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# Obturator Internus Muscle Abscess (OIMA) Successfully Treated With CT-Guided Trans-gluteal Drainage and Antibiotics. A Case Report and Literature Review

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### ABSTRACT

**Background:** Obturator Internus Muscle Abscess (OIMA) is a rare cause of infection around the adult hip with a handful of cases reported in the literature. The management usually consists of antibiotics and open surgical drainage.

**Case:** We present a case of a 38-year old diabetic gentleman with an OIMA causing mass effect and shifting of intrapelvic organs. To our knowledge, this is the first case that was successfully treated with CT- guided trans-gluteal drainage and culture-specific antibiotics.

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## Introduction

Painful hip with lack of clinical findings is a diagnostic challenge. Thorough and repeated clinical examination and high-resolution imaging may be necessary to reach a conclusive diagnosis. Obturator internus muscle abscess (OIMA) is a rare cause of infection around the hip in the adult population, and only a few cases have been reported in the literature with *Staphylococcus Aureus* being the causative organism in 80% of cases. Reported management includes antibiotics and open surgical drainage.<sup>1</sup>

We present a case of OIMA in an adult presenting with vague complaints around hip and antalgic gait. MRI showed an obturator internus abscess with intrapelvic mass effect. This is the first reported case to be successfully managed with CT-guided percutaneous trans-gluteal drainage in an adult..

## Case

We report a 38-year-old male Pakistani patient with known history of morbid obesity (BMI=37.5 kg/m<sup>2</sup>) and poorly controlled diabetes mellitus that presented to our emergency department

(ED) with right hip pain for a week. Initially, he consulted a general practitioner who prescribed analgesics and antibiotics for 5 days. On day 5 from presentation the pain intensified and was radiating to the right thigh. It was accompanied by fever, chills and difficulty in ambulation which prompted the patient to seek medical attention at our ED. He has no history of trauma or other joint involvement.

Upon presentation to ED, he was generally well, vitally stable and afebrile. Hip physical examination showed no erythema or obvious swelling and he had antalgic gait. He had infected hard corn on his little toe upon inspection. There was tenderness mainly on greater trochanter and gluteal area and moderate limitation to right hip movement mainly to external rotation. Peripheral neurovascular examination was unremarkable. Plain radiographs for both Right hip and lumbar spine were unremarkable. Right hip ultrasound (U/S) showed minimal hip joint effusion but otherwise unremarkable. Laboratory investigation (Table. 1) pointed towards an active infectious aetiology.

