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Single versus two implants on peri-implant marginal bone level and implant failures in mandibular implant overdentures: A systematic review with meta-analysis

Dina Mohamed Ahmed Elawady

Modern Science and Art University, Egypt

Statement of the Problem: Edentulous patients experience problems with their complete dentures. These problems are more frequently encountered with the lower denture. With advent of dental implants used to retain and/or support removable prostheses, the functional deficiencies associated with conventional dentures are greatly improved. Guidelines to assist with the selection of the optimal implant number for retaining and/or supporting mandibular implant overdentures (MIODs) are controversial and lacking in literature. The purpose of this review is to systematically evaluate the impact of single versus two implants on peri-implant marginal bone loss (MBL) and number of implant failures in mandibular implant overdentures (MIODs).

Methodology: A literature search of electronic databases (PubMed and Cochrane) was performed up to March 2016 and complemented by hand search. RCTs that evaluated MBL and number of implant failures relative to single implant mandibular overdenture (MOD) were selected. The review and meta-analysis were performed using meta-analytic statistical package and in accordance with PRISMA guidelines.

Findings: Five RCTs met the inclusion criteria for systematic review and qualitative synthesis. The observation period ranged from 12 months to 5 years in the selected RCTs. The comparison included in the meta-analysis is; single implant versus 2 implants MODs. Pooled data revealed that single implant MODs significantly decreased the MBL (MD: 0.27, 95% CI: 0.20, 0.34, $P < 0.0001$, $I^2 = 0\%$) and number of implant failures (RR:3.26, 95% CI: (1.18, 8.97), $P = 0.02$; $I^2 = 0\%$).

Conclusions: Single implant MOD was found to be better than 2-implants MOD in terms of MBL and number of implant failures. However, this result should be interpreted with caution due to limited number of analysed studies with different loading protocols and short follow-up period.

dr.dinaelawady@yahoo.com