

## Occult external iliac vein injury after anterior dislocation of the sacroiliac joint in adult patient<sup>☆</sup>



Yueju Liu<sup>a, b</sup>, Juan Wang<sup>a, b</sup>, Yingze Zhang<sup>a, b, \*</sup>

<sup>a</sup> Third Hospital of Hebei Medical University, Shijiazhuang, 050051, PR China

<sup>b</sup> Key Orthopaedic Biomechanics Laboratory of Hebei Province, Shijiazhuang, PR China

### ARTICLE INFO

#### Article history:

Received 29 September 2014

Received in revised form

4 November 2014

Accepted 12 December 2014

Available online 12 January 2017

#### Keywords:

Dislocation

Sacroiliac joint

Vascular injury

External iliac vein

### ABSTRACT

Anterior dislocation of the sacroiliac joint, characterized by dislocation of the ilium anterior to the sacrum, is a subtype of complete posterior pelvic ring disruption. This injury occurs mostly in children. We present an adult patient with anterior dislocation of the sacroiliac joint. It was associated with numerous complications. To the best of our knowledge, it is only the second case reported in the literature.

© 2016 Turkish Association of Orthopaedics and Traumatology. Publishing services by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

### Introduction

Fracture-dislocation of the sacroiliac joint is an important component of pelvic fractures. It is characterized by dislocation of the ilium posterior to the sacrum, which is the most frequent type of sacroiliac joint dislocation. Ilium dislocation anterior to the sacrum is rare and presents unique radiological manifestation. This distinctive injury is a subtype of complete posterior pelvic ring disruption. Several cases of anterior sacroiliac joint dislocations have occurred in children.<sup>1–4</sup> We present herein a case of anterior dislocation of the sacroiliac joint in an adult that was caused by severe violence. It was followed by complications, including an occult vascular injury after pelvic disruption that could have resulted in significant morbidity and even death.

### Case report

A 38-year-old man suddenly developed pain in his pelvis after being hit by a truck. The initial assessment revealed visible subcutaneous ecchymosis in the hypogastrium and obvious scrotal swelling (Fig. 1). Plain radiography (Fig. 2) and computed tomography (Fig. 3) showed a pelvic fracture with anterior dislocation of the sacroiliac joint. After the patient's general condition was improved by the standardized advanced trauma life support protocol, he underwent urethral realignment, bladder colostomy, and drainage of the scrotal incision. The patient was stable post-operatively. He was placed in temporary skeletal traction of the tibial tubercle and prepared for the second surgery to address his pelvic fracture with internal fixation. Ten days later, however, his blood pressure suddenly dropped to 50/30 mmHg during a sneezing episode. Angiography revealed no apparent pelvic vascular damage (Fig. 4). He was then given an emergency blood transfusion and simultaneous volume expansion therapy.

Physical examination revealed abdominal distension, abdominal tenderness, and rebound tenderness. Emergency laparotomy revealed a large amount of uncoagulated blood (about 4000 ml) and remnants of clotted blood (Fig. 5). Careful probing uncovered branches of a ruptured external iliac vein (Fig. 6), which was quickly repaired with 1.0 sutures (Ethicon, Johnson & Johnson, Tokyo, Japan). The patient's blood pressure then stabilized. He refused, however, to undergo open reduction internal fixation of the pelvic

<sup>☆</sup> The authors confirm that there are no known conflicts of interest associated with this publication and that there has been no significant financial support for this work that could have influenced its outcome.

\* Corresponding author. Department of Orthopedic Center, Third Hospital of Hebei Medical University, No. 139 Zi Qiang Road, Shijiazhuang, Hebei, 050051, PR China. Fax: +86 0311 8702 3626.

E-mail addresses: [liuyueju1983@gmail.com](mailto:liuyueju1983@gmail.com) (Y. Liu), [wangjuandoctor@126.com](mailto:wangjuandoctor@126.com) (J. Wang), [yzlingliu@126.com](mailto:yzlingliu@126.com) (Y. Zhang).

Peer review under responsibility of Turkish Association of Orthopaedics and Traumatology.



**Fig. 1.** There was visible subcutaneous echymosis in the hypogastrium and obvious scrotal swelling on examination in the emergency room.



**Fig. 4.** Angiography reveals no apparent pelvic vascular damage.



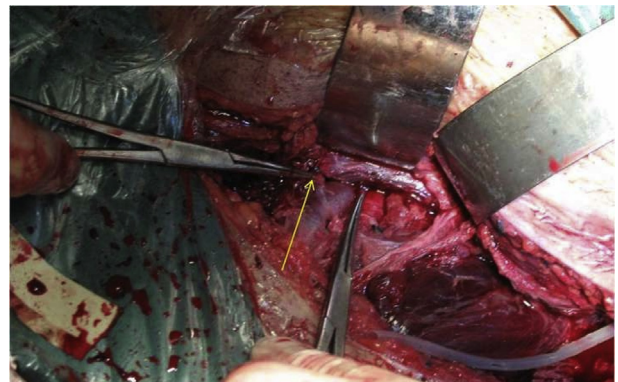
**Fig. 2.** Plain radiography shows a typical pelvic fracture.



