

# Which Way Around Does This Go? A Simple Method for Ensuring the Correct Glenosphere Offset

Saqib Javed · Richard Heasley · Matt Ravenscroft

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**Abstract** The correct glenosphere offset in a reverse total shoulder replacement ensures prosthetic stability, longevity and avoids scapula notching. We present a simple technique for ensuring the correct glenosphere offset when the prosthesis is implanted.

**Keywords** Shoulder · Arthroplasty · Reverse · Glenosphere · Complications

## Technical Note

The reverse total shoulder replacement (RTSR) is now the gold standard treatment in those with rotator cuff arthropathy. The RTSR reverses the ball and socket configuration of the humerus and glenoid resulting in medialisation and distalisation of the centre of rotation of the shoulder joint, which improves function in those with rotator cuff arthropathy [1]. The correct glenosphere offset in a RTSR ensures prosthetic stability, longevity and avoids scapula notching [2].

Despite its obvious benefits the RTSR is not without its unique complications. Scapula notching is widely reported as the commonest complication with radiographic evidence in many series being reported as greater than 50 % [3]. Glenosphere offset is an important predictor of scapula

notching and if this undesirable complication can be prevented it may translate into better patient function and implant longevity [2, 4]. Biomechanical studies have demonstrated that severe scapula notching may affect initial glenoid baseplate stability [5]. Furthermore, progressive scapula notching has been shown to have a negative impact on implant survivorship principally through glenoid loosening and wear [6, 7]. Post-operative acromial fracture is a rarer complication with a reported incidence of 1.5 % [3]. Particularly, in those patients with osteopenia and preexisting acromial erosion an increased glenosphere offset may cause an acromial fracture due to overextension of the deltoid, resulting in deleterious functional outcomes [1].

We describe a simple method for ensuring the correct glenosphere offset in a RTSR. The definitive glenosphere, unlike the trial, is not marked to demonstrate offset direction. The trialled offset direction is determined by placing the definitive glenosphere on an orientation block. However, when the unmarked glenosphere is removed from the block the direction of offset becomes unclear. Applying a steri-strip on the opposite end of the desired offset with the glenosphere still on the block ensures the correct craniocaudal positioning of the glenosphere when implanted (Fig. 1). The steri-strip is then simply removed at the end. We use this clever technique for every

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S. Javed (✉) · R. Heasley · M. Ravenscroft  
Department of Trauma and Orthopaedics, Stepping Hill Hospital,  
Stockport SK2 7JE, UK  
e-mail: shehzada50@doctors.org.uk

R. Heasley  
e-mail: Richard.heasley@stockport.nhs.uk

M. Ravenscroft  
e-mail: Matt.ravenscroft@stockport.nhs.uk



**Fig. 1** Application of a steri-strip on the opposite end of the desired glenosphere offset

procedure we perform with good results and complication rates well below those reported in the literature with regards to scapula notching, acromial fracture and revision.

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