Accuracy of full guided vs. half-guided implant surgery

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OBJECTIVES: The benefit in terms of higher accuracy for full guided implant surgery (template based guided cavity preparation and guided implant insertion) compared with half-guided surgery (template based guided cavity preparation and free-handed, manual implant insertion) has not been proved till now. MATERIAL AND METHODS: A total of 38 identical implants were inserted into five human cadaver jaws, after virtual implant planning with the coDiagnostiX() device. All cavities were drilled using templates equipped with tubes for guidance. At random, 19 implants were inserted in a free handed way (half-guided), whereas 19 implants were inserted in a guided way through the templates tubes (full guided). Postoperative cone beam computer tomographies (CBCT) were performed, and based on image fusion the total deviations between the virtual implant positions at the implants base and tip were determined and compared between both implantation modi. RESULTS: The mean difference in accuracy between both implantation modalities at the implants bases was 0.72 mm (range: 0.16-1.17 mm, SD: 0.45). The mean difference in accuracy between both modalities at the implants tips was 0.46 mm (range: 0.16-1.23 mm. SD: 0.49). Although full guided implantation showed a generally higher accuracy (mean tip: 1.54 mm, range: 0.33-3.64 mm; mean base: 1.52 mm, range: 0.4-3.54 mm) than half-guided implantation (mean tip: 1.84 mm, range: 0.84-3.22 mm; mean base: 1.56 mm, range: 0.49-3.43 mm), the differences were not statistically significant. CONCLUSIONS: The accuracy of half-guided implant surgery is comparable with full guided implant surgery.
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