



## Advanced osteoarthritis of the hip as reason for extensive asymmetric leg edema: a rare case report and review of the literature

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**An enlarged iliopsoas bursa (IB) can cause pressure on iliofemoral veins. Clinical presentation can manifest as asymmetrical lower extremity edema. This case report demonstrates extensive asymmetrical leg edema caused by femoral vein compression based on iliopsoas bursitis (IB-itis) associated with advanced osteoarthritis (OA) of the left hip joint with an outline of relevant current literature.**

A female patient presented with left hip pain and edema in the leg. X-ray showed severe OA of the left hip. Computed Tomography (CT) concluded a cystic abnormality at the left iliopsoas muscle associated with the joint consistent with IB-itis, associated with a degenerative left hip joint. Hybrid total hip replacement was performed. At three-month follow-up her left leg showed no longer signs of extensive edema and she walked without the use of walking aids. IB-itis is mostly associated with rheumatoid arthritis (RA). There are no reports which only describe OA as cause of IB-itis.

**Extensive asymmetrical leg edema can be caused by venous compression of the femoral vein by an IB-itis. If the latter is the consequence of advanced hip OA, a total hip replacement can yield excellent clinical outcomes both functionally and with regard to the edema.**

**Keywords:** Iliopsoas bursitis (IB-itis), osteoarthritis (OA), severe asymmetrical leg edema, case report.

### INTRODUCTION

The hip joint is surrounded by multiple bursae; the ischiogluteal bursa, gluteus medius bursa, trochanteric bursa and the largest one of them is the iliopsoas bursa (IB)<sup>1</sup>. Like every bursa, the IB can become inflamed. Intra-articular reasons for a iliopsoas bursitis (IB-itis) are synovitis<sup>2</sup> due to rheumatoid arthritis (RA)<sup>3</sup>, osteoarthritis (OA)<sup>4</sup>, or avascular necrosis<sup>5</sup>. An overuse of the iliopsoas muscle which leads to irritation of the IB due to the muscle passing over the iliopsoas eminence is an extra-articular cause<sup>6</sup>. Due to the localization of the IB an enlargement might cause direct pressure on nearby structures such as the femoral nerve<sup>3</sup>, iliac<sup>1</sup> and femoral veins<sup>7</sup>. This rare entity can clinically be manifested by pain in the groin, a local mass, femoral neuropathy, and/or lower limb edema<sup>8</sup>. Herein we report a case of an elderly patient presenting with left groin pain, redness, and extensive asymmetrical edema of the leg.

### CASE DESCRIPTION

A female in her early 80's presented to the orthopaedic outpatient clinic. Her medical history noted medicine-treated hypertension and type II diabetes mellitus. She complained of progressive left leg edema from the left foot to her left thigh, which decreases with elevation, for the past 3 months. Progressively worsening left groin pain since 18 months, which was aggravated by weight bearing. The patient's mobility has decreased significantly in recent months due to the severe edema.

Physical examination revealed extensive asymmetrical pitting edema in the left leg from the foot up to the hip, with diffuse redness (Fig. 1). There was no temperature change of the left leg. The dorsalis pedis artery and the tibialis posterior artery were adequately palpable. Flexion and extension of the left hip ranged from 90 to 20 degrees. There was no internal rotation possible. There was an external rotation of 5 degrees with abduction of 5 degrees. Trendelenburg sign, Thomas sign and Drehmann sign were all positive. Neurological examination of the femoral nerve and sciatic nerve showed no abnormalities.



Figure 1. — Clinical photo showing severe edema in the left leg with redness.



Figure 2. — Preoperative AP pelvic x-ray.

Conventional radiography showed advanced OA of the left hip (Fig. 2-3). A duplex ultrasound of the lower- and upper leg was performed which showed no evidence of deep venous thrombosis or



Figure 3. — Preoperative axial left hip x-ray.



Figure 4. — Coronal view of CT abdomen with collection in the psoas muscle

thrombophlebitis. A Computed Tomography (CT) of the pelvis and abdomen showed a giant IB with a maximum craniocaudal length of 8 centimeters. The IB showed clear compression on the left venous vascular axis and comminution with the severely osteoarthritic hip joint (Fig. 4-6). The laboratory results were unremarkable.

