# Reduction of Acute Anterior Shoulder Dislocation under a Narcotic Saves More Service Time in an Emergency Room than Combined Narcotic and Sedation

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## ABSTRACT

**Objective:** To compare the post-reduction service time between using a narcotic and combination of a narcotic with sedative drugs for reduction of acute anterior shoulder dislocation.
**Methods:** Between 2004-2010, medical records and radiographs of patients who sustained acute anterior shoulder dislocation and obtained the successful reduction under sedation were reviewed. The patients were divided into 2 groups. Group 1, reduction was done under either intravenous morphine or pethidine and group 2, under either intravenous morphine or pethidine combined with diazepam. Post-reduction service times were recorded. The statistically significant difference was considered at $p \leq 0.05$.
**Results:** 42 patients were divided to 2 groups (21 patients in each group). The mean post-reduction service time of group 1 was 62.10 (SD = 31.42) and group 2 was 87.57 (SD = 32.07) minutes. The statistical analysis showed that group 1 significantly spent 25.47 minutes less post-reduction service time than group 2 ($p = 0.013$).
**Conclusion:** Reduction of acute anterior shoulder dislocation under a narcotic significantly uses shorter post-reduction service time than under a combination of a narcotic with sedative drug in the emergency room.

**Keywords:** Acute anterior shoulder dislocation, narcotic, sedation, post-reduction service time, emergency room

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Long service time is one problem in the emergency room. Acute anterior shoulder dislocation is a common encounter and needs reduction in the emergency room.[1] There are many methods of reduction such as gentle traction, abduction and external rotation maneuver (TAE), traction countertraction (TCT), Milch, Stimson, Oxford Chair, Hippocrates and scapular manipulation in order to avoid sedative or anesthetic complications and long service time, TAE and Milch techniques are the common maneuvers in which the reduction is performed without sedation or anesthesia with satisfactory results[2,7,8,9,13] in the Siriraj emergency room. However, the reduction under sedation or general anesthesia permits a higher success rate for the reduction of anterior shoulder dislocation.[9-12] Consequently, the patient needs more time for post-sedative or post-anesthetic recovery which raises the time consumed depending on the sedative or anesthetic techniques. This results in longer post-reduction service time and congestion of the emergency room especially when the reduction is performed under forceful traction such as the TCT technique.[8,13] In the Siriraj emergency room, a narcotic or combination of a narcotic with a sedative drug are commonly applied for reduction of the acute anterior shoulder dislocation. Therefore, our study was carried out to compare the post-reduction service time of acute anterior shoulder dislocation between reduction using a narcotic and using a combination of a narcotic with a sedative drug.

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## MATERIALS AND METHODS

Acute anterior shoulder dislocation is reduced under either intravenous 0.1-0.2 mg/kg morphine or 1-2 mg/kg pethidine or a combination of morphine or pethidine with 0.1-0.2 mg/kg diazepam in the emergency room of Siriraj Hospital. The techniques of reduction were TCT, Milch and TAE maneuvers which have been developed by Professor Dr. Thossart Harnroongroj[2] since 1975.

Between 2004-2010, we reviewed medical records and shoulder radiographs of patients who sustained acute anterior shoulder dislocation. Inclusion criteria were all types of anterior dislocation including association with fracture greater tuberosity, one or more episodes of the dislocation, all ages, both genders, and all techniques of reduction with successful reduction performed under sedation. The successful reduction was defined by one or two attempts of the maneuver and confirmed by Dugars sign and post-reduction radiographs of the shoulder. Exclusion criteria were fracture dislocation of a shoulder except for association with fracture greater tuberosity, neglected or an old dislocation, dislocation caused by epilepsy or electrical shock, incomplete medical records and radiographs, and also the reduction that was performed under sedative-free or general anesthesia treatment were excluded. Moreover, patients who delayed discharge from a financial or patients relative problem were also excluded. The patients were divided into 2 groups. Group 1 was the reduction performed under a narcotic drug using either intravenous morphine or pethidine. Group 2 was the reduction performed under a combination of an intravenous narcotic using either morphine or pethidine and combined with diazepam. Age, sex, sites, number of episodes of dislocation, and techniques of reduction were recorded. Complications of reduction were recorded as neurovascular injury and fracture of the affected shoulder. The time for immediate post-reduction radiograph and patient discharge time were recorded and calculated on an OPD card by a duty nurse. The time in minutes beyond the reduction until discharge from the emergency room (PD) were obtained and recorded as post-reduction service time of acute anterior shoulder dislocation.

