Cureus
Part of SPRINGER NATURE

Open Access Case Report

Published via Texas Tech University Health Sciences Center El Paso

Isolated Bilateral Sacroiliac Joint Injuries Managed With Percutaneous Reduction and Fixation: A Case Report and Literature Review

Karen J. Padilla [1], Nathaniel T. Anderson [1], Joshua A. Hansen [2, 1], Adam H. Adler [1], Taylor M. Yong [1]

1. Department of Orthopedic Surgery and Rehabilitation, Foster School of Medicine, Texas Tech University Health Sciences Center, El Paso, USA 2. Department of Orthopedic Surgery, William Beaumont Army Medical Center, El Paso, USA

Corresponding author: Karen J. Padilla, pad52103@ttuhsc.edu

Received 04/01/2026
Review began 04/20/2026
Review ended 10/28/2026
Published 11/11/2026

© Copyright 2026
Padilla et al. This is an open access article distributed under the terms of the Creative Commons Attribution License CC-BY 4.0., which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

DOI: 10.7759/cureus.119490

Abstract

A 48-year-old male was crushed posteriorly against a wall by a forklift, sustaining bilateral sacroiliac (SI) joint dislocation, intraperitoneal bladder rupture, and extensive posterior soft-tissue injury without anterior pelvic ring involvement. Following laparotomy and bladder repair, he underwent percutaneous reduction and fixation in the supine position. At six months, he maintained radiographic stability and was weight-bearing as tolerated with a walker.

Isolated bilateral SI joint disruption without anterior ring involvement represents a relatively rare pattern of injury. This case highlights the importance of recognizing soft-tissue injuries that influence surgical strategy and demonstrates that select SI joint injury patterns can be effectively managed with appropriately sequenced percutaneous reduction and fixation.

Categories: Trauma, Orthopedics
Keywords: isolated sacroiliac joint disruption, pelvic ring, percutaneous fixation, sacroiliac joint dislocation, soft tissue trauma, stabilization

Introduction

Pelvic ring injuries in young patients most often result from high-energy trauma, encompassing a spectrum of bony and ligamentous disruptions. Sacroiliac (SI) joint dislocations typically occur with concomitant anterior arch involvement, making isolated SI disruptions uncommon. These injuries may result from severe impact or crush forces and, if untreated, carry a high risk of long-term morbidity [1].

Optimal management of these complex injuries requires consideration of associated visceral and soft-tissue involvement, careful selection of surgical technique, and appropriate timing of fixation to maximize recovery [2,3]. Reports of isolated bilateral SI joint dislocations without anterior ring involvement are exceedingly rare [4-11]. To our knowledge, the use of a purely percutaneous fixation technique for similar injury patterns appears to be uncommon in the available literature.

We present a unique case of a patient who sustained bilateral SI joint disruptions with intraperitoneal bladder rupture and extensive posterior soft-tissue injury, without anterior pelvic ring involvement, successfully managed with percutaneous fixation. The patient provided informed consent for publication of the materials and information within this report.

Case Presentation

A 48-year-old male presented to our level one trauma center after sustaining a crush injury between a forklift and a wall while at work. The patient was reportedly hypotensive, unable to ambulate, and expressed lower abdominal pain upon initial evaluation at the scene. On examination at hospital arrival, he noted low back and pelvic pain but was neurovascularly intact. The AP pelvis radiograph obtained in the trauma bay demonstrated bilateral SI joint widening without fractures or pubic symphyseal widening (Figure *1*).

