

(RESEARCH ARTICLE)



Comparative study of various anaesthetic blocks for optimal reduction of posterior hip dislocation

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International Journal of Frontiers in Medicine and Surgery Research, 2023, 03(02), 081-085

Publication history: Received on 25 June 2023; revised on 06 August 2023; accepted on 09 August 2023

Article DOI: <https://doi.org/10.53294/ijfmsr.2023.3.2.0076>

Abstract

Native hip dislocations ideally should be reduced soon as possible To improve long-term outcomes. Avascular necrosis and post- traumatic osteoarthritis can be avoided with timely reduction and fixation of defects, if any. There is still debate on the sedation method and the context of the decrease. Allis outlined the standard procedure for the most frequent dislocation, the posterior dislocation: administering longitudinal tension with internal rotation to the hip.

Innovative pain management techniques for patients who undergo planned Orthopedics surgery have received more attention recently. Anaesthesia blocks have been proven to be successful in managing acute trauma-related pain before surgical intervention.

In this study, we assess the femoral block technique for the reduction of a posterior hip Dislocation and the post-operative results.

Keywords: Hip Dislocation; Femoral Block; Fracture-Dislocation

1. Introduction

Numerous clinical investigations have demonstrated the significance of reducing native hip dislocations as soon as possible for long-term outcomes. Avascular necrosis and post- traumatic osteoarthritis occur at higher rates when time to reduction is longer than six hours.¹ Reports have also demonstrated significantly less favourable patient outcomes among individuals who experienced reduction delays longer than 24 hours. ^{2,3} There is still debate on the sedation method and the context of the decrease. Allis outlined the standard procedure for the most frequent dislocation, the posterior dislocation: administering longitudinal tension with internal rotation to the hip.

The danger of additional femoral head cartilage damage is advocated for minimization in an operating room with sedation and muscular paralysis.⁷ If there is restricted access or if accompanying injuries prohibit the patient from entering the operating room, emergency room reduction may be an option. The present investigation is based on earlier case reports of propagation of fracture or iatrogenic fracture from reduction attempts with insufficient sedation(⁴⁻⁶).

Innovative pain management techniques for patients who undergo planned Orthopaedics surgery and sustain Orthopaedics trauma have received more attention recently. ^{7,8} Anaesthesia blocks have been proven to be successful in managing acute trauma-related pain before surgical intervention.^{9,10}

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In this study, we assess the femoral block technique for the reduction of a posterior hip reduction and the post-operative results.

2. Methods

This was a retrospective study performed in the Department of Orthopaedics and Anaesthesia in East Point Medical College, Bangalore. All the patients that presented with posterior hip dislocation with or without fracture were included in the study.

We collected data including age, sex, body mass index (BMI), time from injury to first reduction attempt (TIR), presence of associated femoral head fracture ETC.. Data were analyzed using SPSS software (version 21.0; SPSS Inc., Chicago, IL, USA). Continuous variables were compared using Student's t-test, and categorical variables were compared using the chi-squared test and Fisher's exact test. Statistical significance was set at a p value of < 0.05

Femoral block- The patient was positioned in the Trendelenburg position at a 20-degree angle with the distal thigh restrained by a tourniquet. Under the direction of ultrasound probe (20 Mhz probe, sterilized prior to use), 25 cc of a 1% lidocaine solution were administered immediately adjacent to the proximal femoral nerve after localizing it one centimeter below the inguinal ligament. After fifteen minutes, the bandage was taken off and the patient was examined. It was discovered that the patient had significantly less pain while resting supine and had improved tolerance for passive range of motion.

