

Clinical accuracy of a patient-specific femoral osteotomy guide in minimally-invasive posterior hip arthroplasty

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INTRODUCTION

Patient specific guides can be a valuable tool in improving the precision of planned femoral neck osteotomies, especially in minimally invasive hip surgery, where bony landmarks are often inaccessible. The aim of our study was to validate the accuracy of a novel patient specific femoral osteotomy guide for THR through a minimally invasive posterior approach, the direct superior approach (DSA).

METHODS

As part of our routine preoperative planning 30 patients underwent low dose CT scans of their arthritic hip. 3D printed patient specific femoral neck osteotomy guides were then produced. Intraoperatively, having cleared all soft tissue from the postero-lateral neck of the enlocated hip, the guide was placed and pinned onto the posterolateral femoral neck. The osteotomy was performed using an oscillating saw and the uncemented hip components were implanted as per routine. Postoperatively, the achieved level of the osteotomy at the medial calcar was compared with the planned level of resection using a 3D/2D matching analysis (Mimics X-ray module, Materialise, Belgium).

RESULTS

A total of 30 patients undergoing uncemented Trinity™ acetabular and TriFit TS™ femoral component arthroplasty (Corin, UK) were included in our analysis. All but one of our analysed osteotomies were found to be within 3 mm from the planned height of osteotomy. In one patient the level of osteotomy deviated 5 mm below the planned level of resection.

CONCLUSION

Preoperative planning and the use of patient specific osteotomy guides provides an accurate method of performing femoral neck osteotomies in minimally invasive hip arthroplasty using the direct superior approach.

LEVEL OF EVIDENCE

IV (Case series).

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