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# Effect of Implant-Abutment Connection Type on Bone Around Dental Implants in Long-Term Observation: Internal Cone Versus Internal Hex.

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**Purpose:** The purpose of this study was to evaluate the influence of the implant-abutment connection type on the bone level around dental implants in long-term observation and the survival rate for the different types of implant-abutment connections.

**Materials and Methods:** Two groups of implants made of titanium grade 23 alloy and with sandblasted and acid-etched (SLA) surface were included in the study: (a) the internal hex implant-abutment connection group (480 SPI dental implants; Alpha-Bio Tec, Petach Tikva, Israel, 184 patients) and (b) the internal cone implant-abutment connection group (60 C1 dental implants; MIS Implant Technologies, Israel, 34 patients). Certain inclusion and exclusion criteria were applied. Marginal bone loss (MBL) around the dental implants was measured in intraoral radiographs taken with parallel technique with a film holder and by bite recording index. X-rays were performed at the moment of functional loading, and at 12,

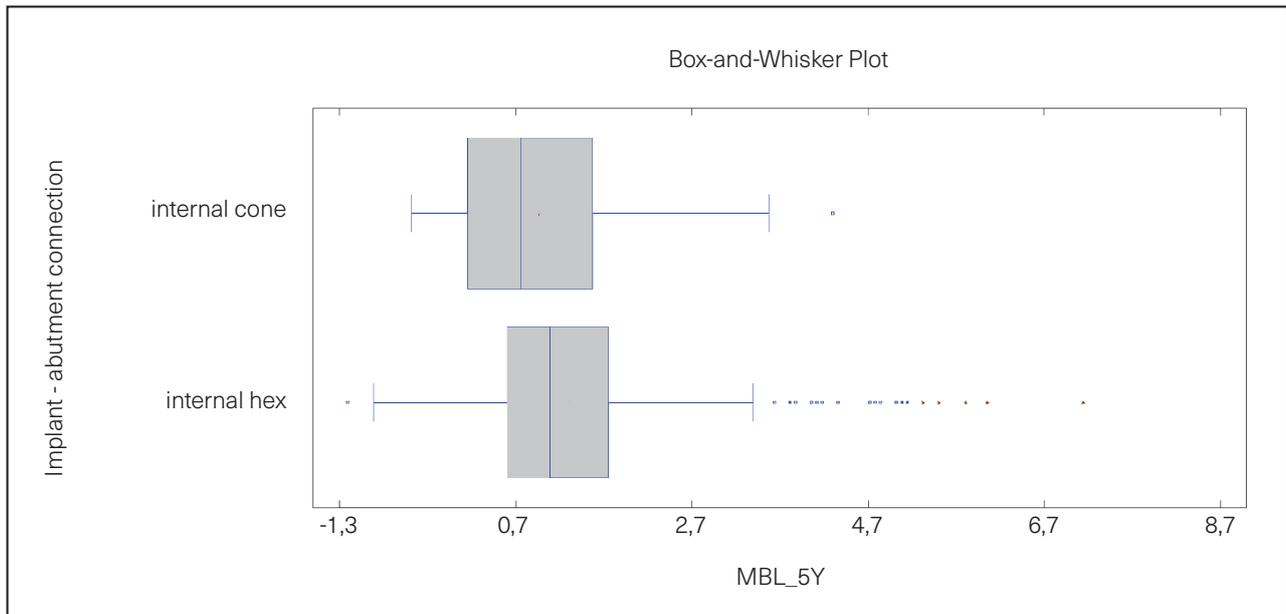
24, 36, and 60 months after loading. The digital analysis was conducted using Dental Studio 2.0 computer software.

**Results:** Average MBL was significantly lower in the conical connection compared with internal hex group  $0.68 \pm 0.59$  versus  $0.99 \pm 0.89$  mm (12 months),  $0.78 \pm 0.80$  versus  $1.12 \pm 1.00$  mm (24 months),  $0.83 \pm 0.87$  versus  $1.22 \pm 1.03$  mm (36 months), and  $0.96 \pm 1.02$  versus  $1.30 \pm 1.15$  mm (60 months after loading). Both groups of implants achieved a 100% survival rate.

**Conclusion:** The internal cone connection reduced bone resorption compared with the internal hex. Both groups of implants had a 100% survival rate.



Table.



Marginal bone loss around dental implants in relation to the implant-abutment connection 60 months after functional loading. The internal cone implant-abutment connection showed significantly less periimplant bone loss compared with the internal hex connection ( $0.96 \pm 1.02$  vs  $1.30 \pm 1.15$  mm) ( $P = 0.0292$ ) (one-way analysis of variance test).

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