

## Case Report

# Osteitis Condensans Ilii and Acetabular Labral Tear after Pregnancy: A Case Report

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Low back and hip pain are common musculoskeletal complaints. Due to its reported low prevalence, osteitis condensans ilii (OCI) is not always considered in the differential diagnosis for low back or hip pain and is often difficult to distinguish based on symptoms alone. OCI is often diagnosed by imaging and is characterized by sclerosis of the ilium with an otherwise normal sacroiliac joint that can be seen in post-partum patients. It can be easily confused for sacroiliitis, spondyloarthropathies, and metastatic bone lesions. This is the case of a 35 year old woman with a 5-year history of right hip pain which began after her first pregnancy who was diagnosed with OCI and additional acetabular labral tear. We report the defining clinical and imaging features of OCI to help guide clinicians in diagnosing and managing this condition.

**Keywords:** Hip pain; Osteitis condensans ilii; Spondyloarthropathy; Sacroiliitis; Labral tear

**Abbreviations**

OCI: Osteitis Condensans Ilii; SpA: Spondyloarthropathy

**Case Presentation**

A 35-year-old woman presented to rheumatology clinic with a 5-year history of chronic right hip pain which began after her first pregnancy without prior trauma, injury, or infection. She reported 5/10 pain radiating down the front of the right leg and occasionally into the groin region, as well as lateral hip and sacroiliac (SI) joint pains. Walking, weight bearing, and transitional movements worsened the pain; standing improved it. Acetaminophen provided modest pain control. She denied prolonged morning stiffness, rash, joint swelling, and denied family history of inflammatory disease.

Physical exam revealed right-sided tenderness at the SI joint and greater trochanter regions. Right hip/groin pain was elicited with external or internal rotation beyond 10 degrees and with straight leg raise. FABER (flexion, abduction, external rotation of ipsilateral hip) and gluteus medius strength testing were unable to be performed secondary to pain. Neurologic testing of the lower extremities was normal. There was no lumbar bony vertebral or paraspinal muscle tenderness, and range of motion of the spine was normal.

MRI revealed an anterosuperior labral tear of the right hip and edema adjacent to the inferior aspect of the iliac side of the sacroiliac joints bilaterally (Figure 1). The latter corresponded with areas of sclerosis seen on a prior abdominal CT, and radiology reported these image findings to be consistent with bilateral osteitis condensans ilii.

Point-of-care ultrasound exam of the right hip (Figure 2) demonstrated synovial thickening without joint effusion or color power Doppler signal consistent with chronic synovitis, likely due to labral tear, and gluteus medius tendinosis. There was no sonographic evidence of gluteus tendon tears, trochanteric bursitis, or bony erosions. Erythrocyte sedimentation rate (ESR) was normal.



**Figure 1:** MRI coronal view of bilateral SI joints demonstrating enhanced signal of bilateral ilii.



**Figure 2:** Ultrasound image of the right hip in anterior longitudinal view demonstrating mild synovitis.

**Table 1:** Imaging differences between OCI, SpA, and metastatic bone lesions.

Imaging Differences in the Differential Diagnosis of OCI			
	Osteitis Condensans Ilii	Axial Spondyloarthritis	Metastatic Bone Lesions
<b>X-Ray</b>	<ul style="list-style-type: none"> <li>• Uni- or bilateral sclerosis of the auricular portion of the SI joints</li> </ul>	<ul style="list-style-type: none"> <li>• bony erosions and space narrowing (greater than 2 mm) are present</li> <li>• early x-ray: may be negative</li> <li>• late x-ray: ankylosis, complete obliteration of joint space</li> </ul>	<ul style="list-style-type: none"> <li>• lesions may be osteolytic, sclerotic, or mixed</li> <li>• lesions appear in the medullary cavity; can spread to medullary bone and then cortex</li> </ul>
<b>MRI</b>	<ul style="list-style-type: none"> <li>• bone marrow edema on the iliac aspects of SI joints</li> </ul>	<ul style="list-style-type: none"> <li>• bone marrow edema (hyper intensity) in both subchondral and inferior aspects of SI joints</li> <li>• erosions, synovitis, enthesitis, and capsulitis may be present</li> <li>• subchondral fatty deposition may be present (seen in chronic sacroiliitis)</li> </ul>	<ul style="list-style-type: none"> <li>• focal or diffuse hypointense lesions on T1-weighted images</li> <li>• intermediate or high signal intensity</li> <li>• hyperintense deposits on STIR images</li> </ul>
<b>CTScan</b>	<ul style="list-style-type: none"> <li>• Uni- or bilateral sclerosis of the auricular portion of the SI joints</li> <li>• sacral aspect of iliac bone may have signs of sclerosis</li> </ul>	<ul style="list-style-type: none"> <li>• subchondral demineralization</li> <li>• erosions and joint space narrowing (early stage on iliac side; last stage on sacral side)</li> <li>• subchondral sclerosis that measures more than 5 mm on iliac surface</li> </ul>	<ul style="list-style-type: none"> <li>• osteolytic, sclerotic, and mixed lesions are depicted well</li> <li>• trabecular and cortical bone destruction, soft-tissue extension, and involvement of neurovascular structures may be present</li> </ul>

The patient was diagnosed with osteitis condensans ilii (OCI) with secondary right hip labral tear and gluteus medius tendinopathy. Treatment for OCI typically includes NSAIDs but patient history of gastric bypass surgery prevented NSAID use. Scheduled rather than sporadic use of acetaminophen was recommended for its mild anti-inflammatory effect. For treatment of chronic hip synovitis, an ultrasound-guided intra-articular hip joint injection is a treatment option but this patient had prior avascular necrosis of another joint so injection was avoided. The patient was recommended to undergo targeted physical therapy to address gluteal and core strengthening. Trial of an SI belt for SI joint pain was also suggested.

