Scapular manipulation technique for reduction of traumatic anterior shoulder dislocations: experiences of an academic emergency department

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Background: Shoulder dislocations account for almost 50% of all joint dislocations, which are most commonly anterior (90–98%) and occur due to trauma. This prospective study was conducted to report our experiences of using the scapular manipulation technique (SMT) to reduce traumatic anterior shoulder dislocations.

Methods: Between March 2002 and March 2003, SMT was applied to 41 patients who presented with traumatic anterior shoulder dislocation to the Gulhane Military Medical Academy, Department of Emergency Medicine, Ankara, Turkey, which is a level 1 trauma centre with an annual attendance of 85,000 patients. The technique was applied to patients in the prone position by a single operator. Where necessary, a procedural sedation/analgesia (PSA) protocol was followed.

Results: The study population consisted of 26 (63.4%) male patients aged between 17 and 76 years (SD 000). Most anterior dislocations are subcoracoid in location. Subglenoid, subclavicular, and, very rarely, intrathoracic dislocations may occur. The usual mechanism of injury is extreme abduction, external rotation, and a posterior directed force against the humerus. Forceful abduction or external rotation alone can also lead to dislocation (about 30%) of the humerus. Mean (SD) trauma to reduction time was approximately 61.5 (72) minutes (range 10–480). Five patients (12%) had a greater tuberosity fracture. SMT was attempted twice to only four (9.8%) patients by a standard PSA protocol. We experienced a success rate of 90.2% at the first attempt and 100% overall. None of the patients encountered any complication.

Conclusions: We report the successful use of SMT in the prone position for the reduction of traumatic anterior shoulder dislocations, mainly without requirement of any sedatives or opiate analgesics. We believe that SMT may also be applied by inexperienced physicians, as it is simple, applicable, and easily understood. As no single method has a 100% success rate, SMT is a useful one to know.

Abbreviations: AP, anteroposterior; PSA, procedural sedation/analgesia; SMT, scapular manipulation technique
stockinette body bandage. Discharge decisions were given after evaluation of the post-reduction control radiographies, and brief neurovascular examinations were concluded as normal.

Statistical analysis
Statistical analyses were calculated by SPSS software (version 11.0; SPSS, Chicago, IL, USA).

Scapular manipulation technique
Shoulder dislocation reduction using this method focuses on repositioning the glenoid fossa rather than the humeral head and requires less force than other methods. Although there is also a description of this technique in the sitting position, we performed our procedure with the patient prone and the arm hanging down as described in the Stimson method, with or without flexion of the elbow to 90°. When placing the patient in the prone position it is important to place the injured shoulder over the edge of the bed to allow the arm to hang in a perpendicular manner for the application of traction.

The initial manoeuvre for SMT is traction on the arm as it is held at 90° of forward flexion (fig 1A). Regardless of the means of arm traction, slight external rotation of the humerus may facilitate reduction by releasing the superior glenohumeral ligament and presenting a favourable profile of the humeral head to the glenoid fossa.

After application of traction, the scapula is then manipulated to complete the reduction. Manipulation of the scapula is carried out by stabilizing the superior aspect of the scapula with one hand and pushing the inferior tip of the scapula medially toward the spine. The thumb of the hand stabilizing the superior aspect of the scapula can be placed along the lateral border of the scapula and used to assist the pressure applied by the thumb of the other hand. A small degree of dorsal displacement of the scapular tip is recommended as it is being pushed as far as possible in the medial direction (see fig 1B). Some authors recommend attaching 3–7 kg (5–15 lb) weights to the affected arm to make the traction easier and assist in successful completion of the reduction.

RESULTS
The study population consisted of 15 women (36.6%) and 26 men (63.4%), age range 17–76 years (SD 15.6; 95% confidence interval (CI) 25.3 to 35.2) (fig 2A). Right anterior shoulder dislocation was diagnosed in 23 (56.1%). Seven patients (17.1%) had a history of recurrent shoulder dislocations at the same site. Patients presented to our emergency department a mean (SD) of 61.5 (72) min (95% CI 38.49 to 84.53) after trauma (fig 2B). SMT was used in the same manner for five patients (12%) with greater tuberosity fracture with no complication afterwards. We experienced a success rate of 90.2% after the first attempt. No sedative or any opiate analgesic was needed for 37 patients. SMT was attempted twice and PSA protocol was used in only four (9.8%) patients. None of the patients encountered any complication (including the patients requiring sedation).

DISCUSSION
Anterior shoulder dislocation is a common occurrence in busy emergency departments. Numerous techniques for treating this problem have been reported. The majority of these techniques (for example, Milch, Kocher, and external rotation) use traction, and/or leverage of the humerus, often requiring considerable force and causing significant patient discomfort. After Bosley and Miles had first described SMT in 1979, it gained popularity especially in the USA owing to its simplicity of performance, safety, and acceptability to patients as years passed. More traditional
techniques, such as the Hippocratic method (traction with the foot in the axilla), and the Kocher manoeuvre (leverage, adduction, and internal rotation) are no longer recom-
mended because of a high incidence of associated complica-
tions (axillary nerve injury, humeral shaft, and neck frac- 
tures, capsular damage). To date, no complications from 
this SMT have been reported in the literature. To date, 
Kothari and Goh found high success rates of 78.4% and 
96% respectively compared with the 90.2% of our success rate 
in SMT.

There are some practical problems with in using the sitting 
position for this technique in that it requires two physici-
ans and increases discomfort. The sitting or supine position 
can be used in some circumstances (such as multiple trauma, 
shortness of breath), when the patient cannot tolerate the 
prone position.

SMT is commonly practiced by emergency physicians, 
orthopaedic surgeons, and family practitioners in the USA, 
but not in Europe; to our knowledge this is the first study 
carried out in Europe. This study should encourage emer-
gency medicine physicians, orthopaedic surgeons, and gen-
eral practitioners in Europe to add SMT to their skills and 
advocates to its use in the management of anterior 
shoulder dislocations. Hence, SMT has a high success rate 
without any sedatives or opiate analgesic.

In conclusion, although larger patient studies are necessary 
to confirm our findings, we show that SMT may be 
considered as a safe, easy, and rapid method for the re-
duction of anterior shoulder dislocation and usually does not require 
use of regional anaesthesia or PSA.

Competing interests: there are no competing interests.

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