How to cite this article
Padilla K J, Anderson N T, Hansen J A, et al. (November 11, 2026) Isolated Bilateral Sacroiliac Joint Injuries Managed With Percutaneous Reduction and Fixation: A Case Report and Literature Review. Cureus 18(11): e119490. DOI 10.7759/cureus.119490

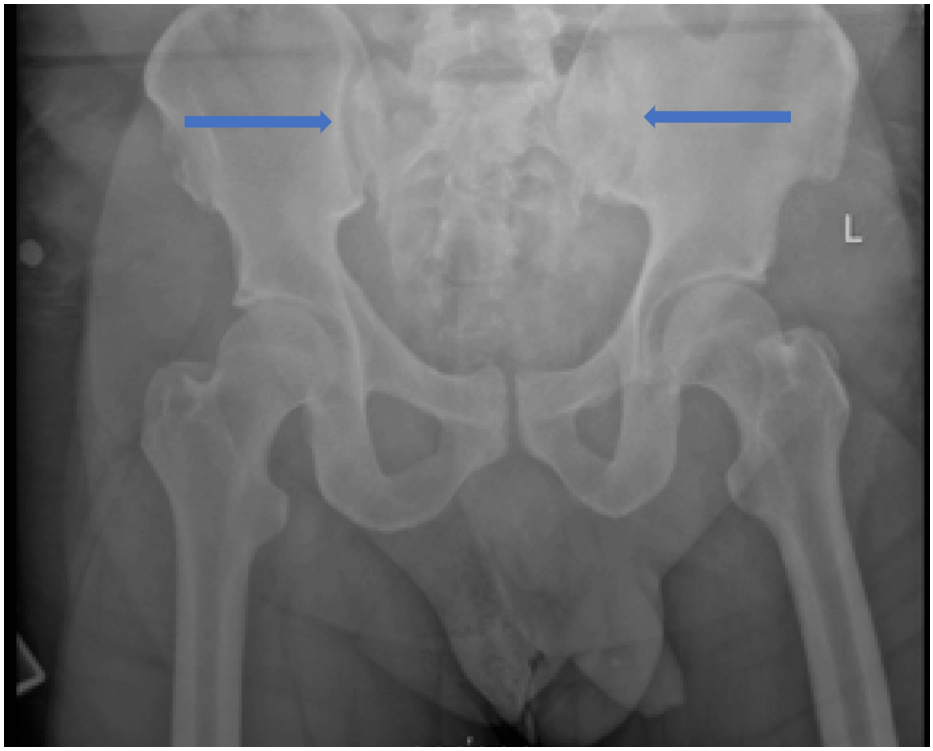


FIGURE 1: AP pelvis radiograph obtained on presentation to the trauma bay shows widening of bilateral sacroiliac joints (arrows) without fracture or gapping of the pubic symphysis.

Gross hematuria was noted following urinary catheter placement. Advanced imaging with computed tomography (CT) showed abnormal bilateral sacroiliac joint widening, and a CT cystogram demonstrated rupture of the bladder dome with contrast extravasation between bowel loops, consistent with intraperitoneal bladder injury (Figure *2*). Additional pertinent findings included caudal sacral fractures with posterior displacement and significant soft tissue hematoma in the posterior sacral and gluteal region, as well as a large right-sided inguinal hernia (Figure *3*).