The demographic data of both groups were analyzed and compared by using Chi-square test or Fisher's exact test for categorical variables and the PD time by Student t-test and p-value $\leq 0.05$ was considered a statistically significant difference. The study was carried out after receiving a certificate of ethical approval from the Siriraj Institutional Review Board (EC Number: 239/2553).

## RESULTS

There were 21 patients each in group 1 and group 2. Group 1 and group 2 consisted of 15,12 males, 6,9 females, 15,16 right sites and 6,5 left sites, 21,20 one episode and 0,1 more than 1 episode of dislocations, respectively. The reduction technique of the dislocation of group 1 were 11 Milch, 7 TCT and 3 TAE and of group 2 were 13 Milch and 8 TCT. The average PD time of group 1 was 62.10 minute (SD = 31.42) and of group 2 was 87.57 minute (SD = 32.07) respectively (Table 1). The statistical analysis showed that the PD time of group 1 significantly consumed 25.47 minutes less than of group 2 (p = 0.013).

## DISCUSSION

Acute anterior shoulder dislocation is one of the common musculoskeletal traumas encountered and needs service time in the emergency room[1]. Pain and muscle spasm obstruct the successful reduction of a dislocated joint.[7,9] The reduction under less pain and decreased muscle spasm by using sedation or anesthesia achieves a high rate of successful reduction. Still, the surgeon must risk sedative or anesthetic complications and longer service time.

**TABLE 1.** The data of patients group 1 and 2.

| | Group 1 (n = 21) | Group 2 (n = 21) | p-value |
|---|---|---|---|
| Sex | | | |
| Male | 15 (71.43%) | 12 (57.14%) | 0.334 |
| Female | 6 (28.57%) | 9 (42.86%) | |
| Age (yrs.) | 44.71 ± 23.89 (17 - 85 yrs.) | 44.14 ± 17.48 (22 - 82 yrs.) | 0.930 |
| Site | | | |
| Right | 15 (71.43%) | 16 (76.19%) | 0.726 |
| Left | 6 (28.57%) | 5 (23.81%) | |
| Dislocation | | | |
| No fracture | 20 (95.24%) | 19 (90.48%) | 0.999 |
| Greater tuberosity fracture | 1 (4.76%) | 2 (9.52%) | |
| Episode of dislocation | | | |
| 1 | 21 (100%) | 20 (95.24%) | 0.999 |
| > 1 | 0 | 1 (4.76%) | |
| Technique | | | |
| Milch | 11 (52.38%) | 13 (61.90%) | |
| TCT | 7 (33.33%) | 8 (38.10%) | - |
| TAE | 3 (14.29%) | - | |
| Complication | - | - | - |
| PD time (min) | | | |
| Mean ± SD | 62.10 ± 31.42 | 87.57 ± 32.07 | 0.013 |
| Min - Max | 25 - 172 | 59 - 181 | |
| 95% CI | 47.79 - 76.40 | 72.97 - 102.17 | |

There are many reduction techniques for acute anterior shoulder dislocation which are maneuvers which can be performed without sedation or anesthesia such as Milch or TAE with satisfactory successful reduction rates. However either of them, can be performed under a narcotic permitting more successful reduction because the techniques were maneuvers developed to perform reduction under less muscle spasm and pain.[2,7] Morphine and pethidine are narcotic drugs which have analgesic and sedative effects. Whenever, they are combined with diazepam, more effects of sedation are obtained. Our study showed that successful reduction of acute anterior shoulder dislocation, performed under either intravenous morphine or pethidine significantly spent 25.47 minutes shorter post reduction service time than the reduction under a combination of either intravenous morphine or pethidine with diazepam. This may affected by the diversity of the post-sedative recovery which depends on different sedative techniques. Therefore, we have concluded that the reduction of acute anterior shoulder dislocation under a narcotic drug can save service time. This may result in decreased congestion of service as well as workload in an emergency room. However, the combination of narcotic and sedative drugs should be of chosen for patients who are worried, annoyed and/or uncooperative.

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