

Nonoperative Management of Acetabular Labral Tear in a Skeletally Immature Figure Skater

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Acetabular labral tear is an uncommon cause of hip pain in the skeletally immature athlete. Treatment outcomes have mostly been described in the surgical literature. We present a case report of a premenarchal 12-year-old figure skater who was diagnosed with an isolated acetabular labral tear without hip deformity. With nonoperative treatment, she was able to return to pain-free competitive figure skating 4 months after her onset of symptoms. Our findings suggest that acetabular labral tears in the skeletally immature athlete can respond to a trial of nonoperative management.

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INTRODUCTION

Acetabular labral tear is an infrequent cause of hip pain in the skeletally immature athlete. Studies have suggested an increased risk for the development of labral tears in the presence of structural abnormalities such as developmental hip dysplasia, slipped capital femoral epiphysis, and femoral acetabular impingement [1,2]. However, isolated acetabular labral tears in the absence of structural abnormality can occur, although they are generally associated with sports activities that require repetitive pivoting, pounding, and torsional forces across the hip [3]. Although hip arthroscopy has been described as an effective treatment for isolated labral tears in skeletally immature athletes [4,5], only 2 specific nonoperative therapeutic protocols with outcome measurements have been reported in patients more than 18 years of age with femoral acetabular impingement (FAI) [6]. The purpose of this case is to present the successful nonoperative management of an acetabular labral tear in a skeletally immature figure skater without structural hip deformity, resulting in her return to competition.

CASE DESCRIPTION

A skeletally immature, 12-year-old, female competitive figure skater (U.S. Figure Skating Association Juvenile Girls) presented with a 1-month history of anterior right hip pain. She reported the acute onset of pain while learning a double axel. She noted several training sessions in which she had spent 2 or more hours per day, 6 days per week, trying to perfect the jump. In performing the maneuver, she and her coaches described repeated landing on her right leg with her hip in a maximally flexed position. Pain was located in the groin region, was pinching in nature, and worsened with figure skating, jumping, and hip flexion beyond 90°. She denied any radiating leg pain, paresthesias, distal extremity weakness, or worsening of pain with lumbar flexion or extension. She had no mechanical symptoms such as popping or clicking. She denied experiencing pain with ambulation or activities of daily living. She had tried resting for 3 weeks, but experienced a significant increase in her pain symptoms. Her pain level, assessed with a 10-cm visual analog scale (VAS), measured 8 cm when she returned to skating. She was planning to complete in a national competition in 6 weeks and presented for counseling regarding treatment and management.

Visual inspection revealed normal alignment of the lower extremities in standing and a nonantalgic gait. Lumbar spine range of motion was evaluated visually and deemed to be

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full in both flexion and extension as well as pain free. The patient had normal sensation, reflexes, and strength of both lower extremities with the exception of strength of 4+/5 right hip abduction (side-lying) and right hip external rotation (seated) strengths [7,8]. Passive and active hip range of motion for flexion and for internal and external rotation with the hip flexed at 90° was assessed on both sides. Pain was reproduced in the right groin at 90° in both active and passive hip flexion. In addition, the patient experienced her typical right groin pain with resisted hip flexion (seated). She was mildly tender to palpation over the iliopsoas tendon, but was nontender elsewhere in the hip region. Anterior groin pain was reproduced with anterior hip-impingement test and flexion, adduction, and internal rotation (FADIR). Posterior hip impingement test and flexion, abduction, and external rotation (FABER) maneuvers were negative [9]. A single-leg squat demonstrated an inability to maintain a level pelvis with medial deviation of the right knee. The patient was unable to maintain a neutral spine as she lifted her opposite arm/leg while in a quadruped position.

Examination of radiographs including AP pelvis and bilateral frog leg lateral views demonstrated open physes without evidence of an avulsion fracture or of a hip deformity (Figure 1). The alpha angle measured 40° (a value of <42° is considered normal) [10], the femoral head and neck offset ratio was 0.21 (a value of <0.17 is suggestive of a cam deformity), and a Tonnis angle measured 10° (a value between 0° and 10° is considered normal acetabular inclination). There was no evidence of a crossover sign (the presence of a crossover sign suggests a retroverted acetabulum). The femoral head was within the lower medial quadrant when measured with the Hilgenreiner and Perkins line. Two fellowship-trained musculoskeletal radiologists independently verified all measurements. Magnetic resonance

arthrography (MRA) of the right hip was then ordered to assess for any serious causes (ie, stress fracture, labral tear) that would affect her ability to complete at the upcoming national event. MRA demonstrated a linear hyperintense T1 signal extending through the anterior labrum, contiguous with a 6-mm paralabral cyst and consistent with a labral tear. Local anesthetic was added to the MR arthrogram, and the patient reported short-term relief of pain with this injection (Figure 2).

