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## Case Report

# Encountering pelvic tuberculosis in closed pelvic ring injury with distant wound – An intraoperative surprise: A case report

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## ABSTRACT

Delayed presentation of closed APC type III pelvic ring injury with a healing wound on the medial thigh, in a twenty-six-year-old male, at four weeks. We planned Symphyseal plating and sacroiliac screw fixation surgery. After percutaneous screw fixation, subsequent pelvic exposure revealed whitish cheesy pus in the retropubic space. Hence, we changed surgery from internal fixation to a supra-acetabular external fixator. Subsequent molecular testing documented tuberculosis and regimen of antitubercular medications was started. Complete functional recovery was observed at 12 months.

While managing pelvic injuries, alternative backup treatment plans should be kept ready in view of infective foci.

## Introduction

Pelvic trauma can have a constellation of features, not all of which are apparent. Superficial skin wounds can masquerade the presence of massive degloving injuries, which, if not appropriately managed, can lead to complications [1]. An isolated open-book pelvis injury presents a challenging case to an orthopedic surgeon. The additional finding of a quiescent infection, intraoperatively, can disrupt the most well-laid surgical plans.

Herein we present the case of a young male with an Anterior Posterior Compression type III pelvic ring injury following a motor vehicle accident. He had been previously treated elsewhere for a lacerated wound over the ipsilateral medial thigh one month back. Now he was referred to our care for the definitive management of the pelvic ring injury.

In the presence of Normal clinical features, laboratory parameters, and a well-healing wound, we decided to go ahead with a primary fixation of the disrupted sacroiliac joint and the symphyseal disarticulation. But an intraoperative finding of whitish cheesy type pus forced us to opt for an alternative plan of a pelvic external fixator.

To the best of our knowledge, such a combination of complex pelvic trauma with pelvic tuberculosis has not been described previously in the literature.

The patient was informed that data concerning the case would be submitted for publication, and he provided consent.

## Case report

A previously healthy twenty-six-year-old male in a motor vehicle accident sustained an anterior hip dislocation, pelvic ring

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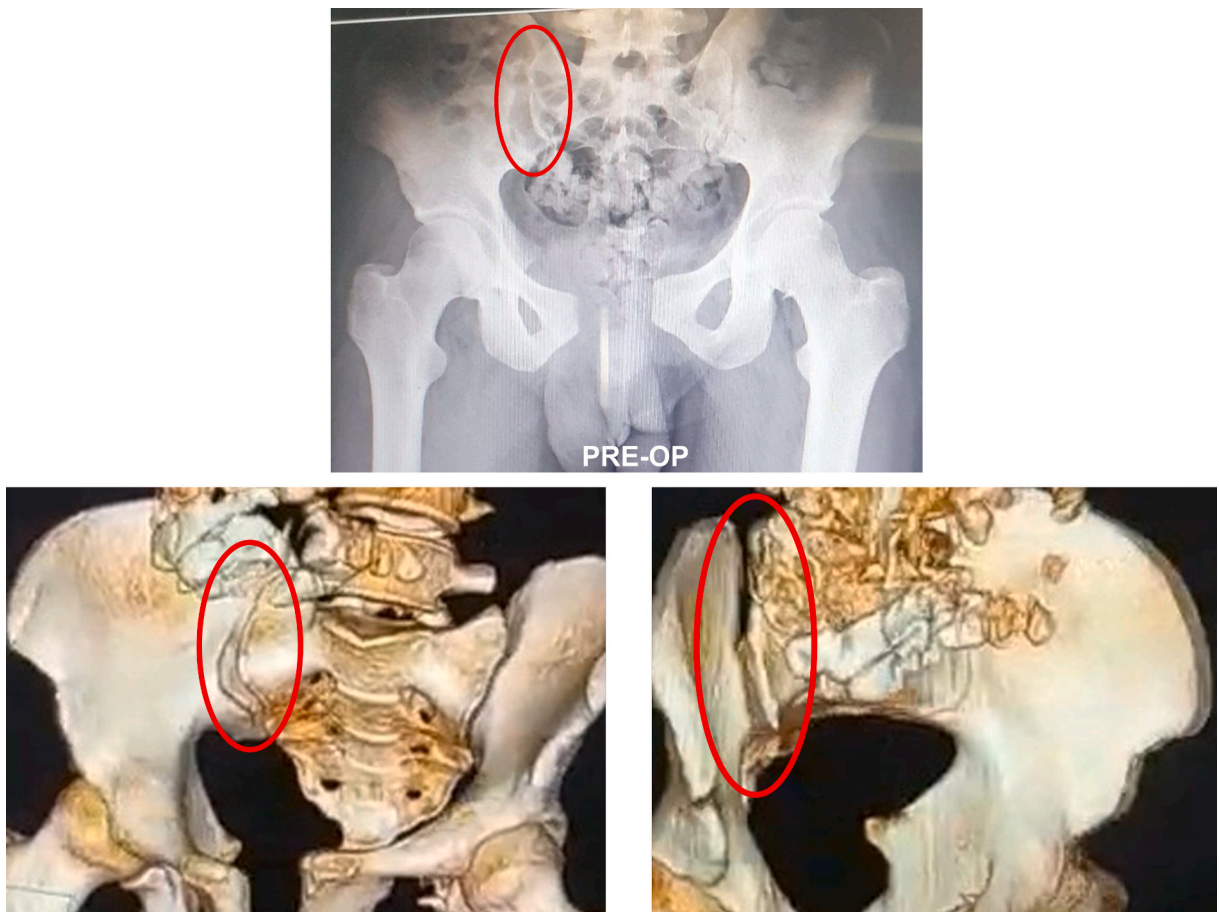
disruption, and a lacerated wound over the medial thigh (Fig. 1). The primary center debrided the wound and transferred the patient to our care for definitive management one month later (Fig. 2).

