Pelvic Deformity Secondary to Tensor Fascia Lata Tightness Associated With Desmoid Tumor

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abstract

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The iliotibial band is a thick, condensed fascia that, when contracted, leads to a hip flexion, abduction, and external rotation contracture in addition to other joint contractures. Iliotibial band tightness occurs secondary to iliotibial band friction syndrome, which commonly occurs at the lateral femoral epicondylar region. However, a proximal cause of iliotibial band/tensor fascia lata friction syndrome leading to a secondary hip contracture is swelling around the hip; this swelling being a desmoid tumor has not been explicitly described in the literature. The authors present a rare case of a hip contracture in a 28-year-old active man who presented with a functionally disabling hip flexion contracture of 20° with further flexion possible up to 130°, a 45° abduction contracture, and a 20° external rotation contracture with further rotation possible up to 40° with a bony hard swelling in the left gluteal region. Ober’s test was positive. Opposite hip and spine examinations were normal. The goals of treatment were to establish the causality between the 2 and to diagnose the etiology of the gluteal mass. Radiographs were normal, with only a pelvic obliquity evident. Magnetic resonance imaging revealed an extra-articular mass abutting the iliac blade. Histopathology confirmed the mass to be a desmoid tumor in the left gluteal region. A wide surgical excision of the mass was performed with negative margins; no postoperative radiotherapy was administered. After rigorous physiotherapy, the hip deformity disappeared at 6 months and there was no evidence of recurrence at 2.5-year follow-up, with the patient able to sit cross-legged and squat.

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Tensor fascia lata tightness is caused by neuromuscular disorders and abductor weakness and is common among runners and horseback riders. The authors report a rare case of tensor fascia lata tightness due to a gluteal desmoid tumor presenting as a pelvic deformity and the result of surgical excision of this tumor.

Case Report

A 28-year-old man presented with a progressively worsening painless limp and a 2-year history of difficulty sitting cross-legged. The patient had a history of a fall 1 year before symptoms began. There was no history suggestive of any other joint involvement, constitutional symptoms, or gluteal injections. There was a history of massage. On examination, a bony, hard mass measuring 8x8 cm was palpated in the left gluteal region. This mass was continuous with the iliac blade, nonmobile, and nontender. The left hip had a flexion contracture of 20° with further flexion possible up to 130°, a 45° abduction contracture, and a 20° external rotation contracture with further rotation possible up to 40°. Ober’s test was positive. Opposite hip and spine examinations were normal. Radiographs of the pelvis and both hips showed no bony affection, but a pelvic obliquity due to the hip abduction contracture was evident (Figure 1).

Values of prothrombin time/activated partial thromboplastin time, serum calcium, phosphate, and alkaline phosphatase were normal. Erythrocyte sedimentation rate was 10 mm/hr. Computed tomography (CT) showed a left hip flexion, abduction, and external rotation deformity (Figures 2A-2B). Magnetic resonance imaging (MRI) of the left hip showed a lobulated mass in the left gluteal region with a hypointense signal on the T1-weighted image and focal hyperintense signal seen with the lesion on short T1 inversion recovery images. There was no marrow edema in the iliac blade (Figures 3A-3B), with normal femoral head and pelvic bones, and no involvement of periarticular soft tissues. This suggested a chronic organizing hematoma. Hip joint imaging was normal. Fine-needle aspiration of the mass showed spindle-shaped cells intermingled with fibrous bands, indicative of a benign spindle cell lesion. Three-phase bone scan was inconclusive.

Written informed consent conforming to the Declaration of Helsinki was obtained from the patient. On exploration, an 8x8x3-cm, firm to hard, well-defined, gritty mass with defined margins was dissected. Near total excision of the mass (Figure 3C) was done, with margins being negative on frozen section. This mass was found encroaching the gluteal muscles with marked atrophy of gluteal muscle, especially gluteus medius. It was confirmed to be a desmoid tumor on histopathology, which demonstrated the tumor cells with a pale eosinophilic cytoplasm and chromatin structures embedded in a collagen network interrupted by fibrotic sections infiltrating into the muscle fibers with no prominent myositis, atypia, or pleomorphisms.

Postoperatively, the patient performed an abductor-strengthening exercise regimen and required a percutaneous release of the tensor fascia lata 3 months postoperatively. Six months postoperatively, the patient was walking normally with no lurch and no deformity at the hip (Figures 4A-4B). At 2.5-year follow-up, repeat MRI confirmed that the patient had no recurrence.

Discussion

The authors dealt with 2 issues in this case: (1) the gluteal mass and (2) the iliobial band tightness with a hip contracture. The latter being caused by the former was the main consideration. The literature reports no such gluteal mass leading to an iliobial band tightness due to a shear mass effect.

The iliobial band is a thick, condensed fascia that originates at the iliac crest, envelopes the tensor fascia lata, and inserts distally into Gerdy’s tubercle on the anterolateral aspect of the knee.1 Thus, it is a biarticular band spanning the hip and the knee on the anterolateral aspect. Hence, any contracture of the band can lead to various deformities of the lower limb, such as flexion, abduction, and external rotation deformity of the hip and flexion and external rotation deformity of the tibia with genu valgum and varus deformity of the foot. The iliobial band...
is also the site for insertion of the gluteus maximus.

