

Pedicle Screw Insertion with and without computer Assistance - Two-year Clinical Results of a Randomized Controlled Study in 100 Patients.

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Objective: To study whether CT-based computer assisted pedicle screw insertion enhances the clinical results of lumbar fusion. **Background:** Computer guidance has improved the accuracy and safety of pedicle screw insertion (1). **Methods:** 100 lumbo and thoracolumbosacral operations were randomized either into 1) conventional pedicle screw insertion (Group 1) or into 2) computer assisted technique using the SurgiGATE Spine 2.1 optoelectronic navigation system (Group 2). Clinical results were analyzed using the Oswestry index. Radiological analysis was performed by an independent radiologist. **Results:** 95 patients completed the follow-up. Three had died and two were lost. Thus, there were 48 patients (265 screws) in Group 1, 38 patients (201 screws) in Group 2, and 9 dropouts from the original randomization. There was no statistical difference between the groups regarding age, gender, diagnosis, type of operation, operating time or number of screws per patient. The follow-up time was 24.2 ± 1.6 months. The preoperative Oswestry score in Group 1 was 47.7 ± 16.6 , and in Group 2 51.4 ± 16.3 (NS). The postoperative scores were, respectively, 27.1 ± 19.1 and 30.8 ± 22.7 (NS). The fusion rate in Group 1 was 85.1%, and in Group 2 92.1% (NS). In Group 1 4.5% of the screws were loose or broken as compared to 7.0% in Group 2 (NS). **Conclusions:** Despite superior accuracy, at 2-year follow-up no clinical benefit from computer assisted pedicle screw insertion could be demonstrated in this randomized controlled clinical study. **Reference:** Laine et al. (2000) Accuracy of pedicle screw insertion with and without computer assistance: a randomized controlled clinical study in 100 consecutive patients. *Eur Spine J* 9:235-40.