

Closed reduction of traumatic bilateral anterior hip dislocations with sedation: a case report and review of the literature

Chee Kidd Chiu¹, M.B.B.S., M.S.Orth., Tiong Soon Ng², M.D., Nayyer Naveed Wazir³, M.B.B.S. M.S.Orth., Kareem Abdul Bhurhanudeen³, M.B.B.S., M.S.Orth.

¹Department of Orthopaedic Surgery, Faculty of Medicine, University of Malaya, Kuala Lumpur, Malaysia;

²Department of Orthopaedic Surgery, Hospital Tuanku Jaafar, Seremban, Malaysia;

³Department of Orthopaedic Surgery, International Medical University, Seremban, Malaysia

ABSTRACT

A rare case of bilateral anterior hip dislocation reduced under sedation was reported in this study. A 47-year-old man was knocked down by a car and sustained bilateral anterior hip dislocation which was reduced successfully with sedation using titrated dose of intravenous Midazolam in combination with Pethidine. A modified Lefkowitz maneuver using the manipulator's thigh as a fulcrum was used. Patient started weight bearing in the second month after injury and was walking without any hip pain at the twenty-fourth month follow-up. Thirteen case reports describing bilateral anterior hip dislocations were found while reviewing the literature and it was noticed that only one author had reported the usage of intravenous sedation (Propofol) for the reduction procedure. However, no author reported the use of Lefkowitz maneuver for this purpose. Consequently, reduction of a bilateral anterior hip dislocation is possible with sedation using a modified Lefkowitz maneuver.

Key words: Bilateral anterior hip dislocation; modified Lefkowitz maneuver; sedation.

INTRODUCTION

Traumatic bilateral anterior dislocation of the hip joints is a rare condition. In 1951, Thompson and Epstein surveyed two hundred and four cases of hip dislocations over a period of twenty-one years and found only eighteen (9%) anterior dislocations, none bilateral.^[1] As with other types of dislocations, prompt reduction of the hip joint is crucial to prevent potential complications of a delayed reduction, such as avascular necrosis of the femoral head. A case of traumatic bilateral anterior hip dislocations reduced successfully under sedation using intravenous Midazolam and Pethidine with a modified Lefkowitz maneuver was reported in this study.

CASE REPORT

The patient, a 47-year-old man, was knocked down from the back by a moving vehicle while standing behind a stationary car. Prior to the accident, he lost control of his car and skidded, and crash into a road divider. He was trying to inspect the car damage when he was knocked down from the back. He was unable to remember what happened from the time of the accident until he awoke in the emergency department. He complained about bilateral hip pain and inability to move both his hips.

Clinical assessment revealed tenderness over both of the patient's hips. Patient resisted moving his hips due to pain. The hip joints were held in a flexed, abducted and external rotated position (Fig. 1a). Radiograph of the pelvis showed anterior dislocation of both his hip joints (Fig. 1c). The patient also sustained a displaced fracture of the right medial malleolus and a Lisfranc fracture of the left foot.

A closed reduction was planned to be carried out under sedation and analgesia in the ward, which was carried out in less than six hours from time of injury. Five milligrams of intravenous Midazolam in 1mg/ml dilution in a 10mls syringe

Address for correspondence: Chee Kidd Chiu, M.D.
Department of Orthopaedic Surgery, Faculty of Medicine,
University of Malaya, 50603 Kuala Lumpur, Malaysia
Tel: +60 379492446 E-mail: cheekidd@yahoo.com

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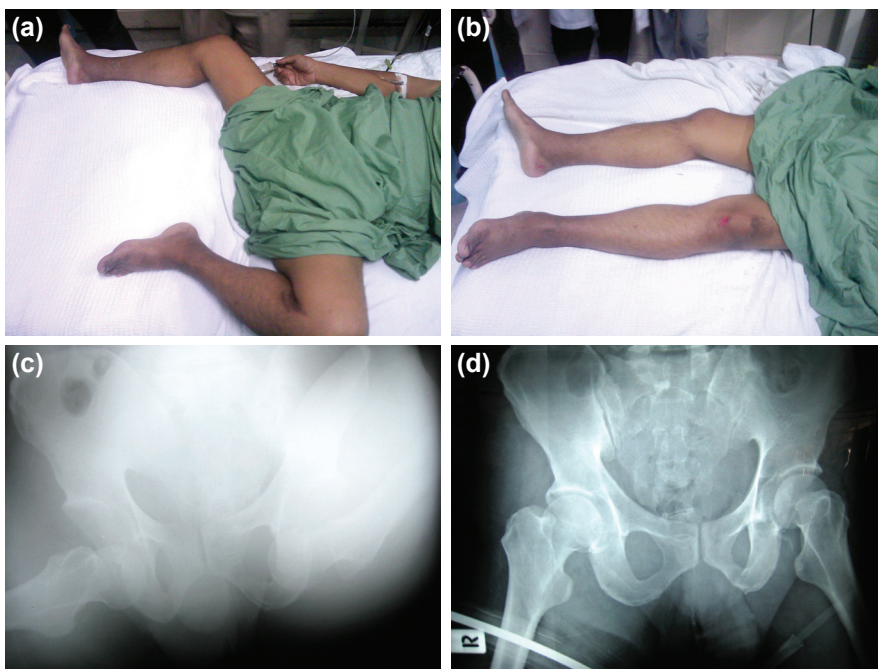