On arrival at our center, the patient had an internal rotation deformity of the right hip and tenderness on palpation over the right sacroiliac joint and pubis. There was no neurovascular deficit. The thigh wound showed signs of healing. Clinical parameters were within normal limits, and laboratory workup was also insignificant. There was no bowel or bladder involvement. Radiographs and computed tomography revealed a pubic diastasis with a complete right sacroiliac disruption and an Anterior Posterior Compression (APC) Type III pelvic ring injury. Ultrasonography showed a hypoechoic collection 40x60mm in the pelvis.

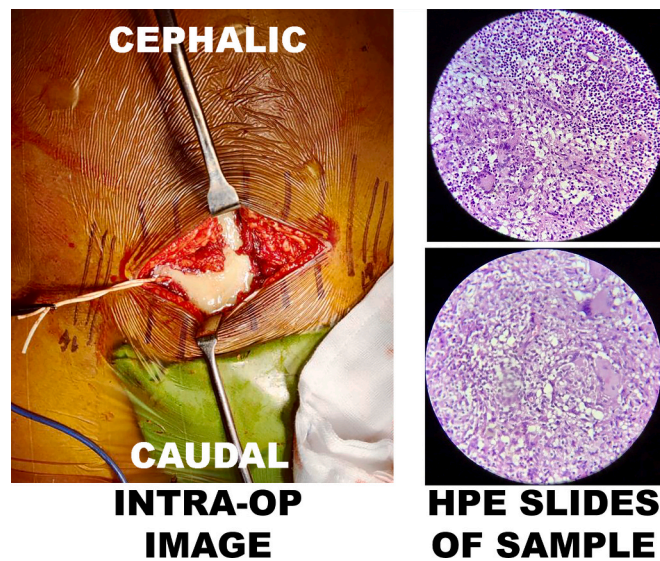
### Surgical technique

Our initial surgical plan was to do an initial reduction and fixation of the Sacroiliac joint. On getting good reduction as checked on fluoroscopy, it was fixed using a single sacroiliac screw [2]. This was followed by an open reduction and internal fixation of the pubic symphysis using a pubic plate through the Pfannenstiel approach. The initial percutaneous cannulated sacroiliac screw fixation went uneventfully. But as we started the pubic plating, we encountered frank whitish discharge upon reaching the pelvic cavity (Fig. 3). On further exposure, we observed a degloving of the entire thigh compartment, extending from the inner pelvis to the distal thigh, where the lacerated wound was present. We found the pus cavity traveling down to the adductor region during debridement. We abandoned the previous plan of plating and instead opted to use external fixation. Pus and biopsy samples were collected and sent for further evaluation, followed by a thorough debridement and wash of the pelvic cavity and thigh. The symphyseal disarticulation was reduced and then fixed using supraacetabular external fixators inserted into the ASIS and iliac crest (Fig. 4). The stability and reduction of the pelvic ring were confirmed using fluoroscopic imaging.

