

Robotic-arm assisted total hip arthroplasty results in smaller acetabular cup size in relation to the femoral head size: a matched-pair controlled study

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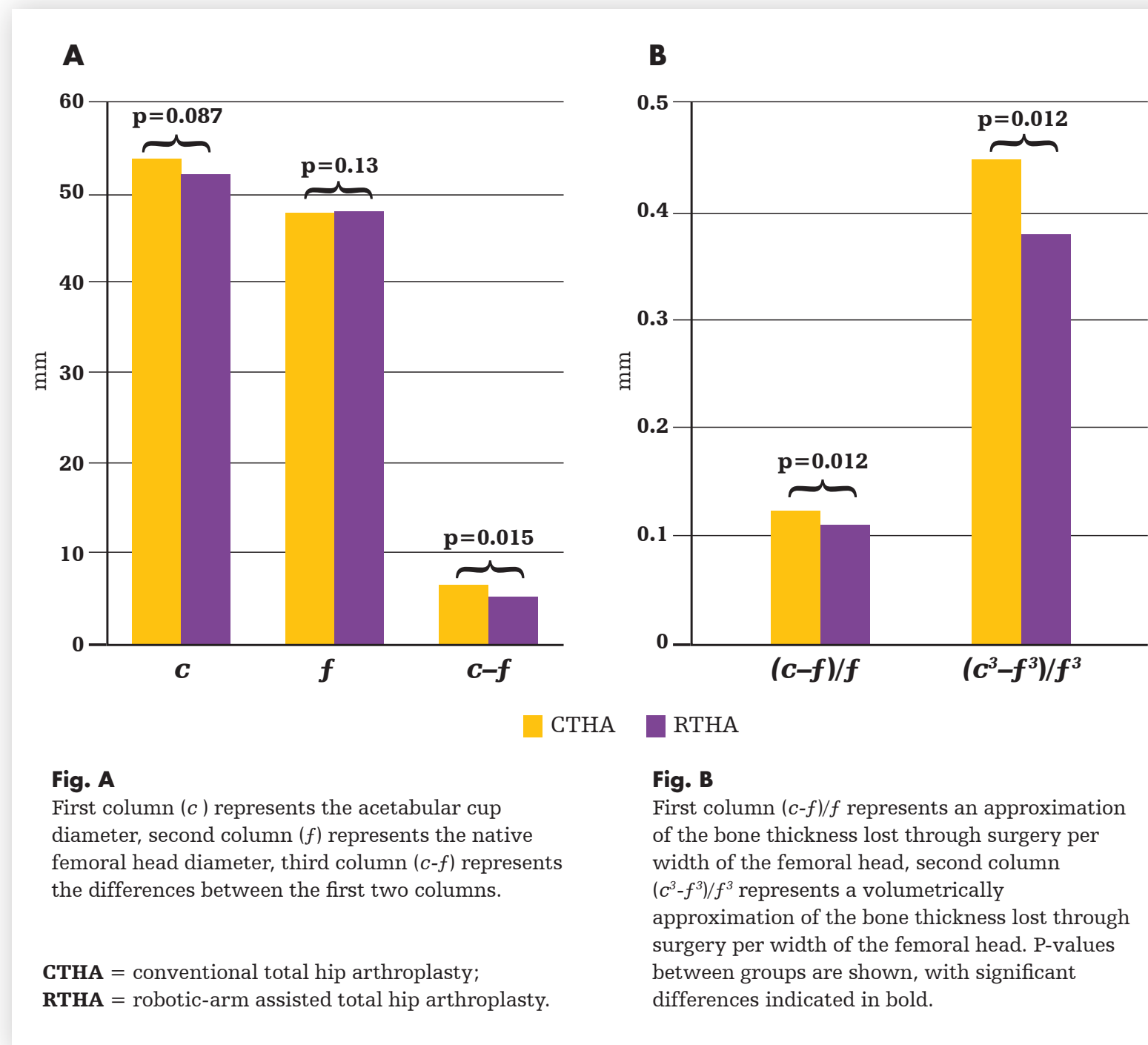
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Purpose

To compare the acetabular component size relative to the patient's native femoral head size between conventional THA (CTHA) approach and robotic-arm assisted THA (RTHA) to infer which of these techniques preserved more acetabular bone.

Methods

Patients were included if they had primary osteoarthritis (OA) and underwent total hip replacement between June 2008 and March 2014. Patients were excluded if they had missing or rotated postoperative anteroposterior radiographs. RTHA patients were matched to a control group of CTHA patients, in terms of preoperative native femoral head size, age, gender, body mass index (BMI), and approach. Acetabular cup size relative to femoral head size was used as a surrogate for amount of bone resected. We compared the groups according to 2 measures describing acetabular cup diameter (c) in relation to femoral head diameter (f): (i) c-f, the difference between cup diameter and femoral head diameter and (ii) (c-f)/f, the same difference as a fraction of femoral head diameter.



Results

57 matched pairs were included in each group. There were no significant differences between groups for demographic measures, femoral head diameter, or acetabular cup diameter (p>0.05). However, measures (i) and (ii) did differ significantly between the groups, with lower values in the RTHA group (p<0.02).

Conclusions

Using acetabular cup size relative to femoral head size as an approximate surrogate measure of acetabular bone resection may suggest greater preservation of bone stock using RTHA compared to CTHA. Further studies are needed to validate the relationship between acetabular cup size and bone loss in THA.

Reference:
 Suarez-Ahedo, C, Gui, C, Martin, T, Stako, C, Chandrasekaran, S, Christopher, J, Domb, B. Robotic-arm assisted total hip arthroplasty results in smaller acetabular cup size in relation to the femoral head size: A Matched-Pair Controlled Study. Hip Int. 2017; 27 (2): 147-152.

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