**Fig. 5.** Large amount of uncoagulated blood (about 4000 ml) and remnants of clotted blood were found during the operation.



**Fig. 3.** Computed tomography shows anterior dislocation of the sacroiliac joint.



**Fig. 6.** Branch of the ruptured external iliac vein was found (arrow).



Fig. 7. Postoperative, predischarge view of the patient in traction.

fracture. Skeletal traction of the tibial tubercle was therefore used successfully to reduce the sacroiliac joint (Fig. 7). The patient insisted on being discharged from the hospital 19 days later.

## Discussion

Although there have been reports addressing anterior dislocation of the sacroiliac joint—wherein the ilium dislocates anterior to the sacrum instead of posterior to it—in children, there are few reports of this dislocation in adults. To the best of our knowledge, we are the first to report the anterior dislocation of sacroiliac joint in an adult patient in the English-language literature. Xue et al,<sup>5</sup> in the Chinese literature, reported a pelvic fracture with this distinct dislocation in a 31-year-old man who had been hit by a car. The patient suffered from pelvic fracture with anterior dislocation of the sacroiliac joint, a pubic rami fracture, and symphysis diastasis. Associated injuries included injury of the sacral nerve, ischiadic nerve, and urethra. Open reduction and internal fixation were performed via an arc incision in the posterior sacroiliac joint combined with an anterior Pfannenstiel incision.

There is a lower incidence of combined injuries (e.g., pubic fractures) in children than in adults because of the greater plasticity of the children's pelvic bones and their thick periosteum, increased elasticity and flexibility of the symphysis pubis and sacroiliac joints, stronger ligaments, and increased capacity for energy absorption in the cartilaginous area.<sup>1–4</sup> It is not surprising, then, that anterior dislocation of the sacroiliac joint in adults is associated with more combined injuries, such as symphysis diastasis, iliac fracture, urethral injury, and occult vascular injury.

Among these combined injuries, the most important is the occult vascular injury, which may occur when the ilium is moving forward because of the impact experienced by the patient. In the present case, the ruptured branch of the external iliac vein was not apparent on angiography and so posed a serious threat to the patient. Even though we discovered this occult vascular injury and successfully rescued the patient, we have a lingering fear that it might happen again. We reported it here with the hope that other doctors could learn from our experience and be highly vigilant regarding its possibility when confronting these fractures in adults. Thus, the patient's vessels should be the primary exploration before addressing other problems as it can save the patient's life during the course of treatment.

The shortcomings and deficiencies of this case include the fact that the patient refused further surgery for internal fixation of his fracture. He was a devoutly religious man, convinced that God helped him escape death. He refused further treatment based on this belief. We therefore cannot provide complete information of this particular case. Our main goal, however, was to warn other orthopedic surgeons to be vigilant when repairing an anterior dislocation of the sacroiliac joint in adults that was caused by a high-energy injury as it can be accompanied by serious combined complications. In terms of this goal, we believe that we have been successful.

In conclusion, the incidence of anterior dislocation of the sacroiliac joint in adults can be expected to rise considering the increasing number of motor vehicles on the roads, especially in China. Emergency doctors and orthopedic surgeons should pay close attention to combined injuries, especially in regard to occult vascular injury, when confronting these fractures.

## References

1. Lee DH, Jeong WK, Inna P, Noh W, Lee DK, Lee SH. Bilateral sacroiliac joint dislocation (anterior and posterior) with triradiate cartilage injury: a case report. *J Orthop Trauma*. 2011;25:e111–e114.
2. Zhang H, Jin L, Li W, Li H. Anterior dislocation of the sacroiliac joint with complex fractures of the pelvis and femur in children: a case report. *J Pediatr Orthop B*. 2013;22:424–426.
3. Blondel B, Glard Y, Launay F, Jacopin S, Jouve JL, Bollini G. Anterior dislocation of the sacroiliac joint in children: a new technique for pelvic fixation. *J Pediatr Orthop B*. 2011;20:209–211.
4. Zhang Q, Chen W, Liu H, Su Y, Pan J, Zhang Y. The anterior dislocation of the sacroiliac joint: a report of four cases and review of the literature and treatment algorithm. *Arch Orthop Trauma Surg*. 2009;129, 941–917.
5. Xue H, Li G, Wang T. The united incisions in treatment of anterior dislocation of sacroiliac joint. *J Shanxi Med Univ*. 2007;38:342–343.