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Superior Glenohumeral Joint Injection; Accuracy, Needle length, And Association with BMI.

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Background: Glenohumeral joint (GHJ) injection is a common orthopedic procedure. Various approaches are documented in the literature to access the GHJ. Shoulder injections are used to treat a wide range of conditions, including arthritis, adhesive capsulitis, and rotator cuff pain. However, the inaccuracy of steroid injection placement has been reported in the literature and found to have a significant effect on the clinical outcome.

Rationale: To our knowledge, no studies have determined the needle length and its correlation to BMI for GHJ injection via a superior approach using the gold standard arthroscopic procedure. Only one study assessed BMI's role in determining needle length using the superomedial injection approach. However, it was done through imaging, not injections. Although it found a significant positive correlation between needle length and BMI.

Method: This is a prospective cohort study. Where fifty-seven shoulder arthroscopic procedures in the beach chair position were included. After prep and draping the shoulder, the spinal needle



was inserted superiorly (Nevesiar Portal), 5 mm medial to the “vertex” and oriented 30° laterally and 20° anteriorly. One-time needle redirection was permitted for each trial. The success and minimal length of the needle was determined by standard posterior portal arthroscopy.

Results: Data from 57 arthroscopic shoulders were analyzed (49.1% males vs. 50.9 females). The mean age was 57.6 years, with an average BMI of 30 kg/m². 83% of the trials were successful in accessing the GHJ, and 17% were documented as failed. In the Joint, the needle was located 77.4% posterior to the biceps tendon, 13.2% anterior to the biceps, and 5.7% in the biceps. The mean of the minimal needle length to access the GHJ through the superior approach was about 45 mm (33-58 mm). Needle length was of statistical significance in association with the patient’s BMI (P-value 0.001) and weight (P-value 0.012), but not with height and gender.

Conclusion: The superior approach guided by the anatomical landmarks is a safe and effective injection to access the GHJ. The length of the needle to access the joint is significantly associated with BMI and weight, but not with Height and patient gender. Keywords: GHJ (glenohumeral joint), BMI (Body mass Index), MRI (Magnetic resonance imaging), mm (millimeter).