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**Title:** The Effect of Fluoroscopy Beam Position on Perceived Acetabular Component Abduction and Anteversion Angles in Direct Anterior Total Hip Arthroplasty

**Introduction:** Placement of the acetabular component during direct anterior approach total hip arthroplasty is commonly guided by intraoperative fluoroscopy. A limitation of fluoroscopy, however, is that the perceived angulation of the acetabular component can change depending on the orientation and position of the fluoroscopy beam. The purpose of this study was to determine the magnitude of change in perceived acetabular component position in relation to fluoroscopy beam positioning.

**Methods:** An acetabular component was optimally positioned in an anatomic model of a female pelvis at an abduction angle of 45 degrees and anteversion angle of 20 degrees, as measured on a true anteroposterior view of the hip. The fluoroscopy beam was then repositioned (10 to 20 degrees cranial and caudal) and images of the hip and pelvis were obtained. Abduction and anteversion angles were measured on each image using Radlink software.

**Results:** Perceived anteversion measured on anteroposterior images of the hip and pelvis differed up to 12 degrees. Cranial beam angulation can increase anteversion angles up to 23.5 degrees, while caudal beam angulation can increase abduction angles up to 8.5 degrees.

**Discussion and Conclusion:** The projected image and perceived angulation of the acetabular component can change dramatically with positioning of the fluoroscopy beam in relation to the pelvis and hip. It is important to recognize beam angulation and the magnitude of effect on the perceived acetabular position in order to prevent erroneous component placement.