

Title

Implant positioning achieved in direct anterior approach total hip arthroplasty using Orthogrid Drone and Radlink assistive imaging systems.

Abstract

BACKGROUND:

Proper implant positioning and equalization of hip offset and leg lengths are well understood to be important surgical goals of total hip arthroplasty (THA). With increasing popularity of the direct anterior approach (DAA) to perform THA, use of of intraoperative fluoroscopy has increased. Supplemental fluoroscopic image guidance systems (Orthogrid Drone & Radlink) are commercially available to aid surgeons achieve targeted goals. The purpose of this study is to present implant positioning data regarding cup position, hip offset and leg lengths following 305 and 207 DAA THAs performed utilizing Orthogrid Drone and RadLink systems, respectively.

METHODS:

A retrospective review was performed on all patients undergoing elective primary unilateral or bilateral DAA THA between January 2016 and May of 2018 with intraoperative fluoroscopy supplemented with either Orthogrid Drone or Radlink systems. No subject received any form of preoperative templating. Our primary surgical outcomes included postoperative acetabular position, HO and LL. As a secondary outcome, surgical and fluoroscopic times were used to assess surgical efficiency.

RESULTS:

Four hundred fifteen subjects met inclusion criteria. This represented a total of five hundred and twelve THAs performed. Postoperatively, the mean HO & LL difference for the Orthogrid group was 3.5 ± 2.6 mm and 2.9 ± 2.2 mm, respectively. For the RadLink group, the mean HO & LL difference was 3.5 ± 2.6 mm and 3.1 ± 2.3 mm, respectively. Average cup inclination and anteversion angles with Orthogrid were 45.1 ± 4.2 and 17.8 ± 4.1 degrees, respectively and 41.7 ± 4.1 and 14.2 ± 4.1 degrees using Radlink. Fluoroscopic time per hip averaged 11 ± 5 and 10 ± 4 seconds with Orthogrid and

Radlink respectively. Surgical times for unilateral THA averaged 72 ± 12 and 78 ± 16 minutes for Orthogrid and Radlink, respectively.

DISCUSSION/CONCLUSION:

Our results suggest that both systems facilitate consistent placement of the acetabular component and produce HO and LL equalization following surgery comparable to previously reported literature, including computer navigated THAs. Surgical efficiency was not significantly different, though price differences between the two systems may influence the choice of hospitals considering adopting such technology.