Case Report

Successful non-surgical management of chronic hip pain in the context of Otto's disease by targeted retraining of the internal torque chain and psoas major

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Abstract

Background: Total hip arthroplasty (THA) is highly effective for degenerative joint disease but poses challenges in younger patients due to higher complication and revision rates. This case highlights the importance of exploring non-surgical approaches that optimise the neuromuscular system thoroughly prior to surgery and reduces the risk of osteoarthritis progression. **Case Presentation:** A 35-year-old non-competitive weightlifter with chronic hip pain, diagnosed with Otto's disease and protrusio acetabuli, was scheduled for THA. However, following a personalised neuromuscular approach that primarily focused on psoas muscle retraining, she experienced immediate and sustained reductions in pain and stiffness, leading to cancellation of the surgery. At 2.5 years follow-up, she remains symptomatically improved. **Conclusion:** This case emphasises the critical role of comprehensive neuromuscular assessment and targeted optimisation of weak and imbalanced muscle groups, in particular the psoas major, before resorting to surgical interventions, especially for younger adults with chronic hip pain.

Keywords: Sports medicine, Otto's disease, Protrusio acetabuli, Torque chains

Introduction

Total hip arthroplasty (THA) is a well-established surgical procedure for end-stage degenerative joint disease (1). However, younger patients present specific challenges, as surgical techniques have historically yielded disappointing results, raising questions regarding optimal management strategies (2–4). Given the limited lifespan of prosthetic implants and the likelihood of future revision surgeries, comprehensive non-surgical approaches—including neuromuscular assessment and optimisation—should be thoroughly explored prior to THA, particularly in athletes. We present a case of a 35-year-old woman with years of chronic left hip pain and dysfunction, subsequently diagnosed with Otto's disease and protrusio acetabuli. She was scheduled for THA but cancelled the procedure after several hours of focused neuromuscular retraining of the internal torque chain (5)—specifically of the psoas major—that resulted in almost immediate pain relief, with continued improvement 30 months later.

Case presentation

A 33-year-old Canadian woman presented with chronic left hip pain and dysfunction persisting for approximately eight years. Previously fit and active, she engaged in weightlifting recreationally from age 22. One year into weightlifting, she experienced hip "clicking" that prompted an initial X-ray and the diagnosis of mild osteoarthritis in her left hip in 2014. Her symptoms significantly worsened during the first trimester of her first pregnancy in 2017. From 2018 to 2020, she experienced intermittent discomfort, particularly during exercises like sumo deadlifts and barbell squats (6). Despite no apparent progression of radiographic changes, her symptoms deteriorated further, leading to episodes of her hip "giving out" whilst walking, with progressive loss of internal and external hip rotation. She struggled with daily tasks such as putting on socks and sitting normally, observing a marked height discrepancy between her knees when seated. In early 2022, physiotherapy treatment from a pelvic floor specialist was initiated, and cortisone injections were offered for pain relief. When the symptoms progressed to include back pain in April 2022, she consulted multiple healthcare providers. A chiropractor identified hip joint abnormalities on X-ray (Fig. 1), prompting referral to a sports medicine physician, who then referred her to an orthopaedic surgeon.

Figure 1. Representative hip X-rays from three orthogonal views taken in 2022. Femoral head crossing the ilioischial line on AP pelvic radiograph with joint space narrowing and early arthritic changes. Provided and published with consent from the case subject.

She was given a diagnosis of Otto's disease, and a total hip replacement was recommended. By this point, severe limitations were evident, including significant pain during basic movements, an antalgic gait, and difficulty sitting or lying comfortably. After consultations with four additional surgeons, her candidacy for THA was confirmed, and surgery was scheduled privately in Calgary due to lengthy public healthcare waiting times (12-14 months for consultation, plus 10-12 months for surgery).