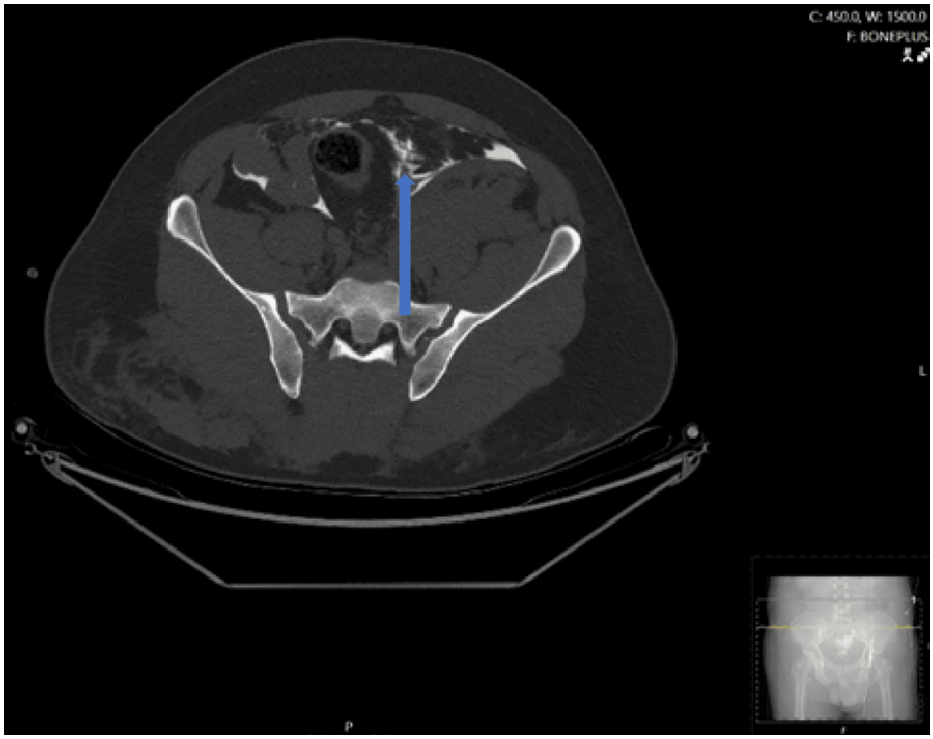


FIGURE 2: Axial CT cystogram shows a left-sided bladder dome rupture with intraperitoneal contrast extravasation (arrow).

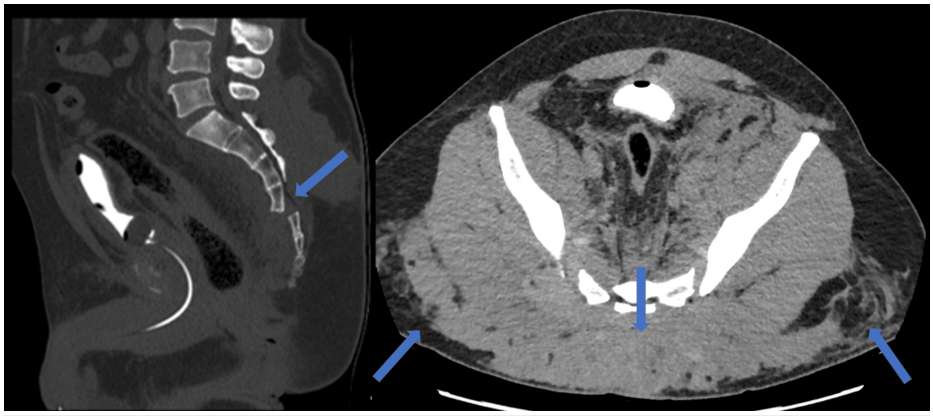


FIGURE 3: Left: sagittal CT shows a sacral fracture with posterior displacement of S4/S5 (arrow) indicative of the force vector; right: axial CT soft-tissue window shows significant soft-tissue trauma in posterior sacral and gluteal soft tissues (arrows).

The patient was resuscitated appropriately and expediently transported to the operating room on hospital day (HD) one for exploratory laparotomy and bladder repair by the trauma surgery team. Postoperatively, he required ongoing resuscitation and was extubated on HD two. On HD three, he was noted to have significant abdominal distention requiring placement of a nasogastric (NG) tube. His abdominal distention had improved, and he was able to undergo stabilization of the posterior pelvic ring on HD four.

In the operative suite, the patient was positioned supine on a sacral bump. A fluoroscopic stress examination under anesthesia was performed, which failed to demonstrate mobility in the anterior pelvic ring. Percutaneous reduction and fixation were then performed with a 70-mm partially threaded, cannulated iliosacral (SI) screw with a washer at the level of S1 on the right side, resulting in compression of the SI joint (Figure *4*).



FIGURE 4: Intraoperative fluoroscopic imaging in the outlet view shows compression across the right sacroiliac joint.

