

Acuracy of Innovative "Smart" Hand Technique for Pedicle Screw Placement: A Radioanatomical Evaluation

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Introduction

Safe and precise pedicle screw placement with proper technique constitutes the main problem of spinal instrumentation. There are various devices and techniques developed for accurate screw placement. In this study, we described a concurrent usage of smartphone and digital angle-meter application in a cadaver vertebra and tried to smooth the way of appliance of this hand-held computers to neurosurgical practice.

Methods

Seventy-six dried vertebrae were evaluated in the Department of Anatomy, School of Medicine, Ankara University. Each vertebra was fixed by vice. According to the defined angles, pedicle screws were inserted in different angles to these vertebras. After the procedure, all vertebras were undergone CT imaging and the difference between the angulation of proposed and last angels of screws were compared.

Results

No penetration of vertebra from lateral or medial side was observed. Mean angular deviation of screw were calculated as 3.5 and 4 degrees in sagittal and horizontal planes respectively.

Conclusions

Integration of this app to spinal instrumentation procedures with hand held computers attachable surgical devices may increase the accuracy of previous techniques and hightechnologic products.

Learning Objectives

By the conclusion of our study, it was shown that smartphone apps can be used as a part of a surgical procedure in the future.

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