Figure 1. (a) Bilateral anterior dislocated hips in abduction and external rotation. (b) Hip alignment returned to normal after reduction. (c) Anterior-posterior radiograph of the pelvis showing bilateral anterior hip dislocation. (d) Anterior-posterior radiograph of the pelvis after reduction showing the reduced hip joints.

was given in a titration method through a running intravenous drip of normal saline. Seventy five milligrams of intravenous Pethidine was also given for pain relief in a similar fashion. A pulse oximeter was applied throughout the procedure, allowing the patient's pulse and oxygen saturation to be monitored.

The patient was assessed to be adequately sedated before reduction, and a quiet, lowly lid surrounding environment was ensured as much as possible. Both hips were reduced one after another and assessed to be stable after reduction (Fig. 1b). Both lower limbs were placed on skin tractions with

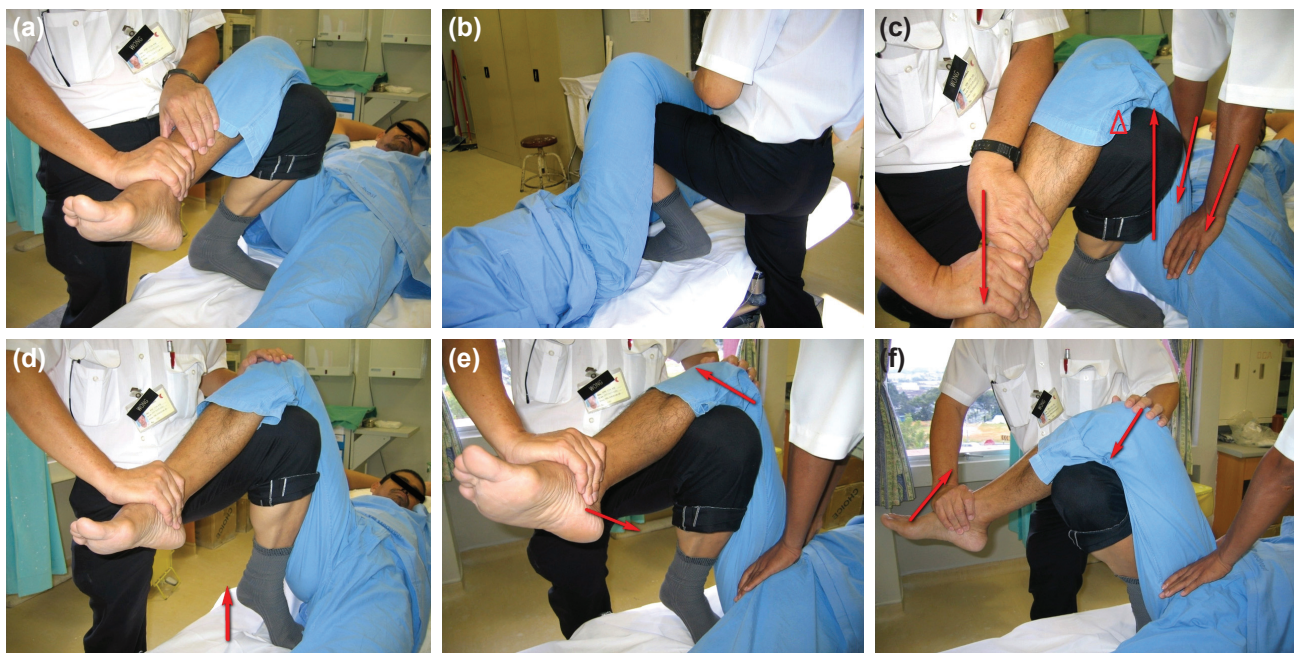


Figure 2. Modified Lefkowitz maneuver. Starting position of the maneuver (a, b). With an assistant stabilizing the hips and the manipulator's thigh under the posterior aspect of proximal tibia acting as a fulcrum, the manipulator then presses the foot down producing and levers system (c). Additional levering force can be achieved by plantar flexion of the manipulator's foot (d). External rotation and internal rotation achieved by shifting the levering forces (e, f).