Shared decision led to total hip replacement, as the advanced OA of the hip joint was thought to be responsible for the IB-itis. While waiting for the hip replacement, an ultrasound-guided aspiration of the IB



Figure 5. — Axial view of CT abdomen with collection in the psoas muscle.



Figure 6. — Sagittal view of CT abdomen with collection in the psoas muscle.



Figure 7. — Postoperative AP pelvic x-ray.



Figure 8. — Postoperative axial left hip x-ray.

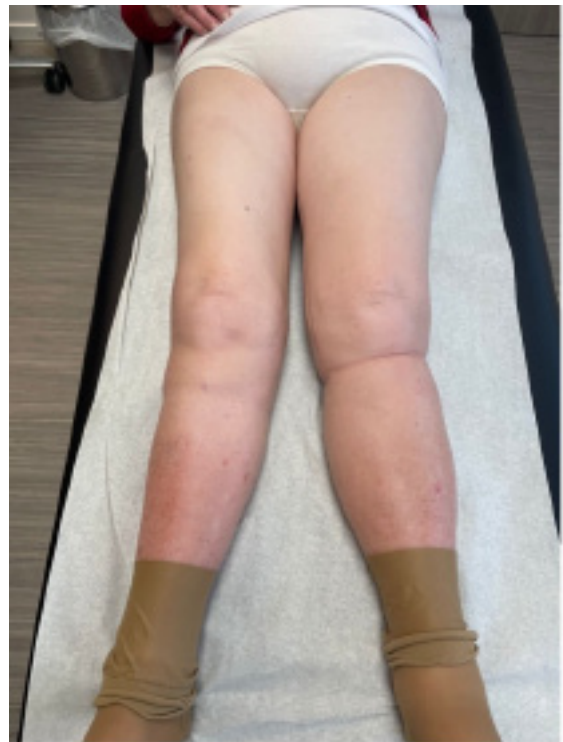


Figure 9. — Clinical photo showing decrease in leg edema, redness and swelling.

was performed to relieve the pressure on the vascular axis, which resulted in temporary slight decrease in pain and edema. Hip replacement was performed using the posterolateral approach, without full dissection of the cyst. During surgery, subcutaneous edema and



Figure 10. — Clinical photo showing progression of decrease in leg edema, redness and swelling.

distended veins were seen and with the arthrotomy of the hip lots of synovial fluid was seen with a connection from the hip joint to the cyst. Both the surgical procedure and the postoperative rehab passed uneventfully (Fig. 7-8). Histological analysis of cyst material and cyst wall showed chronic inflammation without any signs of malignancy.

The patient was seen in the outpatient clinic at six weeks follow-up. The wound healed without complications. The left leg showed a remarkable decrease of size and the redness disappeared. The decrease of edema further improved at three months follow-up (Fig. 9) and at six months follow-up (Fig. 10). At latest follow-up, the patient has no complaints of pain, she walks without a walking aid and is very satisfied about the progress.

## DISCUSSION

IB-itis without leg edema can be seen in patients with developmental dysplasia of the hip<sup>9</sup>, inguinal pain<sup>10-12</sup> with or without additional inguinal swelling<sup>12</sup>, abdominal pain<sup>13</sup>, after previous operations in the groin area (femoral artery exploration, open biopsies)<sup>14</sup>, after trauma<sup>15,16</sup> and without underlying joint disease<sup>17</sup>.

Symptomatic IB-itis is an uncommon pathological condition. The IB is the largest bursa around the hip joint. It is located beneath the musculotendinous

portion of the iliopsoas muscle, anterior to the hip joint capsule and lateral to the common femoral vessels<sup>18</sup>. The normal dimensions of the IB are 5-6 cm in length and 3 cm in width<sup>19</sup>. Usually, it is in a collapsed state, but it can be distended by overproduction of synovial fluid caused by a variety of conditions. In our patient the bursa was dimensioned 8cm in length and 4 cm in width. In 15% of patients the IB is communicating with the hip joint<sup>18</sup>.

