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Open Repair of a Young Hip Abductor Tendon Tears: A Case Report and Literature Review

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Abstract

Greater trochanteric (GT) pain syndrome is a common debilitating hip condition featured by chronic lateral hip pain. This condition includes trochanteric bursitis, hip abductor pathology involving the gluteus medius and minimus, external coxa saltans (snapping hip syndrome), or combinations of those. Hip abductor tendon tears have been recognized as a main pain generator of the hip joints. This pathology is often misdiagnosed and left untreated because of the frequency of partial-thickness undersurface tears. Once definite diagnosis is confirmed, non-operative treatments are considered as the first therapeutic approach. Despite the availability and effectiveness of multiple non-operative therapies, a considerable percentage of patients will present with chronic disabling pain and refractory symptoms. Generally, most of general medical practitioners are unaware of accessible surgical approaches that benefit patients who are unresponsive to non-surgical managements.

We report a case of 39-year-old female patient with chronic lateral hip pain refractory to conservative treatment for more than a year, then treated successfully with open abductor tendon repair. The patient returned to the desired activities six months following surgery without any reported complications. Follow up at a year and 2.5 years postoperatively, she has a pain free hip and normal functions of affected hip joint.

In short, we reported an open surgical repair of the hip abductor tendons in the setting of a chronic full-thickness abductor tendon tear in a female patient after failure of nonsurgical managements. Preoperative accurate diagnosis is the key for successful reparation of the torn abductors.

Keywords: Greater trochanteric pain syndrome; Lateral hip pain; Gluteus medius tendon; Gluteus minimus tendon; Hip abductor tendon tear; Open repair

Introduction

Greater trochanteric pain syndrome (GTPS) which is defined as chronic pain in the lateral aspect of the hip. Previously this lateral hip pain has been attributed to trochanteric bursitis, external coxa saltans (snapping hip syndrome), or combinations of these, however, recent studies propose the etiology is more closely to associated gluteus medius and minimus tendon tears [1-4]. These injuries generally result from a chronic, degenerative process that may be classified as either being spontaneous or being traumatic [5]. Because of the frequency of partial-thickness undersurface tears, this pathology is often misdiagnosed and left untreated. Abductor tendon tears occur 4 times more frequently in women than in men, with the incidence

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reaching its peak between the fifth and seventh decades [4]. This prevalence has been attributed to increased abductor tendon forces required to stabilize the female pelvis, differences in hormones, and activity patterns [6]. Diagnosis is made by a thorough history and physical examination, and confirmed with diagnostic imaging, including X-ray and MRI [1, 4, and 7]. Once this challenging diagnosis is confirmed, non-operative treatments are considered the first therapeutic approach and have shown to be highly effective, with curative rates of more than 90% [8, 9]. Conservative measures include activity modification, weight loss, heat/cold pad therapy, physical therapy (PT), and pharmacologic treatment, including, nonsteroidal anti-inflammatory medications (NSAIDs), simple non-opioid analgesics, such as paracetamol, which may be preferred in this age group of patients contraindicated NSAIDs. Other options include dermal anesthetic patches and adjuvant medication such as antidepressants, injections with corticosteroid and local anesthetics, shockwave therapy and injections with platelet-rich plasma (PRP) [8-10]. These treatments can be used in an individual or multimodal phase, depending on the severity of the patient's symptoms, availability, and patient-physician preferences [8, 10]. However, conservative measures may require lengthy periods of treatments, and multiple cycles of therapy, and patients may experience only partial relief or recurring symptoms [8, 10]. For recalcitrant cases, surgical treatment is indicated and either open or endoscopic repair techniques have demonstrated significant improvement of hip functions. Our reported case describes a severe refractory case of GTPS in a female patient treated with open abductor tendon repair, the outcome was excellent with pain free and return to all ADLs after follow-ups at 10 months and 2.5 years postoperatively without any reported complications.

