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Klinik und Poliklinik für Mund-Kiefer- und Gesichtschirurgie
Plastische Operationen

Primary stability measurement of two types of conical self-tapping implants in an ex-vivo model

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Objectives

Successful implant outcome is basically the result of primary implant stability following placement. Therefor, implant stability is the key to clinical success. Optimal implant stabilization is particularly important in bone of low density. Primary stability depends especially on the geometry of the implant. Aim of the study was to investigate the impact of geometrical modifications of a conical self-tapping Camlog® implant ("J" and "K" line; Fig 2) on primary stability ex-vivo.

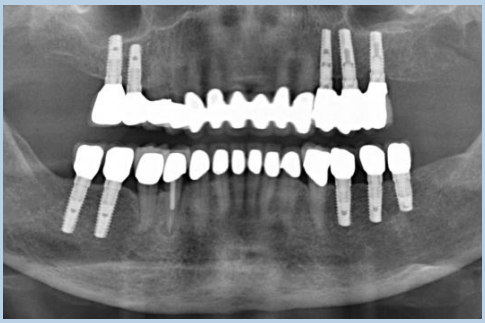


Fig 1: Patient with camlog implants

Material and Method

Two different types of Camlog implants ("J" and "K" line, Camlog, Basel, Switzerland) were inserted into fresh porcine bone. The implants (4.3 x 9mm; half "K", half "J") were placed into porcine cortical (n=18) and cancellous (n=18) bone (Fig 3). Damping capacity (Periotest, Modautal, Germany) and Implant Stability Quotient (ISQ, Osstel, Gothenburg, Sweden) were measured (Fig 4).

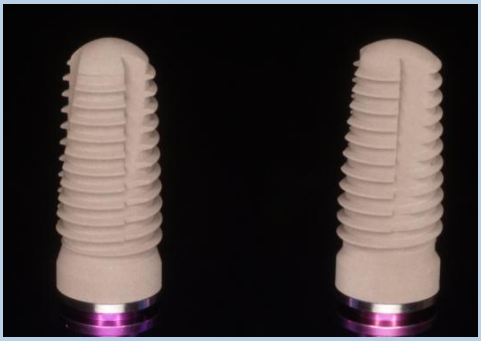
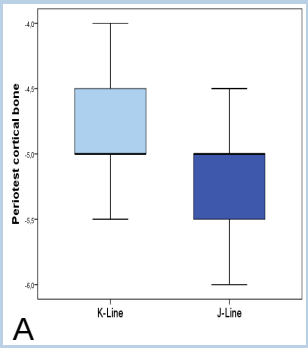
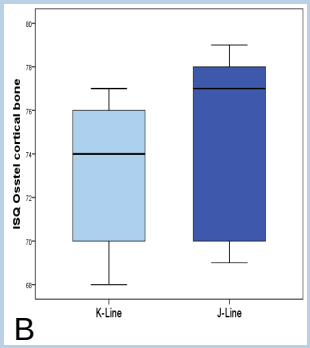


Fig 2: Camlog K-Line and J-Line implants





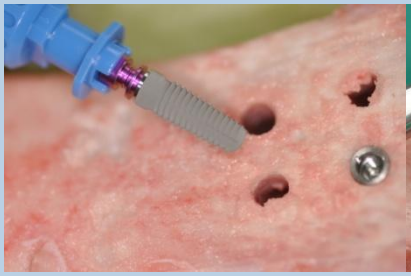
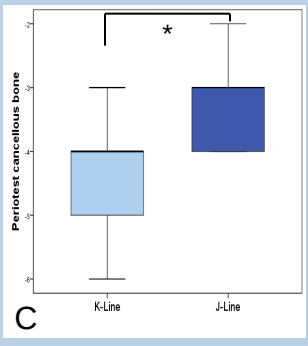


Fig 3: Implantation of Camlog K-Line implants into cortical bone

Fig 4: Measurement of ISQ with Osstel



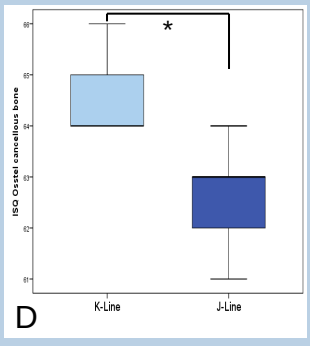


Fig 5A: Blogspots for mean Periotest values K-Line vs. J-Line in cortical bone (p=0.27; n=9), 5B: Blogspots for mean ISQ Osstel values K-Line vs. J-Line in cortical bone (p=0.36; n=9), Blogspots for mean Periotest values K-Line vs. J-Line in cancellous bone (p=0.02; n=9), 5B: Blogspots for mean ISQ Osstel values K-Line vs. J-Line in cancellous bone (p=0.001; n=9), *p<0.05.

Results

In cortical bone a high primary stability without significant differences between the implant lines regarding the mean Periotest values (Fig 5A; p=0.27; n=9) and the mean ISQ values (Fig 5B; p=0.36; n=9) was seen. In cancellous bone, the "K" line showed minor though significant lower Periotest (Fig 5C; p=0.02; n=9) and significant higher ISQ values (Fig 5D; p=0.001; n=9).

Conclusion

Due to the minor changes in the implant geometry, an increased primary stability of "K" line implants in cancellous bone seems to be possible.

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