Intra-articular causes for IB-itis can be divided in different pathologies. Synovitis and bursitis are interrelated pathological conditions characterized by inflammation affecting distinct anatomical structures within the body, particularly in and around joints. Synovitis pertains to the inflammatory response localized within the synovial membrane, an attenuated membranous lining enveloping the articular cavity. Therefore, synovitis manifests as an intra-articular inflammation. In contrast, bursitis entails the inflammation of bursae, which are diminutive, synovial fluid-filled sacs strategically positioned in proximity to joints, serving the crucial function of mitigating friction between tendons, ligaments, and osseous structures<sup>20</sup>.

IB-itis is most frequently associated with RA, being a known cause of synovitis<sup>2,3,21-26</sup>. OA is one of the most common diseases in the elderly and is based on degeneration of the joint. However, although possibly being quite frequent, we found no publications on hip OA being the sole cause of IB-itis. IB-itis can also occur following hip replacement. García et al.<sup>27</sup> described a case with internal coxa saltans after total hip arthroplasty and its relationship to the development of IB-itis. Lin et al.<sup>28</sup> described a case of a patient who after eight years of hemiarthroplasty developed IB-itis which was assumably due to polyethylene debris.

In our case the main complaint was extensive asymmetrical leg edema. This is in accordance with Savarese et al.<sup>1</sup> who reported on iliofemoral vein compression due to IB-itis resulting in lower extremity edema. IB-itis might also cause other problems. The reports of Iwata et al.<sup>3</sup>, Mori et al.<sup>23</sup>, and Tatsumura et al.<sup>25</sup> also demonstrated that neuropathy of the femoral nerve can occur in the presence of IB-itis resulting in sensory impairment in the affected leg.

IB-itis presents without any complaints or clinical symptoms in most cases. However, giant cysts may cause pain, swelling and eventually compression on the surrounding neurovascular structures. Mostly, symptomatic (giant) IB-itis is a manifestation of end-stage intra-articular pathology of the hip joint<sup>29</sup>. It is important to be aware of this clinical condition and its manifestations. As outlined in this case report, treating

the cause of the synovitis can also be the solution to the symptoms caused by IB cyst compression.

## CONCLUSION

Extensive asymmetrical leg edema can be caused by venous compression of the femoral vein by an IB-itis. If the latter is the consequence of advanced hip OA, a total hip replacement can yield excellent clinical outcomes both functionally and with regard to the edema.

