Original article

Traumatic Dislocation and Fracture-Dislocation of the Hip in Sawanpracharak Hospital

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Abstract

Objectives To identify prognostic factors that predict results after traumatic dislocation and fracture-dislocation of the hip.

Methods From October 2003 to September 2007, seventy-five patients with traumatic dislocation of the hip were treated, and 66 completed data for statistical analysis. The patient data were reviewed by sex, age, cause of injury, associated injury, and complication. Two prognostic factors (fracture-dislocation type and grade, time interval between injury and reduction) were analyzed for correlation to the results. Hip scores were classified according to the functional evaluation system described by Merle d’Aubigne.

Results There were 63 male and 12 female patients, with a mean age of 36.6 years. Traffic accidents were the leading cause of injury, with motorcycles being the most involved (47 cases, 62.7%). Sixty-six patients were analyzed; of which 17 were anterior dislocations and 49 posterior dislocations. Fifty-one hips were reduced within 12 hours. In follow-up, 55 patients (83.3%) had very good or good to medium results. Three patients developed osteonecrosis of the femoral head. In this study, grade I of posterior hip dislocation was found to have better result than grade II-IV \( (p<0.001) \). The time interval before hip reduction was to have no found influence on the results.

Conclusions Traumatic dislocation of the hip is an orthopedic emergency. From this study, grade of hip dislocation is the important factor in prognosis for hip stability. This study believes that satisfactory results were obtained in patients with early recognition, and prompt, stable reduction by either closed or open methods. Chiang Mai Medical Journal 2010;49(4):145-151.

Keywords: Prognostic factor, Fracture-dislocation type, Time interval between injury and reduction

Traumatic dislocation and fracture-dislocation of the hip are severe injuries, usually associated with other ones. Currently, their most common cause is from motor vehicle accidents (MVAs). Posterior hip dislocation is found nearly 90 percent of cases.\(^1\,\^2\) The position of the femoral head in relation to the acetabulum, and the vector of force at the time of impact determine the type of dislocation produced. Otherwise, seat-belts and airbags can reduce the incidence of hip dislocation in dashboard injury.\(^2\,\^3\) Traumatic hip dislocation is absolutely an orthopedic emergency, and immediate gentle reduction is essential procedure. Complications are nerve injury, posttraumatic arthritis of the hip joint, and osteonecrosis of the femoral head: (AVN). Osteonecrosis occurs in 8-13% of cases, and this incidence increases in cases of reduction delay of over 12 hours\(^2\,\^6\) or

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attempted reduction more than 2 times. The effect of early weight bearing is controversial, but found to associate with more severe AVN. From previous studies, prognostic factors that predict outcome are grade of hip dislocation and time interval between injury and reduction. The purpose of this retrospective study was to identify prognostic factors that predict results after hip dislocation in Sawanpacharak Hospital.

METHODS

The medical records of 75 patients, who were diagnosed with traumatic dislocation and fracture-dislocation of the hip in Sawanpacharak Hospital from October 2003 to September 2007, were collected. Demographic data, cause of injury, associated injury, type and grade of hip dislocation, time interval between injury and reduction, and complications were reviewed and analyzed. The follow-up period ranged from 2.5 to 6.7 years (average 5.4 years). In this study, Hip functional score was classified according to the Method of Grading Functional Value of Hip (Merle d’ Aubigne Hip Evaluation System). In clinical examinations, attention was paid to pain, mobility, and ability to walk. The results were classified as very good, good, medium, fair, and poor. Cases with good and medium results were evaluated in the same group. Two prognostic factors (fracture-dislocation type and grade, time interval between injury and reduction) were analyzed for correlation to the results by Fischer’s Exact test. Fracture dislocation of the hip was classified by using the method of Stewart and Milford. Cases with femoral head fracture were sub classified by Pipkin’s classification. Time interval was 12 hours for grouping (≤ 12 hours and > 12 hours).