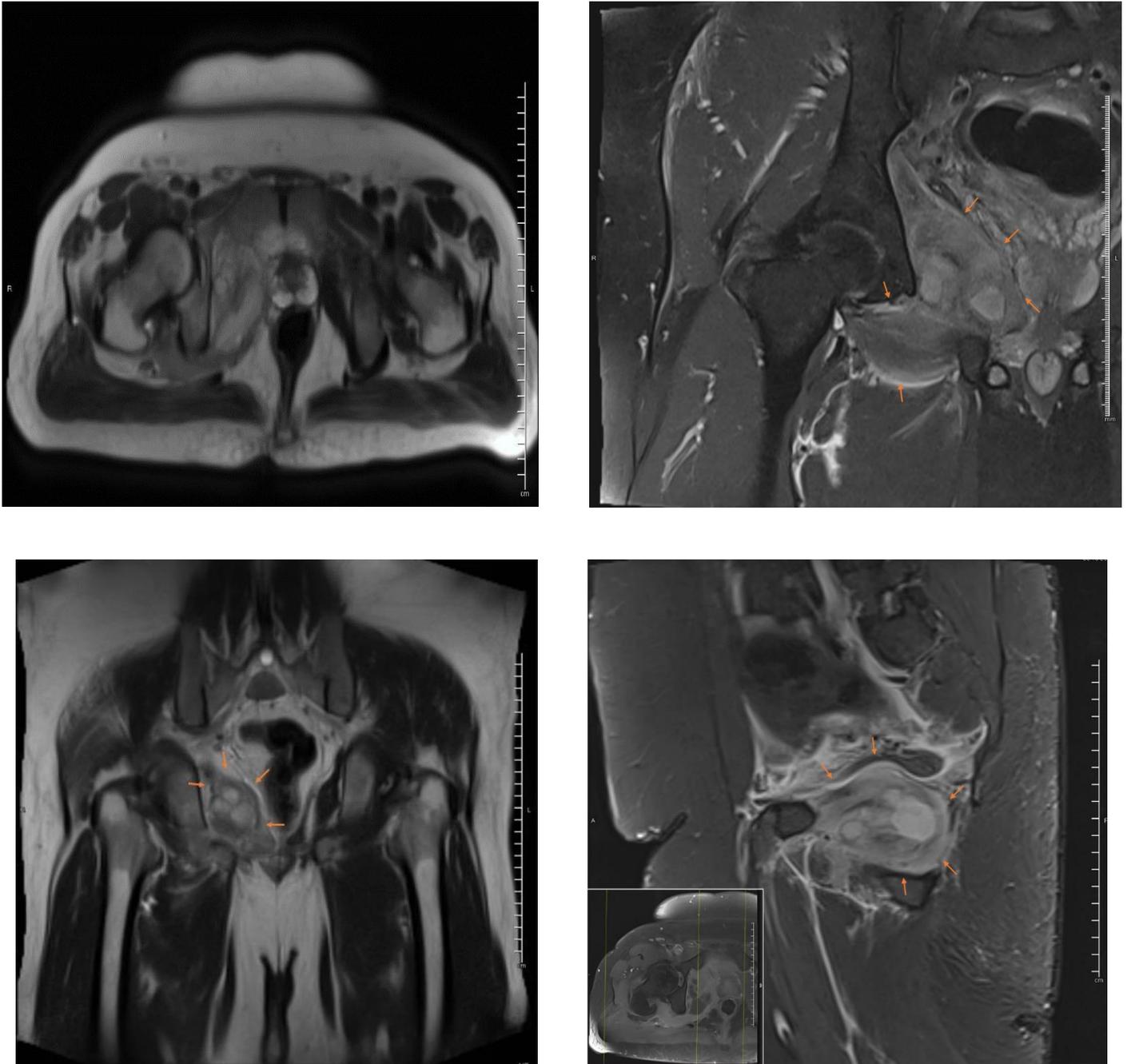
**Table1. Laboratory findings throughout the course of the treatment.**

Marker	Day 0 (admission)	Day 9 (discharge)	Day 30 (outpatient)	Normal values
WBC	17,800/mm <sup>3</sup>	8,400/mm <sup>3</sup>	7,700/mm <sup>3</sup>	4,000-10,000/mm <sup>3</sup>
PMNL	76.2%	65.4%	61%	
CRP	135 mg/dL	22 mg/dL	<5 mg/dL	<5 mg/dL

Abbreviations: WBC White Blood Cells, PMNL polymorph-nuclear leukocytes, CRP C-Reactive Protein

Clinical examination, radiological and laboratory findings were suspicious for a deep gluteal abscess. Blood cultures were drawn, Magnetic Resonance Imaging (MRI) with contrast was ordered and the patient was admitted to the ward for investigations and empirical IV antibiotics (CEFTRIAXONE + CLINDAMYCIN). MRI scan showed varying degree of pyomyositis involving

the right pelvic and thigh muscles with evidence of diffuse enlargement of right obturator internus muscles and intramuscular multiloculated evolving abscess formation. It also demonstrated urinary bladder, prostate and recto sigmoid colon being pushed toward the left side due to mass effect of the collection. Fig 1.



**Fig 1. Selected MRI cuts showing the loculated appearance of the OIMA (Arrows) and mass effect displacing intrapelvic organs laterally.**

The patient remained vitally stable and afebrile throughout the admission and blood cultures remained negative. On day four post admission, the patient underwent abscess drainage by percutaneous trans-gluteal CT-guided aspiration (Fig 2). A Yueh needle was used under CT control to aspirate 22 mL of frank pus that was sent for lab tests. Culture results came positive for *Staphylococcus aureus*. Infectious diseases (ID) team was consulted and they advised to continue the same antibiotics regimen as culture

results showed susceptibility of the organism. Subsequently during admission course, the patient improved clinically and pain dissipated. Tenderness resolved, and gait and hip range of movement significantly improved. His inflammatory markers maintained a downward trend. On day nine post admission, his white blood cell count dropped to 8,400/mm<sup>3</sup> and his C-reactive protein level to 22 mg/dL. The patient was discharged home on day 10 and he was prescribed oral cephalexin for 3 more weeks.