The reduction and fixation on the right side was then reinforced with a second 65-mm fully threaded SI screw without a washer at the same level. Next, a guidewire was placed for a trans-sacral (TS) screw at the level of S2. It was passed from right to left and stopped before crossing the contralateral SI joint. The left SI joint was then percutaneously reduced and stabilized in a similar fashion as previously described (Figure *5*).

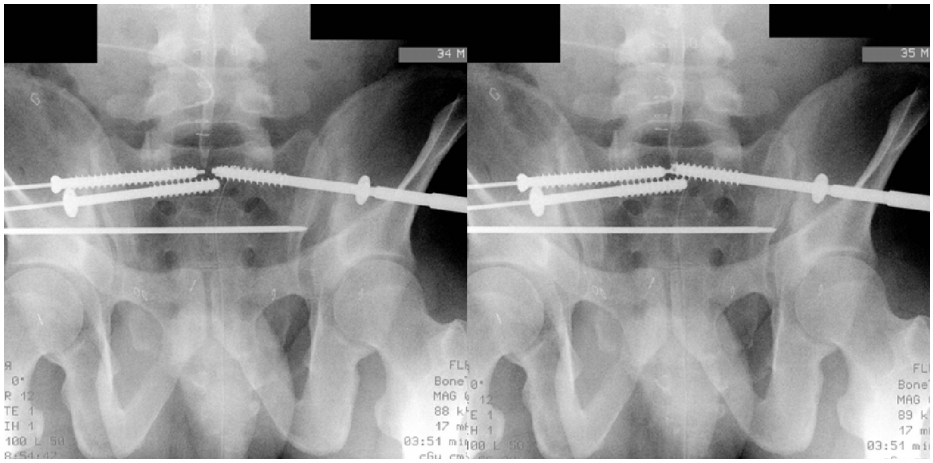


FIGURE 5: Intraoperative fluoroscopic imaging in the outlet view shows compression across the left sacroiliac joint with the trans-sacral wire paused prior to crossing the joint.

After reduction of the left SI joint was accomplished, the guidewire at S2 was then passed across the left SI joint and out the skin on the left side. A left-to-right TS screw was then placed to further stabilize the reduction and fixation of the left side. With stability of the posterior ring, the fluoroscopic stress examination was then repeated and once again did not demonstrate mobility of the anterior ring or any residual instability of the entire pelvic ring. A CT scan was obtained by the trauma service and allowed evaluation of the reduction and implant placement (Figure *6*). This demonstrated safe position of the iliosacral and trans-sacral fixation and anatomic reduction of the SI joints bilaterally.

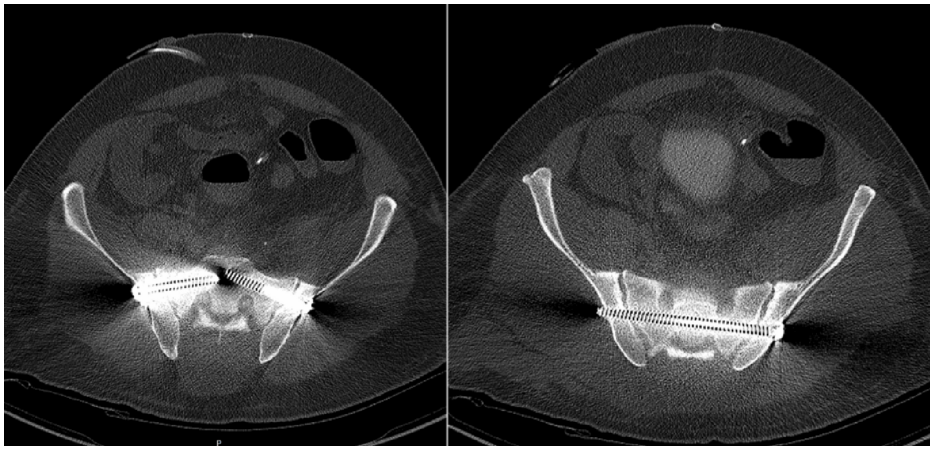


FIGURE 6: Postoperative CT pelvis shows satisfactory reduction of bilateral SI joints and safe position of iliosacral and trans-sacral screw fixation.

