Pelvic tilt makes acetabular cup navigation inaccurate.

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Abstract

BACKGROUND: Modern navigation techniques allow precise positioning of the acetabular cup relative to the anterior pelvic plane. Variations in pelvic tilt will affect the resulting spatial orientation of the cup.

METHODS: We measured pelvic tilt in 30 volunteers with an inclinometer combined with an ultrasonographic position measurement system. A mathematical algorithm was developed to calculate the resulting cup position measured on standard radiographs, depending on pelvic tilt.

RESULTS: Average pelvic tilt at rest was -4 degrees in the lying position and -8 degrees in the standing position, and ranged from -27 degrees to +3 degrees. Pelvic reclination of 1 degree will lead to functional anteversion of the cup of approximately 0.7 degree.

INTERPRETATION: Pelvic tilt makes navigation systems referring to the anterior plane inaccurate.

Comment in

Visual intraoperative estimation of cup and stem position is not reliable in minimally invasive hip arthroplasty. [Acta Orthop. 2016]


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