Beyond Guesswork: How Accurate are Surgeons at Determining a Lack of Glenoid Bone Loss in Instability Surgery?

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INTRODUCTION:

Glenoid bone loss is common following traumatic glenohumeral joint dislocation[1] and bone loss as small as 13.5% of the glenoid surface has been associated with poor functional results[2]. The perfect circle technique has been described utilizing both CT scans and MRI for accurate measurement of glenoid bone loss[3]. Because such small amounts of bone loss can affect the prognosis of treatment, we set out to evaluate true bone loss in cases in which the treating surgeon perceived no bone loss preoperatively or intraoperatively.

METHODS:

We evaluated 138 consecutive instability cases to determine the accuracy of visual inspection of preoperative MRI scans, x-rays, and intraoperative evaluation of the glenoid by 3 fellowship trained shoulder specialists in estimating the accuracy of a “no glenoid bone loss” determination. Ten patients were excluded because of poor imaging quality. In 97/128 patients, the surgeons perceived no bone loss and did not perform specific preoperative measurements on the MRI scan utilizing the perfect circle technique. We subsequently performed perfect circle measurements on the preoperative MRIs of these patients and these 97 cases form the basis of this study. Our hypothesis was that visual inspection without measurement of the glenoid would be inaccurate and miss subtle glenoid bone loss.

RESULTS:

In the 97 cases in which there was no perceived bone loss, perfect circle measurements identified 24 patients (24.7%) with true bone loss. Nine of these 24 patients had bone loss > 13.5% with 1 patient demonstrating >17.5% bone loss. Sixteen patients had off track lesions. In this group of patients there were 7 failures including 4 in patients without true bone loss and 3 in patients with true bone loss. No patients with greater than 13.5 % bone loss failed surgery in the short term.

DISCUSSION AND CONCLUSION:

Visual evaluation without measurement of plain x-rays, MRI scans and clinical evaluation at the time of surgery is inadequate to determine the true degree of glenoid bone loss in instability surgery. Experienced surgeons failed to identify subtle bone loss in 15% of cases and significant bone loss in an additional 9% of cases. Inaccurate measurement of glenoid bone loss may affect surgical planning and have a negative impact on results. The perfect circle technique is recommended for all cases of shoulder instability even in cases without obvious bone loss.