

Comparative study of sacroiliac screw placement guided by 3D-printed template technology and X-ray

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Abstract

To compare the clinical effect of 3D-printed template technology with X-ray fluoroscopy in assisting surgery for sacroiliac screws placement. Institutional review board-approved retrospective analysis. The clinical data of 31 cases of sacroiliac complex injury between January 2015 and December 2016 were analyzed. There were 16 patients, males 11 and females 5, who underwent surgery assisted by 3D-printed template in template group, and that of contemporaneous 15 patients, males 11 and females 4, who underwent traditional surgery were gathered as fluoroscopy group. All those patients were followed up for more than 6 months. The operation time and X-ray fluoroscopy times for each screw placement, and the Matta and Majeed score were analyzed and the difference between the two group was tested. All cases were followed up for 6–20 months, average 11.4 ± 0.6 months. In template group, 19 screws were implanted. Each screw spent 25–38 min, average 27.2 ± 5.3 min, and

need 2–5 times fluoroscopy, average 2.7 ± 0.5 . The fracture reduction quality was evaluated by Matta score scale: excellent 10, well 4, fair 2, good rate 87.5%; and pelvic function were evaluated by Majeed score scale: excellent 11, well 3, fair 2, and good rate 87.5%. In fluoroscopy group, 17 screws were implanted. Each screw spent 45–70 min, average 60.3 ± 5.8 min, and needs 11–23 times fluoroscopy, average 15.4 ± 3.5 . The fracture reduction quality was evaluated by Matta score scale: excellent 7, well 6, fair 2, and good rate 86.7%; and pelvic function was evaluated by Majeed score scale: excellent 6, well 6, fair 3, and good rate 80.0%. The difference in operation time, X-ray fluoroscopy times between template group and fluoroscopy group had statistical significance. But the Matta and Majeed score had no difference between two groups.

Biography

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