

A RANDOMISED PROSPECTIVE COMPARATIVE STUDY OF MILCH vs KOCHER TECHNIQUE FOR REDUCTION OF ANTERIOR SHOULDER DISLOCATION

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● Anterior Shoulder Dislocation

- The most common type of dislocation
 - Simple or Complicated with a fracture pattern
 - Trauma related -almost always- (Combination of Abduction, External Rotation and Extension of the Humerus)
 - Classification :
 1. Subcoracoid (70%)
 2. Subcglenoid (30%)
 3. Subclavicular
 4. Intrathoracic
- Types 3 & 4 are very rare and related with high energy trauma* ←



Patients & Methods

- Seventy-two patients with anterior shoulder dislocation were divided in two groups of similar median age, according to the reduction technique used.
Modified Milch technique: 35 pts
Kocher technique: 37 pts
- The dislocations recorded were of subcoracoid and subglenoid types, with or without a fracture of the greater tuberosity. Cases with more complex fracture-dislocation patterns were excluded from the study.
- The reduction technique choice was randomized.
- Only one reduction technique type was performed in every patient and 3 reduction efforts were allowed before General Anesthesia conduction.
- Intra-muscular analgesia or muscle-relaxation (Inj. Pethidine or Inj. Stedon) was performed in cases of severe pain feeling and lack of collaboration.
- Reduction failures in the Emergency Department were finally treated in the operating room by reduction under General Anesthesia.

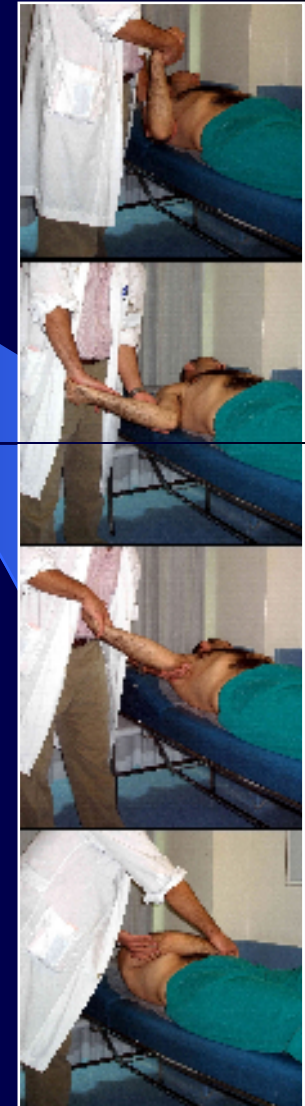
Modified Milch technique

1. The surgeon holds the affected limb by the thumb and places his or her other hand on the upper arm, so that any convulsions of the biceps can be felt.
2. When the abduction reaches 100 degrees the elbow is extended and gentle traction begins.
3. Internal rotation begins while traction is continued.
4. If the dislocation has not been reduced, the surgeon palpates the head of the humerus and presses it back to the glenoid while traction is continued and gradual adduction is begun.



Kocher technique

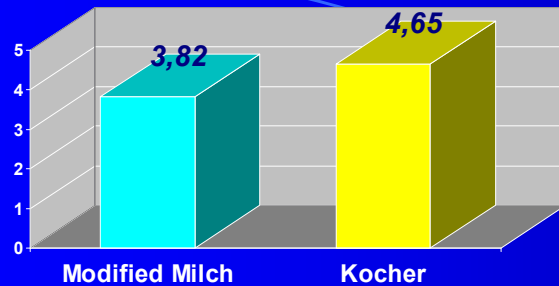
1. The surgeon bends the arm at the elbow and pushes it against the body
2. The humerus is rotated outwards until resistance is felt
3. The surgeon lifts the externally rotated upper arm in the sagittal plane as far as possible forwards
4. The externally rotated and lifted upper arm is turned inwards slowly



Our applied modifications of the Milch technique *

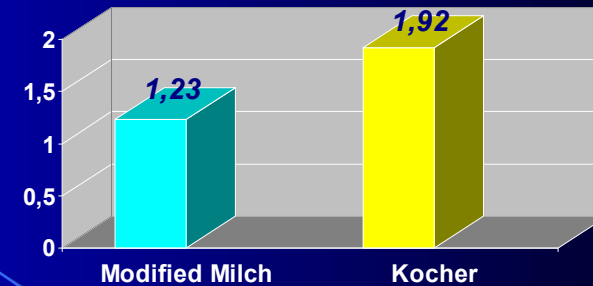
- **During the abduction the surgeon places his or her free hand on the patient's affected arm (Fig. 1). By this way the surgeon can easily feel any convulsion of the biceps and stop the procedure until the patient is fully relaxed, making the maneuver much less painful for the patient and facilitating reduction**
- **The affected limb is held by the wrist and thumb. Therefore it is not necessary for the patient to support the forearm and hand as he or she would do if the traction was applied at the elbow. This further facilitates muscular relaxation.**
- **The traction must be increased gradually after the abduction has been completed. The traction should never be excessive to prevent neurovascular damage and minimize discomfort to the patient (Figs. 2, 3). (The original Milch and Kocher techniques do not include traction)**
- **Pressure on the head of the humerus, when necessary, should be applied with all the fingers and not only the thumb, as has been described. The risk of neurovascular damage is thereby further reduced and the nuisance for the patient is less (Fig. 4).**
- **As the surgeon pushes the humeral head back into the glenoid, gradual adduction with the limb straightened should be attempted. The humeral head slips back easier.**

** Technical note: Modifications and Improvements of the Milch Technique for the Reduction of Anterior Dislocation of the Shoulder without Pre-medication
C.Garnavos. JOT (1992) vol.32; no 6; p.801-803*