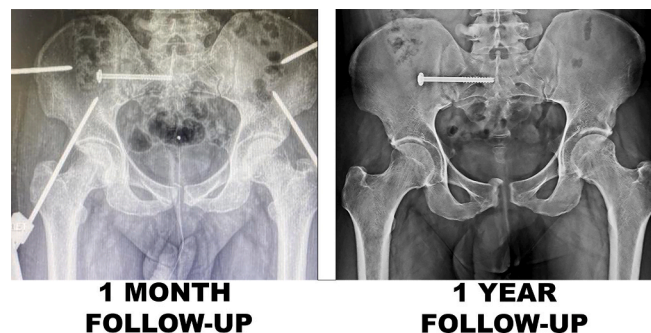
Postoperatively the patient was kept recumbent for one month, with only in-bed exercises allowed. The presence of tuberculosis was confirmed using GeneXpert analysis and biopsy (Fig. 2-B). Under the guidance of an infectious disease specialist, we started an anti-tubercular regimen. On day eight, postoperatively, the patient was discharged from the hospital. At four weeks postoperatively, the radiographs showed the hardware in a good position with reduction maintained. Two months after the fixator application, the



**Fig. 1.** a) Anterior-posterior radiograph of the pelvis, showing pubic symphysis and right sacroiliac joint disruption b) 3D reconstruction of the preoperative computed tomography scan of the pelvis showing complete right sacroiliac joint disruption.



**Fig. 2.** a) Intraoperative image showing the presence of milky white discharge in the retropubic space b) Histopathological picture showing fibrocartilaginous tissue with bony trabeculae mixed with multiple epithelioid cell granulomas with areas of caseous necrosis and multiple Langhans giant cells.



**Fig. 3.** 1-month postoperative anterior posterior radiograph of the pelvis showing placement of the pelvic external fixator and right sacroiliac screw b) 1-year postoperative anterior posterior radiograph of the pelvis showing well healed pubic symphysis after removal of external fixator and healed sacroiliac disruption.

external fixator construct was removed (Fig. 3-B). The patient was kept non-weight bearing on the affected side with full weight bearing on the opposite side. At fortnightly follow-ups, we increased the weight bearing to achieve a Full independent weight bearing five months after the initial surgery.

At the latest follow-up, at one year, the patient was independently walking without any gait abnormality (Fig. 4). Intermittent groin pain at the surgical scar site during physiotherapy was the only complaint. He had fully returned to his daily functional activities, which included lifting heavy loads and standing for long periods.

## Discussion

Complex trauma like pelvic ring injury usually follows high-velocity accidents [3]. A Morel-Lavallée lesion or a closed degloving injury should always be suspected, especially with shearing trauma [1]. Additional presence of an open wound, especially in a rural setting, should arouse the suspicion of an infection.

After a motor vehicle accident near a village, our patient was treated at the peripheral hospital for a skin wound and came to us four weeks later. With a clinically and pathologically quiescent presentation, we decided on a plan of fixation. But a massive morel-lavallée lesion in the thigh allowed the spread of contaminant infection from the skin wound to the pelvic space.

When you are not treating primarily, initial degloving is missed and can become a complication due to residual infected hematoma.

For surgeons in developing countries with a heavy disease burden (25 % of all tuberculosis cases come from India) [4,5] the index of suspicion for tuberculous infection should be low. Extra pulmonary tuberculosis accounts for 10–20 % of cases [6]. Only 30–40 % of the cases of skeletal tuberculosis present with any typical manifestations [7]. The finding of bone-pain resistance to analgesics should



**Fig. 4.** Clinical images of the patient showing well healed surgical scars and achievement of full Range of Motion of the hip, at latest follow up, 1 year.

raise a red flag for the presence of an infection or neoplasia [8]. The radiographic findings in cases of skeletal tuberculosis are usually absent initially or only minimal changes like osteolysis and sclerosis are present. Although bone scans and MRIs are more sensitive, there is no pathognomonic imaging finding [8]. The need for mycobacterial molecular testing and biopsy cannot be over-emphasized. Starting an appropriate anti-tubercular regimen and monitoring the therapeutic response clinically and via the decreasing trend of inflammatory markers (CRP and ESR) is equally essential [9,10].

In this case, we discovered the infection only intra-operatively while attempting fixation of the symphyseal disarticulation. An APC III pelvic ring injury presents a complex case of unstable pelvis requiring thorough pre-planning. Keeping the backup of an external fixator ready allowed us not to abandon the surgery but proceed ahead with an alternate fixation modality. Numerous studies have previously described an Antero Superior Acetabular External Fixator as a valid method to achieve definitive fixation. Initially described only as a transient and emergency measure in cases of hemodynamically compromised cases of pelvic injury, Mendoza et al. reported good functional results in all patients after using an external pelvic fixator for 47 unstable pelvis patients [3].

In any complex trauma scenario, the surgeon should be ready with multiple options in case of any untoward occurrence. Also, extra-pulmonary tuberculosis is a diagnostic challenge, especially in the early stages. Its ability to masquerade as other musculoskeletal conditions and an insidious presentation makes misdiagnosis frequently probable. Tuberculosis must always be kept in mind. A rapid histological and microbiological confirmation helps in the early initiation of treatment.

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