The etiology of the iliotibial band tightness is not clearly defined. Reported causes include friction syndrome, with the iliotibial band becoming impinged against the femoral epicondyle, or inflamed adipose tissue or bursae under the iliotibial band.1-3 This tenting of the iliotibial band over the lateral femoral epicondyle occurs among runners, especially when running downhill, and with repetitive exercise and knee flexion, excessive genu varum, and excessive internal tibial torsion.

A more proximal etiology for iliotibial band syndrome has not been described. There are reports of hip abductor weakness occurring in patients with iliotibial band syndrome. In cases of abductor weakness, increased hip adduction occurs during the stance phase of gait with a consequent increased strain of the iliotibial band and a greater tendency for it to compress the tissues underneath.4,5 A gluteal mass can lead to further tenting of the iliotibial band, leading to iliotibial band tightness. However, the latter has not been described in the literature.

This case is interesting because this patient had both of the incriminating factors that lead to iliotibial band syndrome: (1) weak hip abductors due to the infiltrating fibrotic growth and (2) tenting of the iliotibial band over the desmoid mass as it does over the lateral femoral epicondyle distally.

The diagnostic dilemma was to determine the etiology of the gluteal mass. The differential diagnosis included myositis ossificans traumatica, chronic organizing hematomas, and soft tissue tumors.6-8 Because there was no evidence of ossification, myositis ossificans traumatica was less likely. The literature also supports operative excision of myositis ossificans traumatica in periarticular areas, causing restricted range of motion.5 Chronic organizing hematoma was likely in this patient because there was a history of trauma. Even in these cases, excision of the mass is recommended because histopathology alone confirms the diagnosis. However, chronic hematomas clinically present as an expanding lesion and not as a hard mass with deformity.7,8 The other possibility was a soft tissue tumor in the gluteal region. There are reports indicating that fibroma can present as a mass and muscle contracture.9 With this background, the gluteal mass was clinically likely to be a desmoid tumor.

The term fibromatosis refers to a group of benign soft tissue tumors that have certain characteristics in common, such as the absence of cytological and clinical malignant features, histology consistent with proliferation of well-differentiated fibroblasts, an infiltrative growth pattern, and aggressive clinical behavior with frequent local recurrence. All of these characteristics were seen in the current histopathological specimen, thereby confirming the diagnosis. Musculoaponeurotic fibromatosis refers to the tendency of these tumors to be adjacent to and infiltrate deep into skeletal muscle.

Desmoid tumors are rare, benign tumors that account for 0.03% of all solid soft tissue tumors.10 The common sites of extra-abdominal desmoids are the shoulders, buttocks, popliteal fossa, and backs of the thighs.11 They can occur in a syndromic or nonsyndromic form. The syndromic form is associated with Gardner syndrome. Nonsyndromic extra-abdominal desmoids are usually solitary. Desmoid tumor is a neoplasm that rarely becomes malignant; it is nonmetastasizing but demonstrates local tissue infiltration. The exact etiology of desmoid tumor is unknown. It is associated with genetics, hormonal factors, and surgical trauma.12 Magnetic resonance imaging is suggestive, but histopathology confirms the diagnosis. Radiographs are usually inconclusive, unless there is encroachment of underlying bone. The treatment
of desmoid tumor is wide surgical excision. The risk of local recurrence appears to be most closely related to the extent of the surgical resection, with fewer recurrences occurring in patients with negative margins compared with patients with positive margins.\textsuperscript{13} However, some studies have reported that margin positivity is not prognostically significant.\textsuperscript{14} The local recurrence rate has been shown to be decreased by radiation therapy started 2 weeks postoperatively.

Hip desmoid tumors are thought to arise in the muscles and fascia of gluteus medius, minimus, and maximus. These tumors present as gluteal masses. Rare cases of a hip desmoid that presented with severe joint destruction\textsuperscript{15} and a hip desmoid that presented with sciatica\textsuperscript{16} have been reported. However, no case of a hip desmoid tumor causing tensor fascia lata tightness with pelvic deformity has been reported in the literature. The treatment of desmoid tumor is mainly surgical excision, except when surgery is mutilating and associated with considerable functional loss or major morbidity.\textsuperscript{17} Polychemotherapy and irradiation can be given postoperatively. In some cases, irradiation was used only in patients with incomplete resection of tumor and in recurrent cases.\textsuperscript{18} Polychemotherapy with doxorubicin, ifosfamide, and dacarbazine was used in the treatment of aggressive fibromatosis for patients who suffered from unresectable and advanced disease.\textsuperscript{19} Attempts to completely eradicate the disease may be worse than the disease itself.

In the current case, a wide surgical excision was performed of a mass in the left iliotibial band bursectomy. This underlines the fact that desmoid tumors do not merely have a mass effect but also induce a fibrotic reaction in the surrounding tissue. This needs further investigation. After rigorous physiotherapy and close monthly follow-up, the patient developed normal abductor power with no deformity or recurrence after 2.5 years.

\section*{References}