**Fig 2. Intraoperative CT scan showing the transgluteal needle aspiration of the OIMA**

At 1 month outpatient follow up, the patient had become completely asymptomatic. Complete hip examination was unremarkable with normal gait and full range of movement. The infected skin lesion on his little toe had improved and repeated inflammatory markers came back within normal range.

## DISCUSSION

Primary infection of muscle is becoming more common in temperate climates. This is the first case of a primary obturator Internus pyomyositis in an adult reported from the Middle East.

Although pyomyositis was thought to be a disease of tropics and rare, increasing incidence might be a reflection of the use of early high-resolution imaging. It most commonly involves the large muscles around the pelvis. In a review of 676 patients<sup>2</sup> of primary pyomyositis, more than 50% of the cases involved the quadriceps, glutei or iliopsoas muscles. Perisciatic muscle infections is rare not to mention that most of the infections occur in children and adolescents estimated at 80% .

It is postulated that small intramuscular hematomas, caused by trivial trauma, may get infected by transient bacteremia or contiguous spread from adjacent organs, resulting in pyomyositis<sup>2-4</sup>.

*S. aureus* is isolated in > 75% of cases.<sup>2-4</sup> *Streptococcus*, *Escherichia coli*, *Hemophilus*

*influenzae*, *Citrobacter*, *Fusobacter*, *Peptostreptococcus*, *Gonococcus*, *Klebsiella*, *Serratia*, and *Yersinia enterocolitica* are some of the other bacteriae involved<sup>4</sup>.

Patients usually present with symptoms of fever, hip pain, limitation of movement and antalgic gait. Obturator internus pyomyositis does not reduce hip movement so dramatically in comparison to the presentation in pediatric population where the hip is held in flexion, abduction and external rotation<sup>8,10,11</sup>. It is associated with more distinct areas of tenderness, including pain on rectal examination. There may be pain radiating to the leg if the sciatic nerve is involved<sup>5,6</sup>.

Blood investigations reveal features suggestive of acute infection with neutrophil predominant leukocytosis, elevated ESR and CRP. Plain radiographs are used to rule out a traumatic aetiology of hip pain but are otherwise of limited value. Ultrasound of the hip joint might show an effusion which may be sympathetic and hence, MRI with contrast remains the investigation of choice for diagnosis of such deep abscesses.<sup>12</sup>

Only six cases of OIMA were reported in literature so far<sup>1,2,3,5,14</sup>. Five cases had undergone open surgical drainage while one case reported by Mukhtyar et al<sup>3</sup> was treated successfully with antibiotics (Table 2.)

**Table 2. Summary of studies reporting on OIMA**

	Author(s)	Age	Sex	PMH	Pathogen	Open surgery
1.	Chatwani et al. (1992)	27	F	-	E. Coli, Enterococcus	+
2.	King et al. (2003)	21	M	-	Staph. aureus	+
3.	Mukhtyar et al. (2005)	33	M	-	Staph. aureus	-
4.	Yaholom et al. (2007)	71	M	DM	Klebsiella pneumoniae	+
5.	Gibelin et al. (2015)	24	M	-	Staph. Aureus	+
6.	Maeda et al. (2018)	24	M	-	MRSA	+

Abbreviations: PMH Past Medical History, M Male, F Female, DM Diabetes Mellitus, MRSA Methicillin-Resistant Staphylococcus Aureus

Our Patient underwent Percutaneous Trans gluteal CT -guided aspiration. 22 ml of pus was aspirated and pus culture came positive for Staph Aureus sensitive to Clindamycin and Cefazolin. Blood cultures remained negative in this patient which highlights the importance of securing a microbiological aetiology to guide antibiotics treatment. In obese patients dissection and identification of structures can be challenging and require large incisions and extensive soft tissue dissection. Our patient is morbidly obese with a BMI of 37.5 kg/m<sup>2</sup>. We believe that a minimally invasive modality was the best option for our patient to avoid extensive surgery and longer rehabilitation.

This is the first reported case of OIMA in an adult treated by percutaneous transgluteal CT guided drainage. The patient recovered well with complete clinical and labs resolution of his infection.

### CONCLUSION:

CT guided percutaneous drainage is a minimally invasive accurate alternative to open surgery for these deep not easily accessible abscesses and can lead to early functional recovery. It can be used to acquire a pus sample to guide the treatment in absence of an identifiable organism in blood cultures as well as definitive treatment.

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