SI: sacroiliac

In the postoperative period, he was made non-weight-bearing on bilateral lower extremities with sideboard transfers only. At eight weeks postoperatively, he was instructed to begin weight-bearing as tolerated with a walker and gradually wean the walker while working on mobility with therapy. At six-month follow-up, he was making progress but still struggling with a slight gait abnormality which was felt to be secondary to the degree of gluteal muscular trauma at the time of injury as illustrated in Figure *3*. Radiographs obtained at this time demonstrated maintained positions of the implants and the pelvic ring and appropriate interval healing (Figure *7*). He was instructed to continue strengthening and work on mobility with physical therapy. He had not yet returned to work.

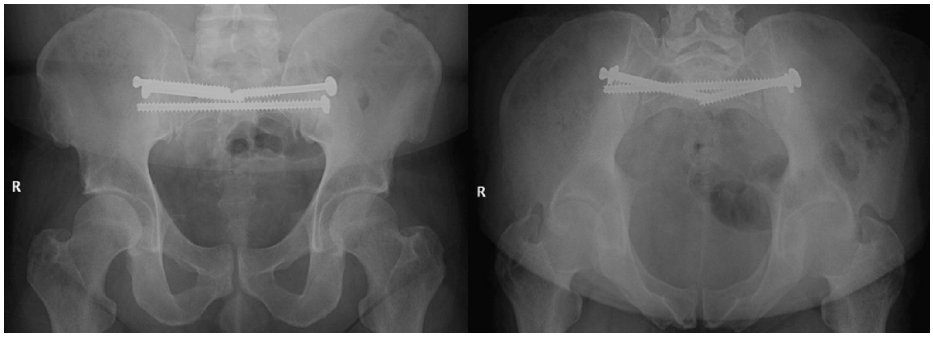


FIGURE 7: Six-month follow-up AP and inlet pelvic radiographs show maintained position of the implants and pelvic ring.

Discussion

High-energy trauma to the posterior pelvis resulting in an isolated bilateral SI joint disruption is an extremely rare injury. The severe force required to disrupt the structural ligaments of the SI joint is most commonly associated with concomitant anterior ring involvement [12]. As the title describes, bilateral posterior pelvic ring injuries typically result from extensive rotational forces, producing characteristic injury patterns such as pubic symphysis diastasis or fracture of the innominate bones [1]. In contrast, the present case describes an isolated bilateral SI joint disruption with concomitant intraperitoneal bladder rupture, occurring in the absence of anterior arch involvement. In the literature, only eight cases of bilateral SI joint dislocation without anterior ring involvement have been reported [4-11]. In several of these, the mechanism was presumed to be a high-energy posterior-to-anterior force directed onto the sacrum. Our case provides direct confirmation of this proposed mechanism, as the patient was struck and pinned against a wall by a forklift from behind.

The force vector resulted in anterior translation of the lumbosacral segment relative to the innominate bones and the caudal sacrum, with displacement occurring through the caudal sacral fracture and SI

joints. We believe this injury pattern is best described as a spinopelvic dissociation variant [13]. Restoration of anatomy and stability to the pelvic ring is paramount in preventing significant morbidity, including long-term pain and dysfunction [1,8,14]. Associated injuries to bowel and urologic structures, together with damage to the surrounding soft tissue envelope, significantly increase the complexity of operative management [15,16]. Furthermore, prior authors have reported that open reduction and internal fixation of posterior pelvic ring disruptions carries significant disadvantages, particularly higher risks of infection, hemorrhage, and wound complications [2,17,18]. In our patient, extensive soft-tissue compromise about the pelvic ring rendered open approaches prone to complications [12,19]. Further, the pattern of displacement, symmetric gapping of the bilateral SI joints without anterior/posterior or cranial/caudal translation, was amenable to closed reduction alone [19,20].