Given the patient's young age and the authors' concern about surgery for this age group, the patient was advised to continue to rest from figure skating for an additional 6-8 weeks and to begin a rehabilitation program to correct impairments noted in the physical examination. At the same time, the parents were concerned about the lack of improvement with her prior rest and sought a surgical consultation. Ultimately, consultations were obtained from 3 surgeons experienced with hip arthroscopy for pediatric labral tears, and all agreed with a trial of nonoperative management. The patient worked closely with her physical therapist twice per week for 6 weeks and performed a daily home exercise program. The initial focus of her treatment was on improving activation of the abdominal wall muscles (transverse abdominis), and strengthening of the gluteus medius, hip external rotators, and lumbar paraspinal and multifidi muscles while maintaining a neutral spine. Supine exercises to improve abdominal wall activation included abdominal bracing with leg lifts and heel slides, and bent-knee fall-out exercises in the hook-lying position (supine position with knees flexed and feet flat). A lumbar biofeedback cuff was used during these supine exercises to help maintenance of a neutral spine. Additional exercises to strengthen the lumbar paraspinals and multifidi included quadruped alternate arm and leg lifts. Initial hip abductor

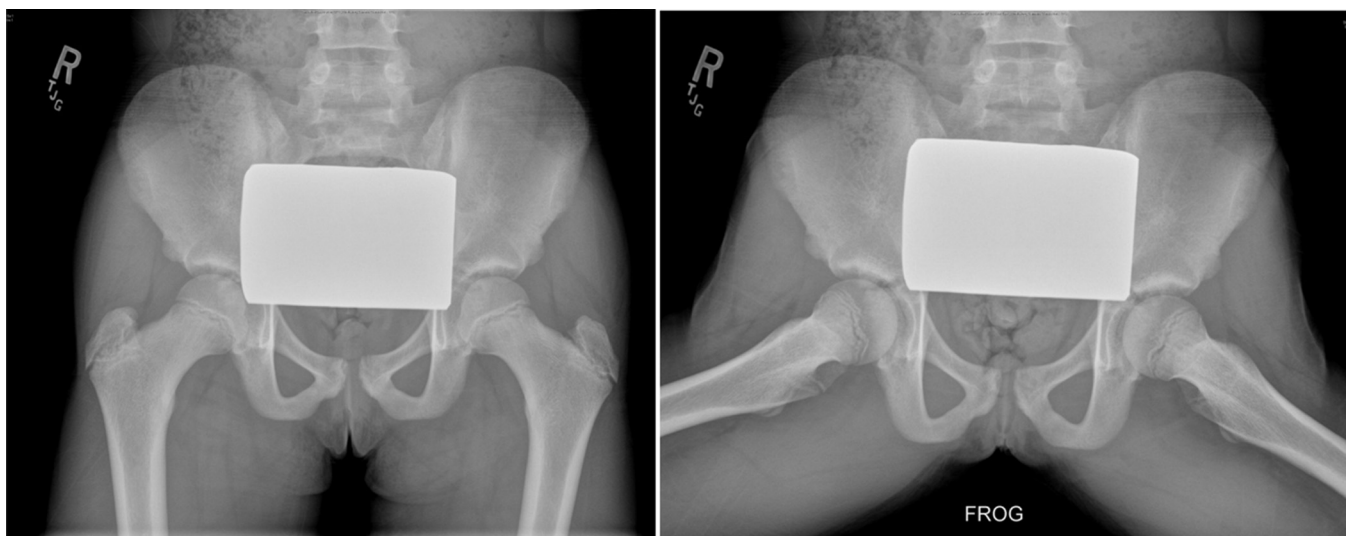


Figure 1. Normal radiograph imaging: AP pelvis (left) and bilateral frog leg lateral (right).

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