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Accuracy of Sacroiliac Screw Placement With and Without Intraoperative Navigation and Clinical Application of the Sacral Dymorphism Score

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Keywords

accuracy; dymorphism; navigation; pelvic fractures; sacroiliac screws; trauma

Abstract

Introduction

Percutaneously-placed sacroiliac (SI) screws are currently the gold-standard fixation technique for fixation of the posterior pelvic ring. The relatively high prevalence of sacral dymorphism in the general population introduces a high risk of cortical breach with resultant neurovascular damage. This study was performed to compare the accuracy of SI screw placement with and without the use of intraoperative navigation, as well as to externally validate the sacral dymorphism score in a trauma patient cohort.

Patients and methods

All trauma patients who underwent sacroiliac screw fixation for pelvic fractures at a level 1 trauma centre over a 6 year period were identified. True axial and coronal sacral reconstructions were obtained from their pre-operative CT scans and assessed qualitatively and quantitatively for sacral dymorphism – a sacral dymorphism score was calculated by two independent assessors. Post-operative CT scans were then analysed for breaches and correlated with the hospital medical records to check for any clinical sequelae.

Results

68 screws were inserted in 36 patients, most sustaining injuries from road traffic accidents (50%) or falls from height (36.1%). There was a male preponderance (83.3%) with the majority of the screws inserted percutaneously (86.1%). Intraoperative navigation was used in 47.2% of the patient cohort.

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