Coronal ultra-thick multiplanar CT reconstructions (MPR) of the pelvis in the multiple trauma patient: an alternative for the initial conventional radiograph

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PURPOSE: Multiple trauma patients with clinically suspected pelvic fractures often directly undergo a CT scan. However, the initial portable pelvis film (PPF) for further follow-up is then not available. This study examines whether coronal ultra-thick multiplanar reconstructions from CT data are similar when compared with the initial PPF, thus having the potential to serve as an alternative baseline image.

MATERIALS AND METHODS: Initial PPF and coronal ultra-thick multiplanar CT reconstructions of 33 multiple trauma patients with pelvic fractures were retrospectively analyzed by two independent radiologists with regard to image quality, visualization of anatomical landmarks, and diagnostic accuracy. The primary diagnosis of pelvic fractures was made by using thin axial CT images and thin slice coronal and sagittal reconstructions and served as the standard of reference.

RESULTS: Coronal ultra-thick multiplanar CT reconstructions were superior to PPF regarding image adjustment (p < 0.02), absence of overlaying structures (p < 0.05), and overall image quality (p < 0.01). Visualization of most anatomical landmarks was similar with both modalities, except of the iliosacral joint and acetabular lines which were more accurately depicted on ultra-thick multiplanar CT reconstructions (p < 0.05). Diagnostic accuracy of coronal ultra-thick CT reconstructions was similar to PPF regarding most fracture types, except of a higher accuracy of coronal ultra-thick CT reconstructions for iliosacral joint and acetabular column fractures (p < 0.05).

CONCLUSION: Coronal ultra-thick multiplanar CT reconstructions of the pelvis provide similar image quality and diagnostic accuracy compared to PPF and are therefore suited as alternative baseline image in multiple trauma patients who directly undergo CT.

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