuals, including 50 who received implants and 50 who received traditional treatment, was evaluated. The analysis's findings revealed a mean difference of -35.64 for the overall score, -29.45 for functional limitation, -33.64 for physical pain, -82.14 for psychological discomfort, -31.45 for physical disability, -53.77 for psychological disability, -14.23 for social disability, and -25.11 for handicap, all of which were statistically significant in favour of the implant group, with the exception of physical pain.

## DISCUSSION

Rehabilitating edentulous patients with residual ridge resorption has improved tremendously because of implant dentistry. Implant-supported overdentures have expanded rapidly as a successful treatment modality to rehabilitate completely edentulous patients. It improves retention, stability, function and aesthetics as well as preserves the residual bone, especially in the mandible.<sup>8</sup> Many denture-related complaints associated with conventional dentures can be addressed when dental implants are used to retain conventional dentures.<sup>9</sup> Overdentures are simply conventional dentures attached to the remaining teeth or dental implants.<sup>10</sup>

Şirin et al<sup>11</sup> compared the changes in mandibular bone structure in edentulous patients who were rehabilitated with conventional complete dentures (CCD) and implant supported overdentures (ISO), by evaluating alveolar bone loss (ABL), panoramic mandibular index (PMI), mandibular cortical width (MCW), gonion index (GI), antegonial index (AI), and articular eminence inclination (AEI). Panoramic radiographs of 63 edentulous patients using CCD, 63 edentulous patients using ISO, and 126 patients without tooth loss were evaluated. Edentulous patients had a 2-year and 6-year follow-up panoramic radiograph image. ABL (anterior, premolar, and molar regions), MCW, PMI, AI, GI, and AEI were measured in each patient. Variation between measurements was analyzed using repeated measures ANOVA test and post hoc Tukey test. Both edentulous groups showed significantly lower mean than without tooth lost group in all

measures ( $p < 0.000$ ). ISO group showed significantly lower mean ABL than CCD group in anterior ( $p = 0.000$ ), right premolar ( $p = 0.005$ ), left premolar ( $p = 0.005$ ), right molar ( $p < 0.000$ ), and left premolar ( $p < 0.000$ ) regions in short term. ISO group showed significantly lower mean ABL than CCD group in anterior ( $p = 0.021$ ), right molar ( $p < 0.000$ ), and left premolar ( $p < 0.000$ ) regions in long-term. There was no statistically significant difference between the CCD and ISO groups in right premolar ( $p = 0.200$ ) and left premolar ( $p = 0.134$ ) regions in long term. Both edentulous groups showed significantly lower mean MCW ( $p < 0.000$ ), PMI ( $p < 0.000$ ), AI ( $p < 0.000$ ), GI ( $p < 0.012$ ), and AEI ( $p < 0.002$ ) than the without tooth loss group. There was no statistically significant difference between the CCD and ISO groups in terms of changes in the mean MCW, PMI, AI, GI, and AEI measurement in short and long term ( $p > 0.000$ ). In the short and long term, edentulism reduced alveolar crest height, MCW, and AEI in individuals, but had no effect on PMI, AI, or GI. The use of prosthesis did not prevent the decrease of alveolar crest height, MCW, or AEI (CCP or ISO). In the short and long term, however, ISO created less ABL in the mandibular anterior and molar regions than CCD.

Cardoso et al<sup>12</sup> evaluated the oral health-related quality of life and masticatory efficiency of patients rehabilitated with mandibular two-implant overdentures with immediate loading or conventional dentures. Fifty completely edentulous patients wearing bimaxillary conventional dentures, for at least one year, were recruited. The patients were then assigned to either two treatment groups: mandibular overdentures supported by two implants with bar-clip system and a maxillary conventional denture ( $n = 25$ ), and new maxillary and mandibular conventional complete dentures ( $n = 25$ ). Masticatory efficiency and oral health-related quality of life were assessed before and 3 months after denture insertion. The Brazilian version of OHIP-Edent questionnaire was used to assess the oral health-related quality of life. Masticatory efficiency was evaluated with chewing capsules through a colorimetric method. The results revealed fewer oral health-related quality of life problems in patients wearing mandibular two-implant overdentures compared to the conventional dentures group. In addition, the implant overdenture group presented statistically significant improvement in masticatory efficiency ( $p = 0.001$ ). There was no correlation between masticatory efficiency and OHIP in the implant group ( $p > 0.05$ ), however a correlation was found in the conventional denture group ( $p < 0.05$ ). Therefore, these short-term results suggest that mandibular overdenture retained by 2 implants with immediate loading combined with maxillary conventional dentures provide better masticatory efficiency and oral health-related quality of life than mandibular conventional dentures.

## CONCLUSION

In conclusion, based on the data analyzed, implant-supported overdentures are superior to traditional dentures at improving several facets of individuals who have lost all of their teeth's quality of life.

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