RESULTS

From October 2003 to September 2007, 75 patients traumatic dislocation and fracture-dislocation of the hip were reviewed in hospital. Sixty-three males and 12 females were included; with an average age of 36.6 years (ranged from 15 to 85 years). The most common age range was 40-49 years (Table 1). Motorcycle accidents were found to be 62.68% of cases (47 patients)
(Table 2), and fracture of extremity was the highest associated injury (Table 3). Twenty-four hip dislocations were anterior type (23 were grade I and one grade IV; Pipkin II). Fifty one hip dislocations were posterior type (grade I = 28, grade II = 10, grade III = 4, and grade IV = 9). Nine cases of grade IV were found in Pipkin I (7), Pipkin II (1), and Pipkin IV (1).

In this study treatment for traumatic hip dislocation was closed reduction under intravenous anesthesia in the operating room. If unsuccessful, open reduction was performed. One case of anterior dislocation had open reduction performed because of soft tissue interposition. For posterior type, the case of Pipkin IV needed open hip joint reduction and then fixed acetabular fragment 4 days later. Two cases were found to have osteochondral fragment after closed reduction, and then open joint reduction was performed for fragment removal.

Nine patients were lost to follow up inside 2 years, therefore, the results of treatment were collected completely for only 66 patients. The outcomes were evaluated with the following hip scores: 33 hips (50%) had a very good result; 22 hips (33.3%), a good or medium result; 5 hips (7.6%), a fair result; and 6 hips (9.1%), a poor result (Table 4). Two cases were found to have sciatic nerve injury and 2 patients had recurrent dislocation. Three hips developed osteonecrosis of the femoral head; AVN. The first patient, who was posterior type; grade IV (Pipkin IV), developed AVN after 6 months, follow-up when total hip replacement was perform (Fig. 1). The second patient, who was posterior type; grade III received skeletal traction for 3 weeks. After 1½ months follow-up, the roengenographic finding found subchondral bone lysis of the femoral head (Fig. 2). These 2 cases had a poor result. The third case, who was posterior type; Pipkin I, had osteonecrosis detected after 3 months before bipolar hip prosthesis was carried out, and the result was in the fair group.

Sixty-six hips were analyzed, of which 17 were anterior type (25.8%), with 16 of them being grade I and 15 having a very good result. Forty-nine hips were posterior type (grade I = 28, grade II = 9, grade III = 4, and grade IV = 8). Type and grade of fracture-dislocation were sub grouped to 2 groups (group1 = grade I, group2 = grade II-IV). The results were sub into 2 sub groups (satisfactory group = very good, good/medium; and unsatisfactory group = fair, poor). Statistical analysis of type and grade of fracture-dislocation and results was performed and found to be significant only in posterior hip dislocation, with grade I having a superior result to grade II-IV (p < 0.001) (Table 4).

Table 4. Statistical analysis of type and grade of fracture-dislocation and results

<table>
<thead>
<tr>
<th>Type/Grade</th>
<th>Result</th>
<th>Satisfactory</th>
<th>Unsatisfactory</th>
<th>Total</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Very good</td>
<td>Good/Medium</td>
<td>Fair</td>
<td>Poor</td>
</tr>
<tr>
<td>Anterior</td>
<td>I</td>
<td>15</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
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<td></td>
<td>II</td>
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<td>III</td>
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<td>0</td>
</tr>
<tr>
<td></td>
<td>IV</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Total(%)</td>
<td>33(50.0)</td>
<td>22(33.3)</td>
<td>5(7.6)</td>
<td>6(9.1)</td>
</tr>
<tr>
<td>Posterior</td>
<td>I</td>
<td>18</td>
<td>9</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>II</td>
<td>0</td>
<td>9</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>III</td>
<td>0</td>
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<tr>
<td></td>
<td>&lt; 0.001*</td>
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</table>


Figure 1. (A) 34-year-old man with a grade IV posterior dislocation of the left hip. (B) Post reduction radiograph showed one screw fixation for posterior wall fragment. (C) 6 months after injury, osteonecrosis was developed. (D) Total hip replacement was performed.

Figure 2. (A) 47-year-old man with a grade III posterior dislocation of the left hip. (B) Closed reduction was performed 4 hours after injury, then skeletal traction for 3 weeks. (C) 18 months later, the femoral head was developed subchondral bone lysis but the patient was refused surgery.
For the time interval between injury and reduction, 51 hips were reduced within 12 hours, with 31 of those being reduced within 6 hours. Sixteen hips were reduced in over 12 hours at that time. Statistical analysis of interval time and results was found to be in significant at a p value of 0.703 (Table 5).

