Materials and Methods

**SWE and SE Techniques**

Shear-wave ultrasound elastography (SWE) and strain ultrasound elastography (SE) were performed in random order using a 9-MHz linear transducer for SWE and a 12-MHz transducer for SE. Conventional B-mode images were displayed on the left side and the color elastography images were displayed on the right side of the ultrasound (US) screen. The probe was tilted if anisotropy was shown in supraspinatus tendon (SST) or infraspinatus tendon (IST). In SWE, the tip of the transducer was covered with a layer of US gel and placed on the skin without compressing the tissue. All participants were instructed to hold their breath for 5–10 seconds. The rectangular color box was positioned such that the distal portion of the tendon was covered. Blue and red colors signified softness and hardness of the tendon, respectively. In SE, the tip of the transducer was covered with a layer of US gel and placed on the skin with manual and rhythmic compression (compression–relaxation cycle) of the tissue. Adequate compression force was maintained using the visual color scale indicator (at least five out of seven columns [green-colored bars]). All participants were instructed to breathe freely. The rectangular colored box was positioned such that the area from the tendon to the skin was covered because subcutaneous fat tissue strain was needed to calculate strain ratio. In contrast to SWE, blue and red colors signified hardness and softness of the tendon, respectively.

**Sample Size Calculation**

Sample size calculation was conducted with SPSS 18.0 (SPSS Inc., Chicago, IL, USA). The null hypothesis was “there was no difference of SST and IST elasticities between adhesive capsulitis of the shoulder (ACS) and control groups.” Based on the results of the pilot study, the recruitment goal for the present study was set at 32 cases (16 cases in each group) to achieve a statistical power of 80% and two-tailed $\alpha$ level (significance level) of 0.05. It means $p$ value equal or more than 0.05 indicates acceptance of the null hypothesis (the SST and IST elasticities in ACS and control groups are not different). In contrary, $p$ value less than 0.05 indicates rejection of the null hypothesis (the SST and IST elasticities in ACS and control groups are different).

**Results**

**Characteristics of Participants**

Sex ($p = 0.053$) and age ($p = 0.77$) were not significantly different between the two groups. All patients markedly or slightly relieved shoulder pain and recovered limitation of the range of motion by 1-month period conservative treatment. No arthroscopic correlation was observed for the diagnosis of ACS in the current study.

**Inter-Observer Agreement (in Pilot Study)**

The inter-observer agreements of velocity (SST, 0.928 [95% confidence interval (CI), 0.843–0.967]; IST, 0.872 [95% CI, 0.718–0.942]) and stiffness (SST, 0.854 [95% CI, 0.717–0.966]; IST, 0.853 [95% CI, 0.758–0.914]) were almost perfect in SWE, as were the values of the strain ratio (SST, 0.827 [95% CI, 0.709–0.939]; IST, 0.889 [95% CI, 0.727–0.954]).