2.5 kg each. Two boluses of intravenous Flumazenil 200mcg (400mcg) were given to the patient, within a minute interval, to reverse sedative effects of Midazolam. Post reduction

radiographs showed adequately reduced hips with an insignificant chip fracture of the left acetabulum (Fig. 1d). After traction for a week, the patient was started on hip abduction

Table I. Summary of cases with traumatic bilateral anterior hip dislocation

Study	Year	Age	Sex	Mechanism of injury	Types of anaesthesia	Method	Maneuver	Follow up	Complications
Aggarwal ^[2]	1967	55	Male	Roof fell on back while stooping	?	Trochanteric osteotomy of left hip	Not done	Old unreduced dislocation seen after 9 months	Limited movements, unable to stand
M'Bamali ^[3]	1975	48	Male	Struck on the back by a vehicle	General	Closed reduction	Bigelow	24 months	No
Gibbs ^[4]	1980	19	Male	Run over by a trailer when facing down in crouching position	General	Closed reduction	Bigelow	18months	No
Zamani ^[5]	1981	27	Male	Car driver, collision with a pole, not using seatbelt	General	Closed reduction	Bigelow	3months	No
Sethi ^[6]	1987	54	Male	Crushed by a heavy weight on lower back in stooping position	General	Closed reduction	Bigelow	18 months	No
Tezcan ^[7]	1988	58	Male	Falling backward with hips anchored to the table	General	Closed reduction	Bigelow	12months	No
Endo ^[8]	1991	27	Male	Fell off the motorcycle	General	Closed reduction	Allis	24 months	No
Terahata ^[9]	1996	22	Male	Motorcycle handle bar hit knees	Spinal	Closed reduction	Bigelow	24months	No
Sneath ^[10]	1997	15	Male	Front seat passenger, head on collision with a vehicle	General	Closed reduction	Bigelow	?	?
Duygulu ^[11]	2002	23	Male	Ejected from a car backseat, not using seatbelt	General	Closed reduction	Bigelow	24 months	No
Akinyoola ^[12]	2005	33	Male	Front seat passenger, hit from behind by a trailer, collided with another vehicle in front	General	Closed reduction	?	?	?
Chung ^[13]	2009	60	Male	A heavy beam fell on back while squatting	General	Closed reduction	Bigelow	24 months	No
Honner ^[14]	2009	37	Female	Fall from height while performing acrobatics with a swinging trapeze	Sedation (Propofol)	Closed reduction	Allis	4 months	No
Current	2010	47	Male	Struck on the back by a vehicle while standing behind a car	Sedation (Midazolam)	Closed reduction	Modified Lefkowitz	24 months	No

and exercises. He was discharged a week later and was asked to ambulate with a wheelchair for another six weeks. At the twelfth and twenty-fourth follow-up after the injury, he was walking without any hip pain.

Literature Review

A search was performed on MEDLINE from January 1966 to December 2012, aiming to identify all publications reporting traumatic bilateral anterior hip dislocation. Key words used were “traumatic”, “bilateral”, “anterior” and “hip dislocation”. Sixteen reports were found in which thirteen were in English^[2-14] (Table 1).

DISCUSSION

Hip dislocations are frequently encountered in an accident and emergency department. Prompt reduction of the hip is desirable as it has been documented to reduce potential long term complications of hip dislocations, such as avascular necrosis of the femoral head.

Reduction of the hip joint can be done under sedation or general anaesthesia. Our review showed that general anaesthesia was mostly preferred since it can provide substantial pain relief and good muscle relaxation. However, general anaesthesia preparation may lead to a delay for the reduction procedure. In patients with risk factors for general anaesthesia, the delay may occur during work-up and optimization of the patient. In some centres, especially in less-developed countries, allocation for general anaesthesia is limited and a delay may be unavoidable while waiting for its availability. In addition, patients with pre-existing medical conditions may be exposed to anaesthetic risks and complications.