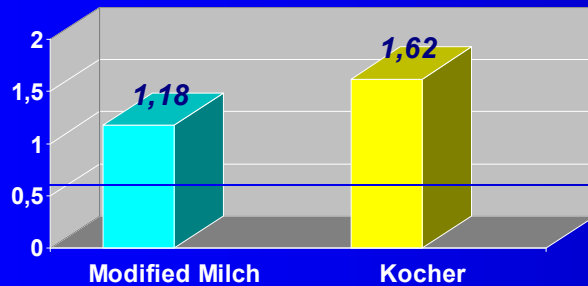
Mean reduction time (min)

$p < 0,05$, 95% CI: 2,3 - 3,8



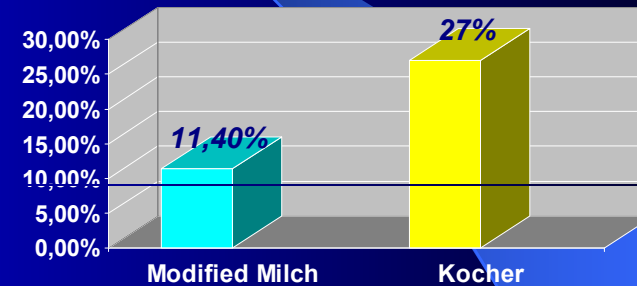
Mean number of efforts needed

$p < 0,05$, 95% CI: 1,85 - 3,32



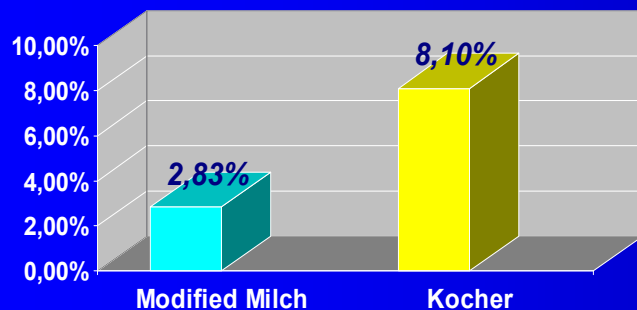
Mean number of doctors occupied

$p < 0,05$, 95% CI: 1,6 - 3,1



Percentage of I.M. medicine administration used

$p < 0,05$, 95% CI: 1,12 - 2,78



Percentage of general anesthesia need

$p > 0,05$, 95% CI: 0,65 - 1,28

Variables recorded :

- Mean reduction time with each technique
- Mean number of efforts needed with each technique
- Number of doctors occupied for every reduction
- Number of times that medicine administration was needed
- Number of times that general anaesthesia was required

(Analysis was performed with the statistical program STATA 8.0)

Results

- **The modified Milch technique group presented statistically significant better results in all the categories apart from variable V (need for General Anesthesia).**
- **The results were favorable to the modified Milch technique in category V, even though not in a statistically significant manner**
- **By the use of the modified Milch technique we managed :**
 - A. To spent less time for the completion of the reduction**
 - B. To occupy fewer doctors for achieving the reduction**
 - C. To minimize the need for Intra-muscular sedation in the Emergency Room**
 - D. To avoid the need for General Anesthesia**

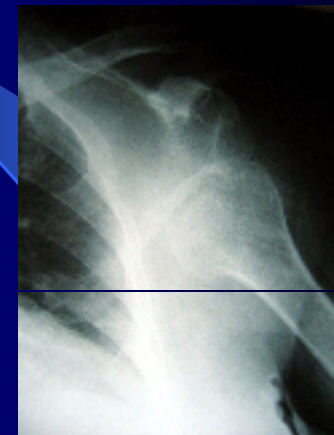
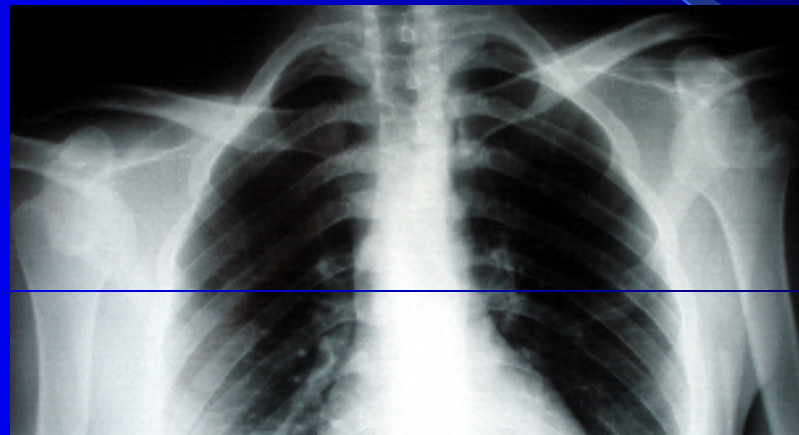
Discussion

- Shoulder dislocation is an emergency and a very painful situation, therefore its treatment should be quick and painless.
- Most authors agree that the main obstacle during the reduction procedure is spasm of muscles as a result of pain and fear. To overcome this problem most surgeons suggest the use of drugs, making the procedure more time consuming. Even longer lasting is a reduction with the patient under general anesthesia, and the patient then is exposed to the risk of complications of drug administration.

Conclusion

- The easy reduction, the minimal inconvenience to the patient, and the fact that drugs are unnecessary are factors that contribute to shortening the entire procedure.
- All these criteria are met by the modified Milch technique.
- We strongly recommend it for reduction of anterior dislocations of the shoulder believing that it is a valuable technique at a busy casualty department.

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