To our knowledge, this case represents an uncommon example of isolated bilateral SI joint disruption successfully managed with a truly percutaneous reduction and fixation technique. Previous case reports have described bilateral SI joint dislocations managed either non-operatively or with open reduction and internal fixation (ORIF) [4-11]. Table *1* summarizes the eight previously reported cases alongside our patient.

Studies	Age in years (gender)	Mechanism of injury	Confirmed and associated injuries	Management/intervention	Reported outcomes
Marcus and Hansen (1984) [4]	34 (M)	Struck across posterior sacrum by hydraulic lift	Complete bilateral SI fracture-dislocation	Open reduction internal fixation with plate and screw fixation and tension band construct in prone position	7-month follow-up: slight limp on right side, improving right gluteus maximus and medius strength, no pain
LaFollette et al. (1986) [5]	17 (F)	Thrown from horse and landed squarely on both ischial tuberosities	Bilateral SI joint dislocation	Non-operative immobilization with delayed active and active-assisted mobilization	7-month follow-up: height loss of 3-4 cm, no symptoms
Nagi et al. (1993) [6]	20 (F)	Fell from seat of motor scooter and landed squarely on her buttocks	Bilateral SI fracture-dislocation (associated fracture of the transverse process and body of L5)*	Non-operative partial reduction with tibial traction for 8 weeks	One-year follow-up: height loss of 2 cm, fully ambulatory, SI joints stable in a partially displaced position
Stevens et al. (1997) [7]	27 (M)	Fell 20 ft out of a window and landed on his back and right arm	Right SI joint disruption and left transiliac fracture-dislocation (associated large retroperitoneal hematoma)*	Open reduction internal fixation	Immediate reduction in pain
Wright et al. (2004) [11]	17 (F)	Motor vehicle accident at 85 mph, rolled over several times, patient unrestrained	Bilateral SI joint disruption	Open reduction internal fixation with reconstruction plates	4-month follow-up: no pain, weakness, or limp
Loupasis et al. (2005) [9]	27 (M)	Fell 6.5 m from a building while inebriated	Bilateral SI joint dislocation with intrapelvic protrusion of the sacrum (associated fracture of the right transverse process of L5, large hematoma and contusion overlying the sacrum and left gluteal region)*	Open reduction internal fixation with dynamic compression plates in supine positioning	2-year follow-up: mild causalgia in the left leg, discomfort in left buttocks, slightly restricted hip movements in both hips, weakness in left ankle dorsiflexion and eversion, extensive heterotopic ossification of the posterior SI, iliolumbar and sacrospinous ligaments; psoas muscle and

					tendon, fusion of the SI joints
Hungerer et al. (2008) [10]	16 (M)	Uncontrolled landing after ski-jump directly on buttocks	Bilateral SI joint disruption	Open reduction internal fixation with double plating in supine positioning and iliolumbar trans-fixation in prone positioning	8-week follow-up: no pain or limitations
Brown et al. (2023) [8]	16 (M)	Head-on collision of dirt bike vs. motor vehicle at 55 mph	Bilateral SI joint dislocation and right anterior wall acetabulum fracture	Open reduction internal fixation with percutaneous screws in supine positioning	3-month follow-up: no pain, stable fixation with slight malreduction of the left SI joint and excellent coronal alignment
Present case	48 (M)	Crushed against a wall by forklift	Bilateral SI joint dislocation (associated transverse fracture of S4-S5, sacral and pelvic sidewall hematomas, bilateral gluteus maximus and piriformis edema/hemorrhage, intraperitoneal bladder rupture)*	Percutaneous reduction and fixation in supine positioning	6-month follow-up: ambulating with a walker, lumbar/buttock pain, gluteal weakness with preserved alignment and stable implants

TABLE 1: Previously reported cases of isolated SI joint dislocation, including mechanism of injury, associated injuries, management strategy, and reported outcomes, compared with the present case.

*Indicates associated injuries reported in addition to the sacroiliac joint injury pattern.

