

Pubic Symphysis Osteomyelitis after Bilateral Laproscopic Hernia Repair: A Case Report and Review of Literature

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Learning Point of the Article:

Pubic symphysis osteomyelitis must be differentiated from osteitis pubis after hernia repair before initiation of treatment for either disease.

Abstract

Introduction: Pubic symphysis osteomyelitis is a rare complication of hernia repair, it is easily mistaken for osteitis pubis (OP) which can lead to a significant delay in diagnosis and prolonged pain for the patient.

Case Report: We present the case of a 41-year-old male who presented with complaints of diffuse low back pain, perineal pain for 8 weeks after bilateral laparoscopic hernia repair. The patient was initially considered to have OP and managed however pain did not relieve with treatment. There was tenderness in the ischial tuberosity only. At the time of presentation, X-ray revealed areas of erosion and sclerosis in the pubis with increased inflammatory markers. Magnetic resonance imaging showed an altered marrow signal in the pubic symphysis, edema in the gluteus maximus on the right side, and collection in the peri-vesical space. The patient was started on oral antibiotics for 6 weeks and clinicoradiological improvement was noted.

Conclusion: Pubic osteomyelitis and OP show similar clinical presentations with contrasting treatments. Early identification and initiation of appropriate treatment can decrease morbidity and improve outcomes.

Keywords: Pubic osteomyelitis, osteitis pubis, osteomyelitis after hernia repair

Introduction

Pubic symphysis osteomyelitis is a rare complication of hernia repair. It is associated with significant morbidity following open or laparoscopic inguinal hernia repair. Despite the phenomenal number of hernia repair surgeries being performed around the world, the reported incidence of osteomyelitis is relatively less [1, 2, 3, 4]. It is often misdiagnosed as osteitis pubis (OP) and due to its relatively rare nature, the diagnosis and treatment are often delayed. We present a case of pubic symphysis osteomyelitis after a

laparoscopic bilateral inguinal hernia in a 41-year-old male.

Case Report

A 41-year-old male was referred to the orthopedic outpatient with complaints of diffuse lower back pain, perineal pain, and lower limb pain for the past 8 weeks in February 2022. Bilateral laparoscopic hernia repair with mesh was performed in November 2021 for bilateral inguinal hernia. The patient had been complaining of pain after 2 weeks of surgery and there had been no pain-free interval since. The pain was dull, throbbing in nature, and non-specific with no aggravating or relieving

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Figure 1: Plain radiograph in December 2021 of the pelvis showing no obvious bony abnormality with mesh tacks on the bilateral superior pubic rami.

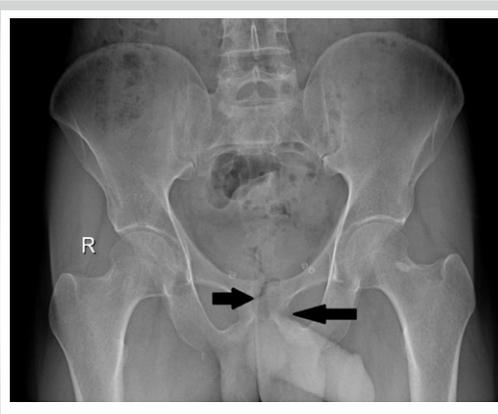


Figure 2: Plain radiograph in February 2022 of the pelvis showing marginal erosions with few sclerotic areas (right more than left) in both the pubic symphysis suggestive of osteitis pubis/osteoarthritic changes.

suggestive of OP/osteoarthritic changes (Fig. 2). A magnetic resonance imaging (MRI) scan revealed an altered marrow signal in the pubic symphysis, edema in the gluteus maximus on the right side, and collection in the peri-vesical space. Contrast-enhanced MRI of the pelvis showed a collection adjacent to the right ischial tuberosity and marrow edema in the symphysis and bilateral pubic rami (Fig. 3).

factors. The patient did not have fever or any constitutional symptoms. The pain did not resolve with over-the-counter medications. He had not suffered from similar symptoms before the surgery. The patient had congenital deafness and no other significant past history of illness. Initial management with analgesics and fomentation did not relieve the pain. The patient was referred to the pain clinic for management but the pain was not relieved.

