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Original article**Detection of penetration of the dorsal cortex by epiphyseal screws of distal radius volar plates: anatomical study comparing ultrasound and fluoroscopy**

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Conflicts of Interest:

Philippe Liverneaux has conflicts of interest with Newclip Technics, Argomedical

None of the other authors have conflicts of interest

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Abstract

Osteosynthesis of the distal radius by a volar plate can be complicated by lesions of extensor tendons by screws penetrating the dorsal cortex. The fluoroscopic skyline view enables to confirm the length of the screws. To avoid its risk of irradiation, some authors have recommended to use ultrasound instead. The goal of this study was to demonstrate that the detection rate of screws penetrating the dorsal cortex was at least as good using ultrasound compared to fluoroscopic skyline.

A volar plate in which one screw penetrated the dorsal cortex was implanted in 10 cadaveric wrists. Three observers had to detect which screw penetrated the dorsal cortex using ultrasound and then a fluoroscopic skyline.

The detection rate of screws penetrating the dorsal cortex was 43.33% with ultrasound and 96.97% using the fluoroscopic skyline. Agreement between the observers was poor with ultrasound and good with fluoroscopy.

Our results show that ultrasound cannot replace the fluoroscopic skyline view to detect screws penetrating the dorsal cortex of the distal radius in clinical practice.

Level of evidence: II

Keywords: fluoroscopic skyline; ultrasound; distal radius; screw length; fluoroscopy

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