## Discussion

Osteitis condensans ilii (OCI) is considered a rare radiographic condition, first reported in 1926, characterized by a distinct triangular area of sclerosis in the auricular portion of the iliac bone with an otherwise normal sacroiliac joint, seen almost exclusively post-partum [1]. OCI is often not considered in the differential diagnosis for low back and hip pain due to its reported low prevalence of only 0.9-2.5% in the general population [2].

In pregnant women, symptoms typically begin either in the third trimester or in the postpartum period and can recur in future pregnancies [3]. The etiology of OCI is not clear but has been hypothesized to occur due to the gravid uterus compressing the abdominal aorta, causing ischemia in the inferior portion of the ilium [2]. One theory suggests pregnancy increases mechanical stress on the SI joint leading to sclerotic changes to the iliac bone. Increased progesterone and relaxin cause SI joint ligaments to become lax during pregnancy, reducing their ability to provide sufficient tension to maintain joint stability. This stress leads to ligament tears likely contributing to periosteal damage during pregnancy [4]. Similarly, labor-related mechanical stressors are also thought to contribute to the incidence of post-partum acetabular labral tears. While OCI is most often related to pregnancy, it can interestingly affect nulliparous women and men. These theories fail to explain the incidence of OCI in males and nulliparous females.

OCI can be confused with other conditions, such as sacroiliitis, spondyloarthropathies, and metastatic disease. Differences in image findings between these diagnoses are reviewed in Table 1 [2, 5-8]. Sacroiliitis can present with either a uni- or bilateral inflamed SI joint,

whereas OCI exhibits an intact joint with no irregularity or loss of joint space and involvement of only the iliac side of the SI joint [9]. OCI has also been mistaken for bone metastases in the lower back and hip area, causing constant dull pain with intermittent severe pain and demonstrating bone damage on imaging [10].

OCI has been misdiagnosed for ankylosing spondylitis (AS), a chronic inflammatory seronegative spondyloarthropathy (SpA) that mainly affects the spine and sacroiliac joints. AS has a strong genetic disposition and approximately 90% of AS patients express the HLA-B27 antigen genotype [11]. In contrast, patients with OCI are typically negative for HLA antigens. Singal et al found that 16% of OCI patients were HLA-B27 positive vs. 92% of AS patients [12]. Patients with inflammatory diseases generally have prolonged systemic stiffness and increased ESR. OCI is generally not associated with elevated ESR levels and is not considered an inflammatory arthritis.

OCI can cause lower back pain that radiates into the buttocks in rare cases [2]. OCI is typically bilateral and symmetric, but can be unilateral [13]. Patients often present with SI joint tenderness [14], a positive FABER test, and negative straight leg raise test [15]. There is no blood test to detect OCI.

In this case, the patient reported pain in the lateral hip and SI joint area characteristic of OCI. Her anterior hip joint symptoms were correlated with acetabular hip labral tear. Typically an X-ray would be the first imaging modality of choice to further investigate the patient's pain, but this was not ordered by the referring provider prior to presentation to our clinic. MRI showed SI joint edema corresponding to areas of sclerosis on a prior CT scan, consistent with OCI. Ultrasound exam showed mild synovitis which likely was a result of the labral tear rather than an underlying inflammatory arthritis. In active inflammatory arthritis, ultrasound can reveal joint effusion, hyperemia within synovium, and bony erosions which were not present in this patient. No active sacroiliitis was present on MRI or prior CT scan. The patient's history, clinical exam and diagnostics were not consistent with an underlying seronegative spondyloarthropathy.

OCI symptoms typically resolve spontaneously within a few months but symptoms can persist for years [2,16]. Most cases of OCI are treated conservatively through physical therapy, NSAIDs,

guided steroid/anesthetic injections, and analgesics. While NSAIDs are typically offered for treatment, our patient had a history of gastric bypass surgery preventing NSAID prescription. An US-guided intra-articular hip joint injection was also not recommended, as patient had a known history of avascular necrosis of other joints. She was advised to take acetaminophen and undergo targeted physical therapy to address hip and core strength. Our patient's symptoms may have persisted due to her limited treatment options. She also had additional pain from an acetabular labral tear. Patients who fail conservative treatment may potentially undergo surgical intervention, but this remains controversial. Moderately successful surgical resection of the affected bone in two female patients [17] and mini-invasive decompression of iliac bone sclerosis via multiple percutaneous cannulated drillings have been described [18].

## Conclusion

OCI is an uncommon cause of low back and hip pain that most commonly occurs post-partum. It is often diagnosed by imaging and is characterized by triangular-shaped sclerosis of the ilium and a normal sacroiliac joint. OCI can mimic symptoms and image findings of inflammatory SpA. Our case demonstrates that clinicians must use a thorough history, exam, and image review localizing MRI edema to specific areas of the SI joint to accurately differentiate between SpA and OCI. Concomitant acetabular labral tear, which can also present in post-partum patients, caused her to present with additional pain localized in areas not typically associated with OCI.

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