

Modified Milch Technique: A Safe and Painless Method for Reduction of Anterior Shoulder Dislocation

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Abstract

Background: The shoulder is the most commonly dislocated major joint in the body and this dislocation causes severe and agonizing pain. Prompt and painless reduction forms the cornerstone of treatment. We studied the efficacy of the Milch technique in the reduction of anterior dislocation of shoulder. **Materials:** Between September 2011 and March 2014, 60 cases of anterior dislocation of shoulder were reduced by Milch technique in C.S Hospital Shivamogga and Dhruva Orthopaedic Clinic Shivamogga and the pain experienced by the patient was quantified by Visual Analogue Score. **Results:** Reduction was successful in 56 cases (93.3%). The mean Visual Analogue score was 1.82. There were no complications. **Conclusion:** We conclude that the Milch technique is a very effective and relatively painless method for reducing anterior dislocation of the shoulder.

Key words: Milch technique, anterior dislocation of the shoulder, Shoulder reduction.

Introduction

Shoulder dislocation accounts for 50% of all large joint dislocation [1]. The versatile anatomic structure of this joint gives it an extensive range of motion and also makes it the most unstable joint of the body. The dislocation of the Gleno-humeral joint may be anterior, posterior or inferior (Luxatio-erecta). Anterior dislocation of the shoulder accounts for 95-98% of all shoulder dislocations [2] and is most commonly sub-coracoid with other encountered types being subglenoid, subclavicular and intrathoracic [3].

Anterior dislocation of the shoulder may result from direct or indirect trauma and associated neurovascular injuries ranging from subtle to obvious may occur in up to 50% of the patients and the Auxiliary nerve is the most commonly damaged structure in 42% of the patients [4]. Recurrent dislocation of the shoulder is a common complication following anterior dislocation of the shoulder. Age at the time of the primary dislocation

is the most important prognostic factor in relation to recurrence. Lesser the age at primary dislocation, higher the chances of recurrent dislocation [5]. Recurrence rates of 64-68% have been reported in patients below 30 years of age [6,7]. The belief that use of anaesthesia for reduction decreases the rate of recurrence has been proved to be wrong [7].

The patient with anterior dislocation of shoulder will be in severe pain and prompt reduction of the joint with or without the use of sedation or anaesthesia is necessary to ameliorate the pain. A myriad number of methods have been described for the reduction of anterior dislocation the shoulder [8]. These include the outdated Hippocrates method [8,9], Kocher's method [8,9,10], Stimson's method [8,9,11], Traction-counter traction method [8,9], Eskimo method [8,9], Chair method [9,12,13], External rotation method [14], Boss-Holzach-Matter self reduction method [9,15], Spaso technique [8,9,16,17], Scapular manipulation method [8,9,18,19] and Milch technique [8,9,20].

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Relatively pain free methods like Spaso technique, scapular manipulation method and Milch method are widely used in emergency departments around the world for quick, safe and pain free reduction of anterior shoulder dislocation. This study was undertaken to study the efficacy and safety of Milch technique in reduction of anterior shoulder dislocation. The intensity of pain felt by the patient during the procedure was also recorded.

Material and Methods

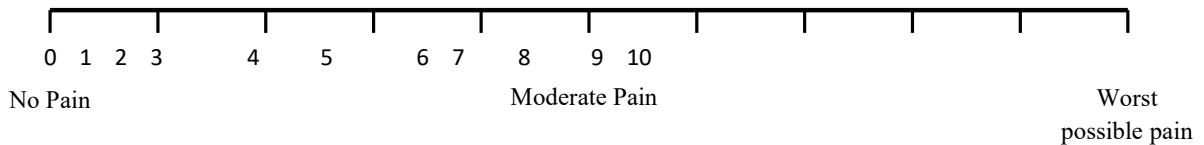
This study was undertaken in C.S Hospital Shivamogga and Dhruva Orthopaedic Clinic Shivamogga from September 2011 to March 2014. 60 patients who presented to the emergency department or Out Patient Department during this period were included in this study.

After taking informed consent, Data was collected regarding age, sex, side, mechanism of injury, time from injury to reduction, associated fractures, history of previous dislocation and number of previous attempts at reduction.

With the patient of supine position, the surgeon stands on the injured side facing the head end of the patient. He stabilizes the shoulder with one hand by placing the fingers over the top of the shoulder and the thumb in the axilla. The thumb steadies the humeral head in the axilla. The elbow of the affected limb is grasped by the other hand of the surgeon keeping it in 90° flexion.

The arm is gradually abducted and externally rotated over a period of 10 minutes. Abduction is done up to 120° and external rotation till the forearm touches the bed. Spontaneous reduction is often achieved in this position. Upward pressure on the humeral head with or without mild longitudinal traction is sometimes required for reduction.