On examination, there was no abdominal tenderness. Tenderness was present over the ischial tuberosity on the left side, there was no joint line tenderness around the hip, and movements around the hip and knee were painless. There were no spinal tenderness and no neurological involvement. There were no sinuses, wounds, or areas of discharge present around the hip and thigh region.

A plain radiograph in December 2021 of the pelvis revealed no obvious bony abnormality with mesh tacks seen on the bilateral superior pubic rami (Fig. 1). A repeat X-ray in February 2022 revealed marginal erosions with few sclerotic areas (right more than left) in both the pubic symphysis

CT-guided aspiration yielded 5 ml of seropurulent fluid. Cytology after aspiration from the collection showed a mixed inflammatory infiltrate with predominant neutrophils with histiocytes some lymphocytes and plasma cells. The fluid culture did not show any growth and CBNAAT for mycobacterium tuberculosis was negative. The patient was started on oral clindamycin and clarithromycin for 6 weeks. At the end of 4 weeks, the patient was painless and signs of healing in previously lytic areas were noted on plain radiographs (Fig. 4). The erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) also decreased with therapy (Graph 1). The patient reported that he was able to perform his normal activities as well.

Discussion

Osteomyelitis of pubic symphysis has been described following urosurgical and gynecological procedures, cardiac catheterization, intravenous drug use, pregnancy, and invasive procedures such as cardiac catheterization [1, 4, 5, 6, 7, 8, 9, 10]. In a review of pubic osteomyelitis by Ross and Hu, only

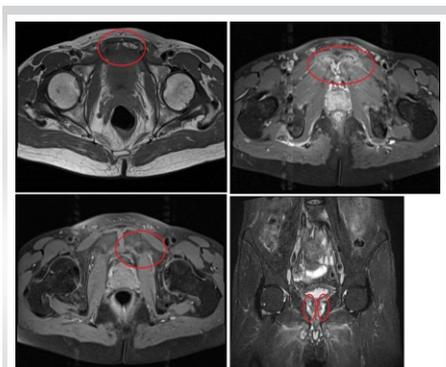
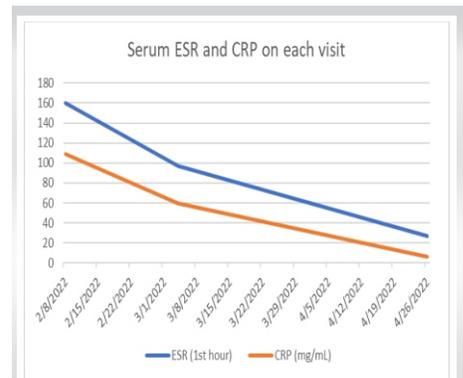


Figure 3: Magnetic resonance imaging (MRI) scan revealed an altered marrow signal in the pubic symphysis, edema in the gluteus maximus on the right side, and collection in the peri-vesical space.



Figure 4: Signs of healing in previously lytic areas seen in plain radiography.



Graph 1: Serum ESR and CRP on each visit showing a decreasing trend after initiation of oral antibiotics.



Table 1: Comparison of osteitis pubis and pubic osteomyelitis [11, 12, 13]

