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## Assessment of Capsular Insertion Type and Capsular Redundancy in Patients with Anterior Shoulder Instability - Quantitative Assessment with CT Arthrography

Joo Han Oh, MD, PhD, KOREA Jun Ha Choi, MD, KOREA Nam Yun Chung, MD, KOREA Hye Yeon Choi, MD,, KOREA Ji Soon Park, MD,, KOREA Ye Hyun Lee, MD,, KOREA Woo Kim, MD, KOREA Jong Pil Yoon, MD, KOREA

Seoul National University College of Medicine Seongnam-Si , Gyeonggi-do , KOREA

## Summary:

The evaluation of capsular insertion type and capsular redundancy using CTA could serve as other important parameters for the management of anterior shoulder instability.

## Abstract:

Purpose: The purposes of this study were to identify the capsular insertion type, to quantify the enlargement of capsule and to evaluate its correlation with surgical outcome in patients with anterior shoulder instability using CT arthrography (CTA).

Materials and Methods: The medical records of 71 consecutive patients (65 male and 6 female; average age, 22.4 years; range, 15-45 years) of anterior shoulder instability between April 2004 and August 2008 who underwent CTA and arthroscopic capsulolabral reconstruction surgery were retrospectively reviewed. The control group comprised 72 patients with isolated type II SLAP lesions during the same periods. Seventy nine among 143 patients were examined with follow-up CTA at average 13.8 months after surgery. CT images in the axial plane were used for the evaluation of anterior capsular insertion type and capsular redundancy. The length and cross-sectional area of 5 o'clock and 4 o'clock position of the capsule were measured at 6 and 12 mm superior to the inferior margin of glenoid rim using a picture archiving and communications system (PACS).

Results: Regarding the anterior capsular insertion type on glenoid, Type I was more common in the control group (13.9%, p < 0.05) than in the instability group (4.2%), whereas Type III in the instability group (21.1%, p < 0.05) than in the control group (9.7%). Anterior capsular length was significantly longer in the instability group at 5 o'clock (17.1% elongation, p < 0.001) and 4 o'clock position (19.2% elongation, p < 0.001) than in the control group. Anterior capsular ross-sectional area was significantly larger in the instability group at 5 o'clock (46.0% enlargement, p < 0.001) and 4 o'clock position (69.5% enlargement, p < 0.001) than in the control group. The number of dislocations and the presence of ALPSA lesion were significantly associated with anterior capsular redundancy in the instability group, capsular length and cross-sectional area were significantly reduced in the postoperative CTA compared with those in the preoperative CTA (p < 0.001). Furthermore, postoperative capsular length and cross-sectional area in the control group (p > 0.05). Three patients (4.2%) in the instability group had recurrence (2 dislocations and 1 subluxation), and their anterior capsular length and cross-sectional area in the postoperative CTA were greater than those of non-recurrent patients, but those were not different between two groups in the preoperative CTA. Conclusion: The evaluation of capsular insertion type and capsular redundancy using CTA could serve as other important parameters for the management of anterior shoulder instability.