**DISCUSSION**

Traumatic dislocation and fracture-dislocation of the hip are produced mostly from high energy injury. Recently, the leading cause has been traffic accidents from which this study found that 62.68% involved motorcycles. Approximately 30% of traumatic hip dislocations occurred during the fifth decade of life (40-49 years), and 84.6% of injuries occurred in males.

In previous studies, the ratio of anterior and posterior dislocation was between 1:10 to 1:19, but this study found more anterior types than others (ratio 1:4). When grading of posterior hip dislocation was considered, this study found 1 in 2 grade I, while Epstein’s data revealed only one third.

Traumatic dislocation of the hip constitutes an emergency that requires prompt reduction. The key technique is immediate, gentle reduction. Most orthopedists believe that this is best accomplished in the operating room under general anesthesia. This method minimizes complication because multiple closed reduction attempts may cause further trauma to the hip joint.

For prognostic factors that predict results after traumatic hip dislocation; this study found a better result of grade I posterior hip dislocation than grade II-IV, which was the same as Sahin’s report. No statistical difference was noted on comparison of results in patients with time interval before reduction, while Sahin reported more satisfactory results in patients who underwent reduction within 12 hours. Although early reduction alone does not ensure satisfactory results, delay in reduction of traumatic dislocation of the hip is clearly associated with increased osteonecrosis of the femoral head.

**CONCLUSION**

In this study, grade of hip dislocation was only a prognostic factor that predicted the result. However, this study believes that early recognition and prompt, stable reduction is the essence of successful management in either closed or open reductions.

**REFERENCES**

ข้อสรุป

การข้อสะโพกเคลื่อนหลุดจากอุบัติเหตุในโรงพยาบาลสรรพสิทธิ์ประชารักษ์

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บทคัดย่อ

วัตถุประสงค์: เพื่อศึกษาปัจจัยในการพยากรณ์โรคที่ทำนายผลการรักษาภาวะข้อสะโพกเคลื่อนหลุดทั้งแบบมีและไม่มีกระดูกหักร่วม

วิธีการ: การศึกษานี้เป็นการทบทวนวิเคราะห์ข้อมูลจากเวชระเบียนผู้บาดเจ็บข้อสะโพกเคลื่อนหลุดระหว่างเดือนตุลาคม พ.ศ. 2546 ถึงเดือนกันยายน พ.ศ. 2550 ทั้งหมด 75 ราย และมีข้อมูลครบเพื่อวิเคราะห์ 66 ราย

ผลการศึกษา: ผู้ป่วยเป็นเพศชาย 63 ราย เพศหญิง 12 ราย อายุเฉลี่ย 36.6 ปี สาเหตุการบาดเจ็บเป็นการกระแทกจากจราจร 47 ราย (ร้อยละ 62.7) สาเหตุการบาดเจ็บด้านหน้า 17 ราย เคลื่อนหลุดไปด้านหลัง 49 ราย ในจำนวนนี้ 51 ราย รักษารัดดึงข้อสะโพกเข้าที่ภายใน 12 ชั่วโมง ทำการจัดดึงเข้าที่ 55 ราย พบกลุ่มที่น่าพอใจ คือ ดีมาก ดี หรือ น่าพอใจ รวม 55 ราย

สรุป:
การข้อสะโพกเคลื่อนหลุดคือภาวะฉุกเฉินทางออร์โธพอดิกส์ การตรวจพบได้รวดเร็วและให้การรักษาที่ถูกต้องทันท่วงทีมีความสำคัญต่อผลการรักษา จากการศึกษาที่พบว่าผลการตรวจพบเจ็บที่ง่ายของข้อสะโพกเคลื่อนหลุดและกระดูกหักร่วม จะมีผลต่อผลการรักษา โดยการศึกษาได้ใช้ประเมินการทำงานของข้อสะโพกเป็นคะแนนตามแบบของ Merle d'Aubigne

คำสำคัญ: ปัจจัยที่ส่งผลต่อการรักษา ชนิดของข้อสะโพกเคลื่อนหลุด ระยะเวลาระหว่างอุบัติเหตุจนถึงการจัดดึงข้อสะโพก