???	Osteitis pubis	Pubic osteomyelitis
Etiology	<ul style="list-style-type: none"> • Normal or slightly elevated 	<ul style="list-style-type: none"> • Always elevated
Causes/pathogenesis	<ul style="list-style-type: none"> • Rheumatic disease • Exertion • Pregnancy • Urological or gynaecological manipulation or surgery 	<ul style="list-style-type: none"> • Abdominal, urological, or gynaecological surgery (haematologic spread) • Direct spread from surrounding focus
Clinical features	<ul style="list-style-type: none"> • Low grade suprapubic pain sometime radiating to unilateral or bilateral groin which is constant in intensity • Wide based gait • Painful hip abduction • Fever 	<ul style="list-style-type: none"> • Suprapubic pain sometime radiating to unilateral or bilateral groin which progressively increases in intensity • Wide based gait • Painful hip abduction • Fever
White blood cell counts	<ul style="list-style-type: none"> • Normal or slightly elevated 	<ul style="list-style-type: none"> • Always elevated
ESR	<ul style="list-style-type: none"> • Normal or slightly elevated 	<ul style="list-style-type: none"> • Always elevated
CRP	<ul style="list-style-type: none"> • Normal or slightly elevated 	<ul style="list-style-type: none"> • Always elevated
Plain radiograph	<ul style="list-style-type: none"> • Normal initially with varying degrees of sclerosis and erosion often in both rami. • Blurred bony contours • Spotty demineralization which initially increases the symphyseal gap and later obliterated with remineralization • Periostitis 	<ul style="list-style-type: none"> • Changes begin in one ramus • Bony erosion and destruction with periostitis
Bone scintigraphy	<ul style="list-style-type: none"> • Increased uptake in mineralization/delayed phase • Findings in bilateral rami in early stages 	<ul style="list-style-type: none"> • Increased uptake in all three phases • Finding in unilateral ramus in early stage
Biopsy	<ul style="list-style-type: none"> • Mild to moderate inflammation with plasma cells and lymphocytes • Areas of local haemorrhage and ossification with polymorphonuclear lymphocytes 	<ul style="list-style-type: none"> • Granulation tissues • Sequestrum • Exudate • Lymphocytic infiltration and plasma cells • Areas of decreased vascularity and sclerotic new bone formation
Medical treatment	<ul style="list-style-type: none"> • Rest • Hot fomentation • Physiotherapy • Analgesia • Anti-inflammatory drugs/steroids • Bisphosphonates 	<ul style="list-style-type: none"> • Intravenous antibiotics based on culture and sensitivity
Surgical treatment	<ul style="list-style-type: none"> • Wedge resection and simple resection of the symphysis • Arthrodesis of pubis/Sacroiliac joint in cases of late pelvic instability 	<ul style="list-style-type: none"> • Surgical debridement • Antibiotic beads

ESR: Erythrocyte sedimentation rate, CRP: C-reactive protein

two out of 100 cases of pubic osteomyelitis were attributed following herniorrhaphy [10]. The role of anchoring the posterior wall repair to the periosteum of the tubercle has been attributed to be a significant risk factor in the development of pubic symphysis osteomyelitis [1].

This relative rarity makes its diagnosis and subsequent management challenging causing a significant delay in the initiation of treatment. Typical presenting features are inguinal or thigh pain and fever with tenderness in the pubic region and waddling or antalgic gait with described risk factors [10]. Laboratory parameters show an increased total lymphocyte count with increased inflammatory markers and radiological evidence of osteomyelitis on plain radiographs, CT scans, or MRIs [1, 2, 3, 4, 10].

The most common differential diagnosis to pubic osteomyelitis is OP which is a non-infective self-resolving inflammation of the pubic joints which is often managed conservatively with analgesics. With the similar presentation and contrasting management of both these clinical entities, it is important to recognize and differentiate these entities. Symmetrical involvement increased time from surgery to clinical manifestations, normal inflammatory markers, and lack of resolution following antibiotic therapy differentiate OP from pubic osteomyelitis [2]. OP is managed with analgesics, bed rest, and corticosteroids, and surgery is rarely indicated [2]. The comparison between the two clinical entities has been summarized in Table 1 [11, 12].

Increased levels of inflammatory markers such as ESR and



Table 2: Comparison of different studies to this study [1, 2, 3, 4]

