Determining radial head height using the radial tuberosity as a landmark

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Introduction

Restoration of the normal length of the radius is considered a significant factor in achieving good outcomes in radial head arthroplasty. However, no widely accepted guidelines or techniques for measuring radial head height and quantifying overstuffing of the radiocapitellar joint have been suggested. The objective was to determine whether the radial tuberosity could be a reliable landmark to measure radial head height.

Methods

Thirty anteroposterior elbow radiographs from the thirty patients with a clinical diagnosis of tennis elbow were analyzed to measure radial height. Three methods using different points (proximal end, the most prominent point, and middle point with a template) along the radial tuberosity as a landmark were used. All measurements were performed three times by three observers to determine interobserver and intraobserver reliability.

Results

Intraclass correlation coefficient revealed excellent intra- and interobserver reliability for all three methods. The 95% limits of agreement regarding radial height measurement ranged from −3.8 mm to +3.4 mm for proximal end method, −5.9 mm to +4.9 mm for the most prominent point method, and −1.8 mm to +1.9 mm for middle point method, which made use of a template.

Conclusion

Radial tuberosity could be a reliable landmark for assessing radial head height. The measurement method which used of a template showed the least variability, with its 95% limit of agreement being less than 2.5 mm. Our methods could be helpful for inserting a radial head prosthesis of proper size and maintaining normal radial length and elbow function.