

# AB103. SOH21AS005. CT versus MRI planning for reverse geometry total shoulder arthroplasty

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**Background:** Preoperative planning for Reverse Total Shoulder Arthroplasty (RTSA) using CT or MRI is well described. We aimed to compare pre-operative CT versus MRI measurement accuracy for predicting glenoid implant sizes.

**Methods:** All patients with a preoperative CT or MRI undergoing RTSA at our tertiary referral centre from October 2017 to February 2020 were included. Data was collected from theatre and implant registers. Glenosphere Width (GW) and Baseplate Central Screw Length (BCSL) were independently predicted from pre-operative CT or MRI imaging by 2 blinded senior authors. A sub-group analysis was also performed between trauma and non-trauma CT cases. SPSS v26 was used for statistical comparison between predicted and actual implants.

**Results:** Seventy-one data sets from 69 patients were included for analysis; 31 CT predictions and 40 MRI predictions; 61.3% of CT measured GW predictions were accurate compared to 82.5% of MRI predictions ( $P=0.045$ ). BCSL predictions were 77.4% and 70% accurate for CT and MRI respectively, without significant difference. There was no significant difference in sub-group analysis for trauma *vs.* elective CT accuracy of BCSL or GW measurements.

**Conclusions:** MRI imaging may be superior to CT

for predicting GW and no less accurate than CT for predicting BCSL in the elective setting. No difference in CT measurement accuracy was seen between trauma and elective settings. Further study is required to assess MRI accuracy in trauma. While simultaneously clearly defining shoulder soft tissue anatomy, MRI may also be the preferred modality for bony measurements during pre-operative planning for RTSA.

**Keywords:** Pre-operative imaging; reverse total shoulder arthroplasty (RTSA); pre-operative predictions; proximal humeral fracture; shoulder arthroplasty

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## Footnote

*Conflicts of Interest:* The authors have no conflicts of interest to declare.

*Ethical Statement:* The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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