Author	Baxandall et al. (1996)	Mader and Yeromonco (1999)	Tekin et al. (2015)	Tashiro et al. (2017) [1, 2, 3, 4]	Sinha et al. (this study) (2022)
Age/Sex	78/Female	22/Male	55/Male	76/Male	41
Diagnosis	Left indirect hernia	Right inguinal hernia	Left inguinal hernia	Right inguinal hernia	Bilateral inguinal hernia
Surgical procedure	Hernia repair with anchoring of the posterior wall to the pubic symphysis periosteum	Hernia repair	Hernia repair	Right transabdominal preperitoneal laparoscopic hernia repair	Laparoscopic hernia repair
History	Purulent discharge from the surgical site 12-day post-operative day mangled with IV antibiotics. Readmitted 4 months later with malaise and left iliac fossa pain	Lower abdomen pain and groin pain for 5 weeks, Fever 38°C weight loss 10 kg	Left inguinal pain, fever, and disturbance in gait 10 days after surgery	Pubic and femoral pain 9 days post-surgery. Recurrence of symptoms after initial antibiotics	Diffuse lower back pain, perineal pain, and lower limb pain since operative intervention
Co morbidities	Diabetes	None	None	None	Congenital deafness
Examination	Discharging sinus cavity at surgical site communicating with abscess cavity.	Wide based waddling gait, Tenderness in groin and medial thigh on left side	Fever, Pelvic compression test (+), Trochanteric compression test (+)	Not mentioned	Supratrochanteric fossa tenderness on right side
Laboratory	Increased ESR CRP	Increased TLC ESR CRP	Increased TLC ESR CRP	Increased CRP	Increased TLC ESR CRP
Radiological Studies	X-ray: Pubic symphysis osteomyelitis	X-ray: Irregular symphysis pubis margins, CT: erosion on symphysis pubis, Bone scan: Increased uptake	X-ray pelvis: no abnormalities, MRI Pelvis Inflammatory change in left pubic bone, adductor muscle (pubic osteomyelitis)	CT: inflammatory change in the soft tissue from the lower abdomen to the inguinal region. Initially and a repeat scan after 55 days showed features of pubic osteomyelitis; MRI: Pectenus muscle, inside femoral muscle and bone marrow in pubis show high intensity signals on T2	X-ray pelvis: no bony abnormality on initial scan and later areas of erosion and sclerosis suggestive of pubic osteomyelitis, MRI pelvis: altered marrow signal in the pubic symphysis, edema in the gluteus maximus on the right side and collection in the perivesical space.
Organism isolated	Staphylococcus aureus isolated in both instances	Blood Culture: Pseudomonas aeruginosa	Not isolated	Not isolated	Not isolated on culture
Treatment	IV Flucloxacillin for initial symptoms. Debridement with curettage up to normal bone with gentamycin beads. IV flucloxacillin and fidicidic acid	IV Ciprofloxacin x 2 weeks then oral for 4 weeks	Ampicillin/Sulbactam and Ciprofloxacin for 6 weeks	IV Cefepime for 6 days, then Oral cefepime for 14 days. On 54th post op day IV panipenem and Vancomycin started for 7 days followed by oral cefepime and tosufoxacan for 44 days	Oral Clindamycin for 6 weeks
Remarks	Dry wound 6 weeks after debridement. Pain less mobilization on stick with no recurrence of hernia	Resolution of fever, complaints, abnormal physical findings	Symptoms improved after 10th day of therapy. Radiological and laboratory parameter regressed and no recurrence 1 year after hernia repair	Initially diagnosed with cellulitis. Symptoms resolved and lab parameters normalized after therapy with panipenem Vancomycin, Cefepime and Tosufoxacan. Only empirical therapy given. Organism isolation not attempted	Patient painless with signs of healing on plain X-ray and resolution of biochemical parameters at the end of 4 weeks

CRP as well as positive blood/aspirate cultures are highly suggestive of pubic osteomyelitis. Pubic osteomyelitis is managed effectively using oral or intravenous antibiotics for 6 weeks, surgery is indicated when frank abscess formation occurs or when foreign bodies like mesh or suture anchors are left in situ [2, 3, 4, 10]. In contrast, OP oral or injectable steroids along with analgesics are the recommended treatment. It is imperative to obtain a correct diagnosis before initiating management. A review of studies reporting infective pubic osteomyelitis is shown in Table 2.

Conclusion

Pubic symphysis osteomyelitis and OP are clinically similar entities. Making the appropriate and timely diagnosis, as well as initiation of appropriate treatment, is essential for the effective resolution of both.

Clinical Message

Pubic symphysis osteomyelitis is a relatively rare complication of hernia repair. Persistence of pain and increased inflammatory markers provide a clue to the diagnosis. Obtaining tissue cultures are the gold standard to direct antibiotic therapy.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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