Case Report

A 39-year-old female, whose personal hobbies were running and jogging, developed left lateral hip pain referral to the posterior hip a year ago after a long-distance run, which stopped her running and jogging and reduction of her activities for daily life. She was limping for the last 3 months. There was night pain, wake her up a few times during sleep. The pain was refractory to conservative treatment, including one year of physiotherapy and physical therapy, three-time trochanteric bursa steroid injections, and three times' PRP injections combined with shock wave therapies. All injections were separated by a few weeks or months and performed under ultrasound guidance. Physical examination revealed antalgic and Trendelenburg gaits, tenderness over the greater trochanter, FABER test, and abductor complex weakness with resisted hip abduction. Radiological images demonstrate chronic enthesopathy with osteophyte formation at the abductor insertion over tip of the greater trochanter (GT) and lateral surface (roughness) of the GT on AP radiograph and anterior aspect of the GT on frog lateral view radiograph (Figure 1). MRI demonstrated a complete, chronic full-thickness gluteus medius and minimus tendon tear (Figure 2a, b and Fig 3). Given the failure of conservative managements and duration of her hip pain, indication of surgical treatment with open gluteus medius/minimus repair was indicated.

The patient was under general anesthesia and placed in a lateral decubitus position, with pressure areas properly protected. After routine preps and drapes, surgical skin incision was centered over the tip GT about 6 cm long. After splitting ITB and TFL longitudinally and bursectomy was performed first then torn gluteal medius and minimus were identified and after debridement of osteophytes, bursa, scars and fat degenerated tissue, burred footprint with a high speed burrs for refreshing footprints of abductors for better healing potentials.

Two metallic 5.0 mm suture bone anchors were used for repairing torn abductors back to their footprints over lateral surface of the GT (gluteal medius) and anterior aspect of the tip of the GT (Gluteal minimus) (Figure 4). Intra operative FABER test showed that hip abductors in good tension after repairs. Post-operative evaluation Patients are performed at 2-weeks, 6-weeks, 3- months, ten months and two and a half years' post-operatively, showing pain-free hip and return to desired activities.

The patient was instructed to mobilize with double crutches for touching down weight bearing on the left leg and worn a hip abduction brace for 4 weeks limiting adduction and flexion to 45 degrees. Daily position changes (no sit/ stand/ walk longer than 30 continuous minutes). Basically Foot/calf activations, gluteal maximum isometric, abdominal isometric were her daily tasks. After 4 weeks postoperatively unassisted activities of daily living (ADL) (postoperative week 4–8). She was engaged in isometric function of abductor/ITB, Increase stance-phase independence of operative limb and restore normal gait. Week 8-10 after surgery she was encouraged to use a cane in the opposite hand and discontinue brace.

Post-operatively week 10 and 3 months to increase gait and ADL-related repair site endurance and reduce myofascial pain can start manual myofascial loosening avoiding extremes of passive adduction/IR/ER. The patient is in supine, foot on the ground core, allowed gentle isokinetic abductor in addition to standing core/balance isometrics.

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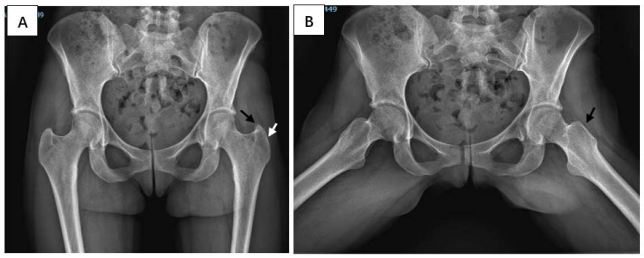

Figure 1: Early osteophytes formation over tip of the greater trochanter (GT) and roughness of the lateral surface of the GT (A, arrows) on AP radiograph and anterior aspect of the GT on front lateral view radiograph (B an arrow).

