Hypertrophic Pubic Ramus Nonunion: Does Conservative Treatment Helpful?

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Abstract

The treatment of pubic ramus nonunion is usually surgical. We report the successful healing of a hypertrophic nonunion of pubic ramus in a 46 year old active male patient who was treated conservatively with a lumbo-sacral corset. We believe that understanding the injury mechanics in pelvic injury is more important to employ a particular treatment method than to follow the conventional ways of treatment.

Introduction

Pubic ramus fractures are quite common. Isolated pubic ramus fractures with out posterior injuries are inherently stable and rarely require surgical stabilisation. Even with considerable displacement in anteroposterior plane, these ramus fractures rarely displaces laterally. When displacement occurs, it is secondary to injury of the soft tissues (cooper ligament, Pouport ligament, Pectineus muscle etc) attached to it [8]. Even though displaced, these fractures tend to unite without intervention though in non anatomical position [3,8]. Nonunion of pubic ramus is quite uncommon and in undisplaced fracture nonunion is rarely ever reported. These injuries are usually managed by open or percutaneus techniques of fixation. Tile et al recommended the anterior stabilization of superior pubic ramus nonunion with a compression plate and cancaellous bone graft as the treatment of choice [4]. Altman et al reported two cases of symptomatic nonunion of pubic rami that required surgical intervention for subsequent union [1]. This article discusses the successful healing of a symptomatic hypertrophic non-union of pubic ramus fracture in a 46 year male patient who was treated conservatively with lumbo-sacral corset.

Case Report(s)

A 46 year old active man sustained a roadside accident and presented with pain in pelvis. Clinical examination revealed positive pelvic compression test. Radiograph showed fracture of iliac blade along with hairline fractures of pubic ramus on the same side (Fig 1). Abdominal ultrasound excluded any visceral injury. For the pelvic injury he was given conservative treatment in the form of bed rest and analgesic and was advised ambulation after 6 weeks. He resumed his work with persistent mild dull aching pain around the groin and suprapubic area, but didn't seek medical advice for further two months. Later as the pain intensity increased, he soughted orthopaedic consultation and was given analgesics by the local surgeon. However he continued to have intermittent complaints of pain and at 9 months after injury, he presented to our tertiary center with the above complaints. The pain was not radiating to any site and used to be worse after prolonged standing activity. The only point of tenderness was at the right inguinal area. His x-ray pelvis showed completely healed right ilium fracture with hypertropic nonunion of ipsilateral pubic ramus (Fig 2). CT pelvis confirmed it to be a Lateral Compression (LC) injury. The ilium was malunited with slight opening up of the ring anteriorly. Hematological investigations and serum biochemistry was with in normal range. Considering that slight outward malposition of iliac flare at fracture site might have been the cause of relative distraction at pubic rami fracture, leading to nonunion response, he was advised to wear a lumbo-sacral frame back support during his upright activities to maintain circumferential compression around pelvis. After 2 months of using the brace, patient became totally asymptomatic. Further evaluation at one year revealed free of any pain or tenderness at the pubic or inguinal regions. His pelvis x-ray compared to previous ones, showed union at the hypertrophic nonunion site (Fig 3).

Discussion

It is a common belief that pubic ramus fractures even when associated with ring injuries tend to unite fast. Koval et al reported good clinical results in patients having isolated low energy pubic ramus fractures treated nonoperatvely. In their series, 95 % of the
patients returned to their prefracture level functional activities of daily life at one year of follow up [3]. While any persistent motion in long bone fractures with adequate blood supply is seen to produce hypertrophic nonunion, the pelvic ring bone fractures due to their better biomechanical stability tend to unite fast even in early ambulators [5]. However nonunion of pubic ramus is a known entity and usually occurs as a result of initial displacement added to other factors like inadequate treatment, smoking, gender, age, nutrition, systemic diseases etc [6]. In the reported case we could not find any of the risk factors in the diseased and after all symptomatic nonunion in an undisplaced pubic ramus fracture in an active healthy patient is quite unusual.

Matta observed that malunion of a pelvic ring at one place can impair fracture healing elsewhere. But if initial fracture displacement is negligible, the nonunion is least likely. In grossly displaced pelvic ring injuries nonunion can occur and Matta et al advised limited open reduction and plate fixation for pubic rami fractures with greater than 2 centimetres displacement [5]. In undisplaced fractures of the pubic rami, nonunion is very rare. In the presence of a stable posterior pelvis, asymptomatic anterior pelvic non-union requires no treatment according to some authors [4,8].

In the present case, the iliac blade malunion might have created biomechanical instability in anterior part of the pelvic ring. This resulted in opening up of the pelvis anteriorly which was difficult to determine on radiographs. But CT images clearly showed the malunion with an outward swing. The instability led to painful non-union at the pubic ramus fracture site; even though it was undisplaced initially. In 1980, Penal and Massiah recommended open reduction and internal fixation of symptomatic pelvic nonunion [6]. Altman et al reported 2 cases of symptomatic pelvic nonunion treated surgically using retrograde percutaneous medullary screws with good results [1]. Considering the anterior distraction to be the reason for nonunion, surgical stabilisation using a screw could have been the standard treatment. But the trial of inducing circumferential compression at the pubic ramus using lumbo-sacral corset proved successful in this case. This corset probably reduced the instability in the pelvic ring, and induced bone healing.

Conclusion

To conclude, understanding the biomechanics is more important in pelvis fracture treatment. ‘Surgery’ is not always the treatment of choice for pubic ramus nonunion. If the injury mechanics is properly assessed and managed accordingly; even conservative treatment in the form of Lumbo-Sacral corset may be successful.

Abbreviations(s)

CT : Computed Tomogram

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Authors contribution(s)

RKS managed the patient. SD and SKT prepared the manuscript. TG reviewed the literature. All the authors have read the manuscript and approved.

References

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Illustrations

Illustration 1

Radiograph of pelvis showing minimally displaced ilium fracture with undisplaced pubic rami (both superior and inferior pubic ramus) fractures on right side

Illustration 2

X-ray showing hypertrophic nonunion at the pubic rami sites
Illustration 3

After one year of conservative treatment both these rami fractures got united
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