Reduction was confirmed by Dugas test and X-rays and a shoulder immobilizer was applied for three weeks after which mobilization of the shoulder was done. The pain experienced by the patient during the procedure was quantified by Visual Analog Score (VAS) where zero indicates no pain, 5 indicate moderate pain and 10 indicates worst possible pain [21].



Visual Analog Scoring (VAS)

Results

The study population consisted of patients with age ranging from 19 to 59. The mean age was 33 years. There were 54 men and 6 women in our series. The right side was involved in 34 patients and left in 26 patients. The mechanism of injury was road traffic accident in 22 patient, fall in 26 patient, assault in 4 patients and trivial trauma leading to dislocation in 8 patients(with history of recurrent dislocation).

The time from injury to reduction ranged from 30 minutes to 3 days. The greater tuberosity of the humerus was fractured in 7 cases and the greater tuberosity fragment returned to anatomical position on reduction of the dislocation. 9 patients had history of unsuccessful manipulation in peripheral hospitals.

The reduction was successful in 56 cases. 4 cases needed sedation or anaesthesia for reduction. Failure rate was higher in patients with history of previous unsuccessful manipulation. There were no major or minor complications in our series. The rate of successful reduction was lower in patients with fracture of the greater tuberosity (71.4%). The mean Visual Analog Score for pain was 1.82, with zero being the minimum and 7 being the maximum.

Table 1: Distridution & success rate of shoulder reduction

Patients	Number	Left side	Right side	Mean Age	Success rate
Men	54	25	29	32 years	92.59%
Women	06	01	05	42 years	100%
Total	60	26	34	33 years	93.33%

Discussion

Acute anterior dislocation of the shoulder is a common problem presenting in the emergency department. It is an extremely painful condition and prompt reduction saves the patient a lot of agony. The technique used for reduction varies from institution to institution.

The commonly used techniques which involve sedation or anaesthesia include the Hippocrates maneuver, external rotation method, traction counter-traction and Kocher's maneuver. The success rates by these methods range from 80-100% [22,23,24]. The Hippocrates method may lead to neurovascular complications like brachial artery/vein injury or brachial plexus injury [25]. The Kocher's method may result fracture of the proximal humerus [22,26]. The commonly used techniques which do not use anaesthesia are spaso technique [16,17,27], FARES method [28], scapular manipulation technique [18,19,29] and the Milch technique [8,9,20]. The success rate of reduction ranged from 70-100% and there were no major complications [22,24,27,30].

All techniques requiring the use of anaesthesia or sedation need more hospital stay thus increasing the cost

of care [31] and also exposing the patient to the risks of anaesthetic complications. There may also be delay in reduction due to problems like non availability of Operation Theatre and Nil oral status of the patient. It also increases the morbidity, risks and cost of the procedure. It also wastes valuable resources in terms of manpower and time [20,31].

Milch technique is a painless way to reduce the anterior dislocation of the shoulder, obviating the need of sedatives or anaesthesia. This was first described by Sir Ashley Cooper in 1825 [9] and later popularized by Milch in 1938 [32].

Milch believed that by placing the shoulder in full abduction, the muscle of the humerus, scapula and thoracic wall assume a position of conical symmetry. In this position, the muscle force vectors which otherwise would have been forces preventing reduction are converted to a reduction force which allows humeral head to slide into glenoid with gentle pulsion [33]. Various series of the use of Milch technique have shown success rates of 70-100% in the reduction of anterior shoulder dislocation [11,20,22,33,34,35,36] (Table 2).

Table 2 – Comparison of various series of use of Milch technique

Series	Number of Cases	Success rate (decimal rounded to nearest digit)
Amar et al [11]	35	83%
Johnson et al [20]	142	86%
Beattie et al [22]	56	70%
O' Connor et al [33]	76	100%
Russel el al [34]	76	89%
Singh et al [35]	31	84%
Garnavos et al [36]	75	95%
Our series	60	93%

The reduction rate in our study was 93.33% this is in concordance with various studies reported in literature. There were no complications which is in line with series using techniques like Milch, Spaso, Scapular manipulation and FARES [22,27,30].

There was no correlation between success of reduction and age, sex and side of injury. Reduction was easier in patients with recurrent dislocation. All 4 cases of failure of reduction were in patients in whom reduction was previously attempted at peripheral hospitals without sedation/anaesthesia. We think that this failure of reduction is due to severe muscle spasm due to repeated painful manipulations.

Conclusion

Based on results of our study we conclude that Milch technique is a very effective and relatively painless technique for the reduction of anterior dislocation of the shoulder.

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