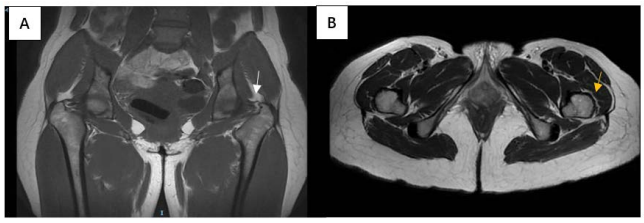

Figure 2: MRI showed right hip gluteal minimus tear (A) (a white arrow); and gluteal medius tear (B) (a yellow arrow).

Figure 3: Gluteal minimus torn on the left (a white arrow) normal on the right (a yellow arrow).

Figure 4: Open surgical repairs of torn abductors, after debridement osteophytes and bursectomies two metallic bone anchors for reparation of the torn abductor medius and minimus (an arrow).

Discussion

GTPS is a term used to characterize multiple disorders in the proximal, lateral hip region. [1, 10] Frequently, these disorders involve locations within the peritrochanteric anatomic area of the proximal femur. The most frequently seen disorders are trochanteric bursitis, hip abductor pathology involving the gluteus medius tendinitis or tears, external coxa saltans (snapping hip syndrome), or combinations of these [1, 4, 7]. Given the importance of the enthesis in load distribution, it is most likely that preexisting degeneration in both tissue types contributes to tendon tears [13]. Interestingly, our case did reveal degenerative changes in GT and anterior insertion of gluteus minimus indicating pre-existing risk factors for gluteal tears. Actually the pathology leading to idiopathic tears of the gluteal tendons is not fully understood but is primarily believed to be part of an ongoing degenerative process [14], with pathological changes in the shoulder rotator cuff as a similar degenerative musculoskeletal mechanism.

In brief, tear types were classified as either type I or type II tears. Type I tears were defined as a partial tear of the gluteus minimus or gluteus medius, a complete tear of the gluteus minimus, or a longitudinal tear of the gluteus medius. There is no avulsion of gluteus medius from the bone. Type II tears were defined as a gluteus medius avulsion of either $< 50\%$ or $\geq 50\%$ of the tendon insertion into the greater trochanter [15]. In our case the tears belonged to type I due to full thickness more than 50% tendon tears from GT insertional footprints. Tendinopathy and tendon tears of the gluteus medius and/or minimus insertion at the greater trochanter are increasingly recognized as a cause of recalcitrant lateral hip pain [16, 17].

Appropriately preoperative diagnosis should be awareness of the potential causes of pain, performing comprehensive history and physical examination, assessment of findings on radiographs and MRI（1, 10）. Despite the availability and effectiveness of numerous non-operative treatments, a considerable percentage of patients will present with chronic disabling pain and refractory symptoms [8, 9]. Many general practitioners are unaware of accessible advanced surgical techniques that have proven to benefit patients unresponsive to conservative management [3, 11, and 12]. Open abductor tendon repair has been shown to provide significant improvement in patients reported outcomes and substantial clinical benefits. Multiple investigators have demonstrated open repair techniques that is a reliable repair construct.

This case report is an example of open surgical repair of the hip abductor tendons in the setting of a chronic full thickness abductor tendon tear in a female patient after failure of conservative management, reporting great improvement in ADLs without short-term complications. Knowledge of this pathology and familiar anatomy of the abductor footprints,

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accurate preoperative image studies guaranteed for better repairs and the best functional recovery with chronic lateral hip pain sufferers.

In summary, abductor tendon tears represent a challenging diagnosis for all health-care providers when treating patients with lateral hip pain. Although nonsurgical managements are representing the gold standard first-line approach, such measures may require long periods of treatments, multiple cycles of therapy, and patients may experience only partial relief or recurring symptoms. For recalcitrant cases, surgical treatment is indicated. The open repair technique indicated for treating a chronic full-thickness abductor tendon in a female patient after failure of conservative management, without reported complications at short-term follow-up. The future studies for comparison of open versus arthroscopically reparation of the torn abductors may benefit for GTPS patients.

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