The use of intravenous sedation in reduction of the hip is a good alternative for general anaesthesia. Intravenous sedation can easily be administered bedside at the accident and emergency room or in the ward. If titrated well, it can provide a level of sedation adequate for procedures with mild muscle relaxation. The fear of using sedation for this procedure may arise from its lack of predictability of sedative duration and the incomplete muscle relaxation leading to a difficult reduction and a failed procedure. In our review, only one author has reported the use of intravenous sedation to reduce the hip joints. Honner^[14] has used intravenous Propofol to sedate the patient before reducing both anterior hip dislocations. In our center, Propofol is not freely available in the emergency department or in the wards. It was shown in our study that the reduction of bilateral anterior hip dislocation is possible using a cheaper and more available sedative agent.

Our review noted that most authors had used Bigelow maneuver to reduce hip joints. Two authors, Endo^[8] and Honner,^[14] used the Allis maneuver. All early closed reductions were successful and none needed operation. An adapted version of thigh fulcrum maneuver described by Lefkowitz^[15] was

used in our case to reduce the dislocated hip joints. With a fulcrum maneuver, a consistent and controlled force could be applied throughout the reduction procedure, preventing the risk of excessive stress to the hip joint which may lead to the impairment of femoral head blood supply and damage of the surface of the joint cartilage (Fig. 2). This is particularly useful if a potentially strong muscular resistance is anticipated during the reduction procedure, especially in a brawny man.

All case reports in our review revealed good outcome on follow-up except for a patient reported by Aggarwal,^[2] who neglected his hip dislocations for nine months. He developed limited hip movements preventing him from standing and a trochanteric osteotomy was done to improve his function. In our case, the patient was able to walk after two months and continued to walk without any pain at the twenty-fourth month follow-up after injury.

Conclusion

Closed reduction of traumatic bilateral anterior hip dislocation can be done successfully under sedation using intravenous Midazolam with a modified Lefkowitz maneuver. Early reduction of hip dislocation will ensure a better long term outcome.

Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for the review by the Editor-in-Chief of this journal.

Authors' Contribution

CKC performed the procedure, took care of the patient, collected the clinical data, and drafted the manuscript. TSN assisted in collecting the clinical data and drafting of the manuscript. NNW and BAK revised the manuscript. All authors read and approved the final manuscript.

Competing Interest

The authors declare that they have no competing interests.

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OLGU SUNUMU - ÖZET

Travmatik çift taraflı anterior kalça çıkıklarında sedasyon ile kapalı redüksiyon: Bir olgu sunumu ve literatürün gözden geçirilmesi

Dr. Chee Kidd Chiu,¹ Dr. Tiong Soon Ng,² Dr. Nayyer Naveed Wazir,³ Dr. Kareem Abdul Bhurhanudeen³

¹Malaya Üniversitesi Tıp Fakültesi, Ortopedik Cerrahi Anabilim Dalı, Kuala Lumpur, Malezya;

²Tuanku Jaafar Hastanesi, Ortopedik Cerrahi Kliniği, Malezya;

³Uluslararası Uluslararası Tıp Üniversitesi, Ortopedik Cerrahi Anabilim Dalı, Malezya

Sedasyon altında redükte edilmiş nadir bir çift taraflı anterior kalça çıkığı olgusunu sunuyoruz. Kırk yedi yaşındaki erkek bir araç tarafından çarpılıp yere düşürüldü. Petidinle kombine titre edilmiş intravenöz midazolam dozuyla birlikte petidin kullanarak sedasyon altında çift taraflı anterior kalça kırığını başarıyla redükte ettik. Manipülasyon yapanın uyluğunu bir dayanak noktası olarak kullanıp modifiye Lefkowitz manevrası uyguladık. Hasta travmadan iki ay sonra yük bindirmeye başladı. Yirmi dört ay sonra ise kalça ağrısı olmaksızın yürüyordu. Literatür gözden geçirildiğinde 12 adet çift taraflı anterior kırığı olgu sunumu saptadık. Yalnızca bir yazar redüksiyon işlemi için intravenöz sedasyon (propofol) kullandığını bildirmişti. Hiçbir yazar bu amaçla Lefkowitz manevrası kullandığını bildirmemişti. Sonuçta, modifiye Lefkowitz manevrasını kullanarak sedasyon altında çift taraflı anterior kalça çıkığının redüksiyonu mümkündür.

Anahtar sözcükler: Çift taraflı anterior kalça çıkığı; modifiye Lefkowitz manevrası; sedasyon.

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