SI: sacroiliac

Among these, six were treated with ORIF, and two were managed nonoperatively. Most operative cases utilized plates in their fixation technique, and only one report confirmed using percutaneous screws alone, albeit with an open reduction [4-11]. Mechanisms of injury were uniformly high-energy, including falls onto the buttocks, high-speed motor vehicle collisions, and compressive impact from heavy machinery [4-11]. The case most comparable to ours in mechanism is that described by Marcus and Hansen, whose patient was struck across the sacrum by a hydraulic lift [4]. Despite operative fixation, that patient continued to exhibit a limp and residual gluteal weakness at seven months, indicating that residual dysfunction can persist even after operative treatment [4]. This is similar to the observed trajectory of recovery in our patient. In contrast, the two patients managed non-operatively were noted to have some degree of height loss or deformity despite functional recovery [5,6].

Another point of comparison among published cases is the development of heterotopic ossification (HO). Unlike the patient described by Loupasis et al., who demonstrated radiographic HO as early as six weeks and marked progression by two years, our patient showed no evidence of HO on imaging up to six months [9]. Longer follow-up would be necessary to definitively exclude delayed development of HO; however, the absence of early radiographic changes and avoidance of open reduction suggest he was less likely to develop it.

Beyond HO risk, long-term functional outcomes may also be influenced by the severity of soft-tissue trauma. At six months, our patient maintained radiographic stability and demonstrated ongoing functional recovery. The residual symptoms in our patient, including buttock pain and gait disturbance, may be attributable to the extensive soft-tissue trauma sustained at the time of injury. This interpretation is supported by the case reported by Loupasis et al., whose patient also sustained posterior soft-tissue injury and notably experienced persistent buttock discomfort and lower extremity weakness at two years [9]. In contrast, most prior reports of isolated SI joint disruptions without major soft-tissue compromise describe excellent symptomatic recovery. Taken together, these findings suggest that the extent of posterior soft-tissue involvement may be a key determinant of residual morbidity, independent of fixation method.

Conclusions

In summary, we present a case of an isolated bilateral SI joint disruption without anterior ring involvement, complicated by intraperitoneal bladder rupture and severe posterior soft-tissue injury. The case highlights

the importance of tailoring fixation strategy to the injury pattern and associated soft-tissue involvement. A percutaneous approach can achieve anatomic reduction while minimizing risk to already compromised tissues. Sound surgical technique with regard to the sequence of reduction and the attainment of rigid fixation of the pelvic ring is essential. At six months, the construct remained stable with anatomic reduction of the pelvic ring, and the patient exhibited ongoing functional recovery. Residual weakness and gait disturbance may have reflected the magnitude of soft-tissue trauma. This suggests that in complex bilateral SI joint disruptions, soft-tissue trauma may impact functional recovery even with excellent bony stability, and extended-duration physical therapy may be necessary to return to preinjury function.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Karen J. Padilla, Nathaniel T. Anderson, Joshua A. Hansen, Adam H. Adler, Taylor M. Yong

Acquisition, analysis, or interpretation of data: Karen J. Padilla, Nathaniel T. Anderson, Joshua A. Hansen, Adam H. Adler, Taylor M. Yong

Drafting of the manuscript: Karen J. Padilla, Nathaniel T. Anderson

Critical review of the manuscript for important intellectual content: Karen J. Padilla, Joshua A. Hansen, Adam H. Adler, Taylor M. Yong