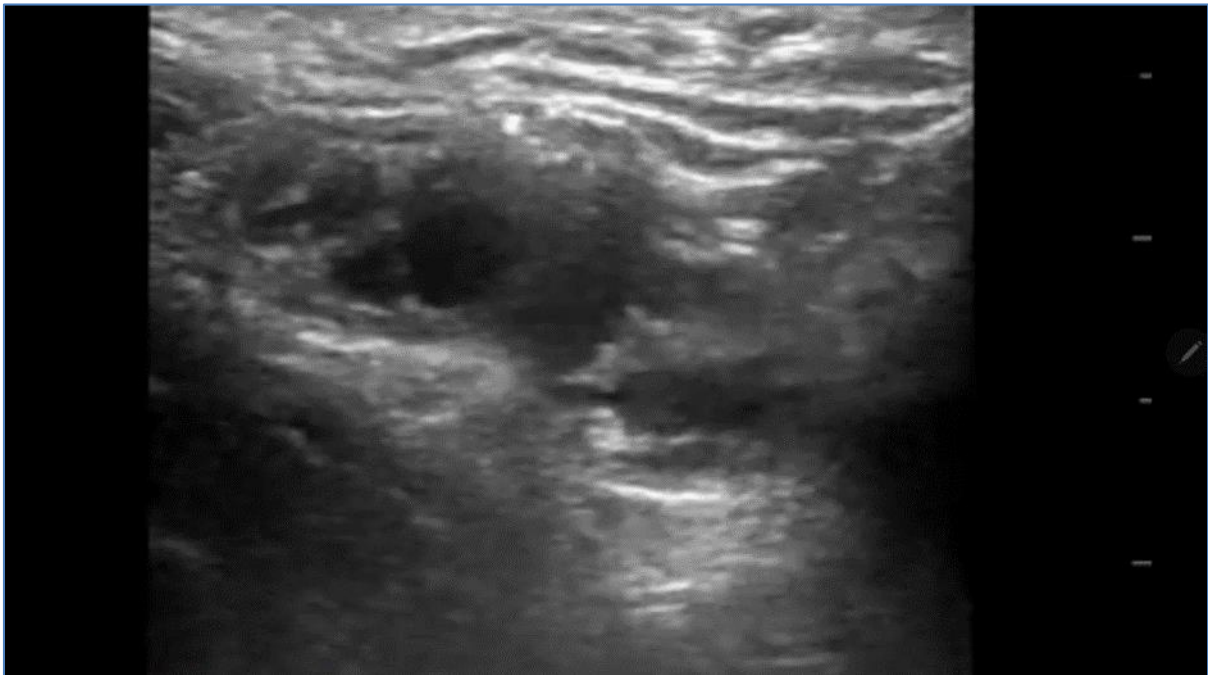


Figure 1 USG view of femoral artery and vein to identify nerve

The Howard reduction procedure was then used to decrease the hip.11 Until the hip diminished, gentle traction and laterally directed force were applied with external then internal rotation. Radiographs showed reduction, and the patient had good hip pain management and complete range of motion.

An AP pelvic radiograph taken after the reduction showed concentric reduction of the femoral head, with no signs of an iatrogenic fracture.

3. Results

The current study analyzed the outcomes of USG-guided femoral guided block for patients with posterior hip dislocation with or without associated fractures.

The study included a total of 52 patients over the last 2 years with posterior hip dislocation. The mean age of the study population was 65.48 +/- 5.44 years. Majority of the study population belonged to 60-70 years age group.

Majority of the study participants were male (N=38) while remaining participants were females.

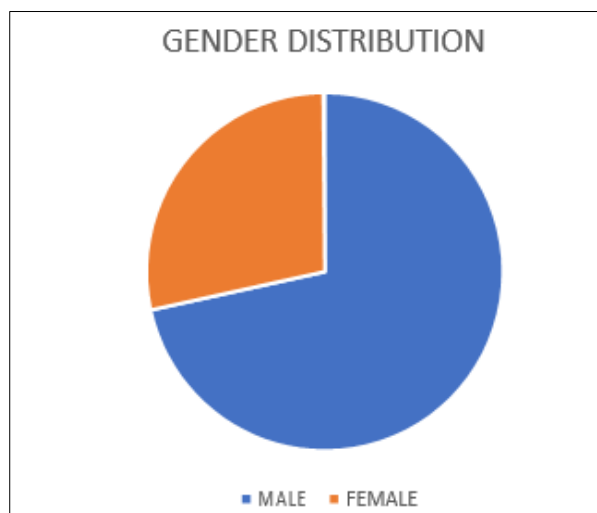


Figure 2 Gender distribution

All the femoral blocks were performed under ultrasound guidance by a single, senior experienced Anesthetist. The mean time to perform the femoral block was 10.27 +/- 2.39 minutes. In two patients, the femoral block failed, and hence patient was induced with general anaesthesia.

Time from femoral block to reduction without any pain or discomfort to the patient is an important parameter. Hence, we observed that majority of the patients underwent reduction within 2 hours of delivering the femoral nerve block. This difference was statistically significant.

Additionally, we observed that in 7 patients, the reduction was unsuccessful under femoral block.

Table 1 Time to reduction

Time to reduction	Less than 2 hours	More than equal to 2 hours
Successful	36	9
Failure	4	3

P VALUE <0.001, CORRELATION IS STATISTICALLY SIGNIFICANT

VAS score was utilized to assess the pain post-operatively. The average VAS score pre- operatively showed a significant reduction (p value 0.043*).

Table 2 Improvement in pain scores

VAS SCORE	<3	3 TO 7	>7
PRE OP	7	14	31
POST OP 1 HOUR	42	7	3
POST OP 6 HOURS	34	13	5
POST OP 12 HOURS	31	10	11

4. Discussion

Patients with a hip dislocation typically receive procedural anaesthesia to enable closed reduction of the joint; however, using this method on older patients who have major medical comorbidities increases the risk for negative outcomes, such as hypotension and respiratory failure.⁸ However, not all patients are good candidates for procedural sedation, and it can make some techniques (eg, Stimson) more difficult. Regional anaesthesia provides an alternate approach with several case reports describing the femoral nerve block,⁷ fascia iliaca compartment block,⁸⁻¹⁰ and pericapsular nerve group block¹¹ with good success rates. A short-acting agent (eg, lidocaine) is typically used, given the duration of the procedure.

Regardless of the approach selected, it is essential to obtain adequate analgesia early in these patients.

For patients with hip fractures, regional anaesthesia of the femoral nerve is a tried-and-true method of pain management. For patients with hip fractures and in some specific surgical procedures, US-guided femoral nerve blocks have been shown to be similarly successful in controlling pain.⁶

In these instances, regional anaesthesia was used following the more intrusive approach of nerve stimulator guided localization of the femoral nerve.³

Comparing US-guided regional nerve blocks to more conventional anatomic "blind" methods, it can be done more accurately and effectively.¹⁰ In comparison to a method that uses a nerve stimulator to locate the femoral nerve, US-guided femoral nerve blocks have improved the time it takes for anaesthesia to start working.¹¹ It is logical to assume that regional anaesthesia could be used on patients with hip dislocations because US-guided regional anaesthesia techniques significantly outperform other techniques and because previous research has shown the effectiveness of femoral nerve blocks or three-in-one blocks for analgesia.

5. Conclusion

USG guided regional blocks are better when administered in patients with posterior hip dislocation, as it can be administered in an emergency setting with minimal imaging techniques while providing adequate reduction and pain relief.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of ethical approval

Ethical clearance sought.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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