

## New Techniques and Emerging Evidence #NT4

### Clinical Cases, Solutions, and Novel Techniques

#### 3D C-Arm Navigated Suture Button Implantation for AC Joint Dislocations: A Pilot Study

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**Purpose:** Acromioclavicular (AC) joint dislocations are still very common and the indication for surgical stabilization is generally given from Rockwood 3b to 6 in active patients. The aim of this study was to develop a using closed AC joint reduction with 3D C-arm navigated drill channel creation and implantation of a suture button. The aim of the study was to demonstrate the feasibility of the method clinically treating 10 patients with 3 months of follow up.

**Methods:** Patients were positioned on a carbon table in beach chair-like position. After closed AC joint reduction and fixation with a Kirschner wire (K-wire), 3D scan was performed and sent to the navigation system. After planning the CC (coracoclavicular) drill tunnel, a 1.6-mm K-wire was inserted using computer navigation. Then the K-wire was over drilled to 4 mm and the implant suture button system could then be inserted through this drill tunnel and tightened. Data collection took place postoperatively, at 6 weeks, and at 3 months. Besides clinical examinations and radiographs, all patients completed Disabilities of the Arm, Shoulder and Hand (DASH) questionnaire, National Health Service (NHS) score, and EuroQol 5 Dimensions (EQ-5D).

**Results:** The targeted number of 10 patients for this pilot study was reached within 5 months. All patients were male and the average age was 47.8 years ( $\pm 15.51$ ). 9 patients could be fully followed up by the planned end of the study (3 months postoperatively); 1 patient withdrew from the follow-up. The average operating time was 50.3 minutes ( $\pm 8.81$ ). The mean distance of the drill hole in the clavicle to the AC joint (drill hole center to lateral clavicle end) was 26.6 mm ( $\pm 2.63$ ). The radiologically measured vertical CC distance between the 2 titanium plates above the clavicle and below the coracoid process was 38.8 mm (6.16) at discharge and 41.11 mm (7.51) after 3 months. The DASH, NHS, and EQ-5D showed a significant improvement in outcome between the assessment points at discharge and 3 months postoperatively.

**Conclusion:** The expected general advantages of the navigated suture button procedure, such as being a really minimally invasive procedure with precise drill tunnel placement and the ability to check the AC joint position exactly, could be confirmed in this study.