

# Summary of: PROSPECTIVE RANDOMIZED STUDY OF DIRECT ANTERIOR VS. POSTERO-LATERAL APPROACH FOR TOTAL HIP ARTHROPLASTY

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## Location

Single center, single surgeon, USA

## Objectives

To assess the differences between the direct anterior approach and the posterior-lateral approach to total hip arthroplasty (THA) during a 12 month follow-up period.

## Treatments Assessed

- THA using direct anterior approach (DAA)
- THA using posterior-lateral approach (PA)

## Outcomes

- Clinical evaluation, at 6 weeks and 3, 6, 12 months post operatively
- Primary endpoint: ability to climb stairs normally and walk unlimited distances
- Secondary endpoints: Harris Hip Score (HHS), Hip Disability and Arthritis Outcomes Score (HOOS), VAS Pain Score, 6 minute walk test (6MWT)
- Cup and stem orientation

## Study Design

### Single-surgeon, prospective, randomized clinical study

Patients were enrolled from January 2010 to April 2011. Inclusion criteria included: primary THA, non-cemented, to treat non-inflammatory degenerative joint disease (NIDJD). All patients received a CORAIL® Total Hip System femoral stem, a PINNACLE® Acetabular Cup System cup, an AltrX® cross-linked polyethylene liner and a cobalt-chromium-molybdenum femoral head, size 28, 32 or 36mm. Overall, 87 patients were randomized in blocks: 43 in the DAA group and 44 in the PA group. Assessments were conducted pre-operatively, operatively, and post-operatively at 6 weeks then at 3, 6 and 12 months.

DAA was performed on fracture table with fluoroscopy.

Overall the DAA and PA groups had comparable demography, except there were significantly more males and higher Harris Hip Pain score in the DAA group.

## Results

### Effectiveness

The DAA group was associated with significantly longer surgery time ( $P<0.0001$ ), a larger incision ( $P<0.0001$ ) and more blood loss ( $P<0.0001$ ) which is partly explainable through the additional steps within the DAA procedure (fracture table and fluoroscopy) and more difficult visualization.

Post-operative data showed DAA subjects performed significantly better compared to PA subjects, walking further on day of surgery ( $P=0.0003$ ), day 1 ( $P=0.0062$ ) and day 2 ( $P=0.0030$ ) post-operatively. At 6 weeks post-operatively, significantly more of the DAA group were walking unlimited distances and using stairs normally compared to the PA group.

The DAA group at day 1 post-operatively had a significantly lower VAS Pain Score ( $P=0.0472$ ). There were no significant differences in pain medication post-operatively.

There was a significant difference in length of stay ( $P=0.0028$ ), in favor of DAA vs. PA (2.28 vs.3.02 days): 74% of DAA subjects were discharged on day 2 vs. 39% in the PA group.

The HHS unlimited distance walking question continued to show significant benefit of DAA vs. PA at 3 months ( $P=0.0260$ ).

At 6 weeks the average HOOS Sports and Recreation sub-scores were significantly higher in the DAA group ( $P=0.0007$ ). At 3 months the DAA group average HOOS Symptoms sub-scores were still significantly higher ( $P=0.0471$ ).

The average cup inclinations had significantly different means but the standard deviations showed no significance at 6 weeks ( $47.1^\circ \pm 6.1$  [DAA] vs.  $42.4^\circ \pm 7.6$  [PA],  $P=0.0022$  and  $P=0.1581$  respectively). The average cup anteversion had significantly different means and standard deviations ( $20.1^\circ \pm 5.9$  [DAA] vs.  $25.8^\circ \pm 8.1$  [PA],  $P=0.0005$  and  $P=0.0426$  respectively).

There was no significant difference in the number of cups implanted within Lewinnek's safe zone for both inclination and abduction, DAA 73% vs. PA 57% ( $P=0.1709$ ). There was no evidence of cup migration at 12 months in either group.

The DAA group had significantly more stems placed in a neutral position ( $P=0.0034$ ). There was radiographic evidence of osseointegration in all acetabular and femoral components.

At 6 and 12 months post-operatively there were no significant differences in any of the parameters between the two groups.

### Safety

There were no significant differences in the rate of operative and post-operative complications (10 DAA, 7 PA,  $P=0.4460$ ).

No revisions occurred in the DAA group. One PA subject was revised due to a recurrent dislocation.

## Authors Conclusions

"The longer surgical time and blood loss are offset by better pain relief, earlier discharge, avoidance of range of motion precautions, and improved early function. The use of intra-operative fluoroscopy led to a lower variance in cup anteversion and stem orientation which, in addition to preserving posterior soft tissue structures, allowed patients to avoid range of motion restrictions."

### [Link to full article](#)

This summary is based on *Prospective randomized study of direct anterior vs. Postero-lateral approach for total hip arthroplasty (Barrett et al, 2013)* and produced by DePuy Synthes for promotional purposes.