Supervision: Joshua A. Hansen, Taylor M. Yong

Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

References

1. Tile M: Pelvic ring fractures: should they be fixed? . J Bone Joint Surg Br. 1988, 70:1-12. 10.1302/0301-620X.70B1.3276697
2. Cole JD, Blum DA, Ansel LJ: Outcome after fixation of unstable posterior pelvic ring injuries . Clin Orthop Relat Res. 1996, 329:160-79. 10.1097/00003086-199608000-00020
3. Katsoulis E, Giannoudis PV: Impact of timing of pelvic fixation on functional outcome . Injury. 2006, 37:1133-42. 10.1016/j.injury.2006.07.017
4. Marcus RE, Hansen ST: Bilateral fracture-dislocation of the sacrum. A case report . J Bone Joint Surg Am. 1984, 66:1297-9.
5. LaFollette BF, Levine MI, McNiesh LM: Bilateral fracture-dislocation of the sacrum. A case report . J Bone Joint Surg Am. 1986, 68:1099-101.
6. Nagi ON, Dhillon MS, Gill SS: Bilateral fracture dislocation of the sacrum without injury to the anterior pelvis. Orthopedics. 1993, 16:215-7. 10.3928/0147-7447-19930201-17
7. Stevens KJ, Preston BJ, Hahn DM: Bilateral fracture dislocation of the sacroiliac joint . Skeletal Radiol. 1997, 26:556-8. 10.1007/s002560050286
8. Brown M, Simister S, Paul A, Helmkamp J, McGowan S, DeBaun M: Bilateral sacroiliac joint dislocation, discussion and surgical strategies: a case report. JBJS Case Connect. 2023, 13: 10.2106/JBJS.CC.23.00389
9. Loupasis G, Anastopoulos G, Asimakopoulos A: Pure bilateral sacroiliac dislocation with intact anterior pelvis. Injury. 2005, 36:1379-82. 10.1016/j.injury.2005.04.006
10. Hungerer S, Woltmann A, Bühren V: Bilateral sacroiliac joint dislocation in an adolescent after a skiing accident. Eur J Trauma Emerg Surg. 2008, 34:181-7. 10.1007/s00068-007-7055-z
11. Wright V, Zelle BA, Prayson M: Bilateral sacroiliac joint dislocation without associated fracture or anterior pelvic ring injuries. J Orthop Trauma. 2004, 18:634-7. 10.1097/00005131-200410000-00010
12. Routt Jr ML, Kregor PJ, Simonian PT, Mayo KA: Early results of percutaneous iliosacral screws placed with the patient in the supine position. J Orthop Trauma. 1995, 9:207-14. 10.1097/00005131-199506000-00005
13. Lee Y, Lambrechts M, Narayanan R, et al.: The surgical algorithm for the AO Spine Sacral Injury Classification System. Spine (Phila Pa 1976). 2024, 49:165-73. 10.1097/BRS.0000000000004876
14. Matta JM, Saucedo T: Internal fixation of pelvic ring fractures . Clin Orthop Relat Res. 1989, 242:83-97.
15. Routt Jr ML, Meier MC, Kregor PJ, et al.: Percutaneous iliosacral screws with the patient supine technique . Oper Tech Orthop. 1993, 3:35-45. 10.1016/S1048-6666(06)80007-8

16. Corró S, Sallent A, Pons A, Ares Ó, Barastegui D, Seijas R: Association between stability and urologic lesions in pelvic ring fractures. A case series report. J Invest Surg. 2021, 34:786-9. 10.1080/08941939.2019.1692100
17. Duwelius PJ, Van Allen M, Bray TJ, Nelson D: Computed tomography-guided fixation of unstable posterior pelvic ring disruptions. J Orthop Trauma. 1992, 6:420-6. 10.1097/00005131-199212000-00005
18. Pearson JM, Niemeier TE, McGwin G, Manoharan SR: Spinopelvic dissociation: comparison of outcomes of percutaneous versus open fixation strategies. Adv Orthop. 2018, 2018: 10.1155/2018/5023908
19. Verbeek DO, Routt Jr ML: High-energy pelvic ring disruptions with complete posterior instability: contemporary reduction and fixation strategies. J Bone Joint Surg Am. 2018, 100:1704-12. 10.2106/JBJS.17.01289
20. Lindsay A, Tornetta P, Diwan A, Templeman D: Is closed reduction and percutaneous fixation of unstable posterior ring injuries as accurate as open reduction and internal fixation?. J Orthop Trauma. 2016, 30:29-33. 10.1097/BOT.0000000000000418