## REFERENCES

- Savarese RP, Kaplan SM, Calligaro KD, DeLaurentis DA. Iliopectineal bursitis: An unusual cause of iliofemoral vein compression. *J Vasc Surg*. 1991. 13(5): p. 725-727.
- Kuroyanagi G, Yamada K, Imaizumi T, et al. Leg lymphedema caused by iliopectineal bursitis associated with destruction of a rheumatoid hip joint: A case report. *Exp Ther Med*. 2013. 6(4): p. 887-890.
- Iwata T, Nozawa S, Ohashi M, Sakai H, Shimizu K. Giant iliopectineal bursitis presenting as neuropathy and severe edema of the lower limb: case illustration and review of the literature. *Clin Rheumatol*. 2013. 32(5): p. 721-725.
- Warren R, Kaye JJ, Salvati EA. Arthrographic demonstration of an enlarged iliopsoas bursa complicating osteoarthritis of the hip. A case report. *J Bone Joint Surg Am*. 1975. 57(3): p. 413-5.
- Yoon TR, Song EK, Chung JY, Park CH. Femoral neuropathy caused by enlarged iliopsoas bursa associated with osteonecrosis of femoral head—a case report. *Acta Orthop Scand*. 2000. 71(3): p. 322-4.
- Tyler TF and Nicholas SJ. Rehabilitation of extra-articular sources of hip pain in athletes. *N Am J Sports Phys Ther*. 2007. 2(4): p. 207-16.
- Natsume K, Yamamoto K, Tanaka K, Hiraiwa T, Tanaka K. A Case of External Compression of Femoral Vein by the Enlarged Iliopsoas Bursa with Long Term Edema. *Ann Vasc Dis*. 2015. 8(2): p. 100-2.
- Toohey AK, LaSalle TL, Martinez S, Polisson RP. Iliopsoas bursitis: Clinical features, radiographic findings, and disease associations. *Semin in Arthritis Rheum*. 1990. 20(1): p. 41-47.
- Fujii M, Kijima H, Kaya M, Miyakoshi N. Endoscopic Resection for Iliopectineal Bursitis Associated With Developmental Dysplasia of the Hip. *Cureus*. 2022. 14(3): p. e23515.
- Mallant MP, Mastboom WJ, de Backer GP. Inguinal pain caused by iliopsoas bursitis. *Ned Tijdschr Geneesk*. 1998. 142(23): p. 1328-31.
- Gresser J, Bitz K, Binswanger R, Hegglin J. Bursitis iliopectinea – a rare differential diagnosis of painful inguinal swelling. *Helv Chir Acta*. 1992. 59(2): p. 383-8.
- Roumen RM and Scheltinga MR. Inguinal pain without inguinal hernia: what could it be?. *Ned Tijdschr Geneesk*. 2004. 148(49): p. 2421-6.
- Kazda J. Iliopectineal bursitis and its relation to abdominal pain. *Rozhl Chir*. 1962. 41: p. 564-7.
- Murphy SB. Iliopectineal bursitis. *J R Soc Med*. 1997. 90(6): p. 359.
- Boggild K and Meyer-Christensen J. Traumatic iliopectineal bursitis. *Ugeskr Laeger*. 1969. 131(28): p. 1202-3.
- Koudela K Jr, Koudelová J, Skalický T. Primary Pyomyositis of the muscles around the hip. case reports and literature review. *Acta Chir Orthop Traumatol Cech*. 2012. 79(2): p. 156-61.
- Ettlinger RE and Hunder GG. Synovial effusions containing cholesterol crystals report of 12 patients and review. *Mayo Clin Proc*. 1979. 54(6): p. 366-74.
- Varma DG, Richli WR, Charnsangavej C, et al. MR appearance of the distended iliopsoas bursa. *AJR Am J Roentgenol*. 1991. 156(5): p. 1025-8.
- Tatu L, Parratte B, Vuillier F, Diop M, Monnier G. Descriptive anatomy of the femoral portion of the iliopsoas muscle. Anatomical basis of anterior snapping of the hip. *Surg Radiol Anat*. 2001. 23(6): p. 371-4.
- Gregory CF. Synovitis and bursitis. *Med Clin North Am*. 1958. 42(6): p. 1641-52.
- Saraiva L, Eugénio G, Duarte C. Iliopectineal Bursitis in a Patient With Spondyloarthritis. *J Clin Rheumatol*. 2021. 27(8s): p. S620-s621.
- Tateiwa T, Shinmura K, Ko M, Mibe J, Yamamoto K. Iliopectineal bursitis associated with rapid destruction of a rheumatoid hip joint. *J Orthop Sci*. 2009. 14(4): p. 455-8.
- Mori S, Tamura T, Komatsubara S, et al. A case of femoral nerve palsy caused by iliopectineal bursitis associated with rheumatoid arthritis. *Mod Rheumatol*. 2004. 14(3): p. 274-8.
- Weber M, Prim J, Lüthy T. Inguinal pain with limping: Iliopectineal bursitis as first sign of polymyalgia rheumatica. *Joint Bone Spine*. 2008. 75(3): p. 332-3.
- Tatsumura M, Mishima H, Shiina I, et al. Femoral nerve palsy caused by a huge iliopectineal synovitis extending to the iliac fossa in a rheumatoid arthritis case. *Mod Rheumatol*. 2008. 18(1): p. 81-5.
- Ohyama Y, Yazawa M, Haji Y, et al. Calcium pyrophosphate deposition disease involving “the largest” Bursa in the human body. *J Nephrol*. 2022. 35(2): p. 687-688.
- Gómez García F. Internal coxa saltans in total hip arthroplasty. Case report. *Acta Ortop Mex*. 2010. 24(1): p. 18-22.
- Lin YM, Ho TF, Lee TS. Iliopectineal bursitis complicating hemiarthroplasty: a case report. *Clin Orthop Relat Res*. 2001(392): p. 366-71.
- Koudela K Jr, Koudelová J, Koudela K Sr, Kunesová M. Bursitis iliopectinea. *Acta Chir Orthop Traumatol Cech*. 2008. 75(5): p. 347-54.