Intervention, outcome, and follow-up

Prior to surgery, the first and second authors (movement specialists, one also a medical doctor) became involved in this case. The second author identified significant functional weakness of her left psoas major at the initial assessment, which was made evident to the patient through rhythmic activation of the internal torque chain using an approach that combines breathwork with movement (5). Remarkably, within the first 15 minutes of the intervention, building awareness of the left psoas major, she experienced reduced pain and increased functional capacity, progressing to running—an activity previously perceived as impossible due to pain and apparent stiffness—within the hour. Due to this dramatic initial improvement and subsequent training sessions, the case subject cancelled her scheduled THA within the week. At 2.5 years follow-up, she continues to report ongoing functional improvements and reduced frequency and intensity of pain. She has successfully returned to recreational activities including squatting and deadlifting without significant daily limitations and has required no surgical intervention thus far. There is no longer any audible sound from the hip elicited by movement.

Discussion

This case underscores several very important principles, namely the importance of comprehensive neuromuscular assessment and optimisation in cases of chronic hip pain and dysfunction. We feel that this is particularly important in athletes and younger patients who may be able to delay or avoid surgical intervention entirely, avoiding unnecessary harm. Even in the absence of arthritic changes, surgical hip dislocation and/or a valgus intertrochanteric osteotomy are indicated for skeletally mature patients with protrusio acetabuli; however, globally not all orthopaedic centres may possess the necessary experience to perform these procedures (7).

The initial presentation in 2014 of hip "clicking" should be considered a neuromuscular issue until proven otherwise. Snapping hip syndrome (coxa saltans) is characterised as an audible or palpable snapping sensation during movement, commonly resulting from overuse, iliotibial band tightness, muscular tightness, shortened muscles or tendons, or inadequate muscle relaxation (8). This case is a classic example of muscular imbalance not being addressed early enough and leading to more debilitating symptoms over time. In the context of a pelvic anatomical variant and the apparent diagnosis of Otto's disease, neuromuscular assessment and optimisation is clearly beneficial, even when surgery is indicated. In fact, altering neuromuscular balance in the context of anatomical variation may enable more even distribution of force through the joint leading to decreased likelihood of osteoarthritis progression (9,10). Could the classical loss of joint space be a symptom of a short, weak psoas major? In this patient, this was central to the development of her symptoms, yet this was overlooked for more than seven years, emphasising the necessity of detailed clinical movement histories, especially in athletes. Despite consultations spanning several years with physiotherapists, chiropractors, sports physicians and orthopaedic surgeons, her underlying neuromuscular dysfunction was neither identified nor addressed appropriately at any point. Otto's disease diagnosis may have been a misleading factor, highlighting the importance of distinguishing anatomical variants from functional neuromuscular deficits.

The psoas major functions as a primary hip flexor and vital stabiliser of the lumbar spine and hip joint. Its dysfunction can significantly alter biomechanics, resulting in compensatory movements and chronic pain (11). In this case, weight-training and powerlifting style movements likely contributed to muscular imbalances. Differential pain responses to specific lifts (greater discomfort during sumo deadlifts and barbell squats compared to conventional deadlifts and belt squats) support biomechanical rather than purely degenerative aetiology. Pregnancy-related pelvic biomechanical alterations may have also

contributed in this case, further supporting the need to assess and optimise neuromuscular function in women after childbearing. Anecdotally we find that the obliques and psoas major are particularly important in these cases.

Conclusion

This case demonstrates successful non-surgical management of chronic hip pain in a young woman initially scheduled for THA. The immediate and sustained improvements achieved through personalised neuromuscular optimisation, particularly psoas retraining, underscore the importance of a thorough movement assessment prior to considering irreversible surgical interventions. Although THA remains highly effective in specific contexts, careful consideration and comprehensive exploration of non-surgical approaches are essential, particularly for younger, athletic patients.

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Author contributions

Conceptualisation, E.C., R.A.; writing—original draft preparation, E.C., G.W.F.; writing—review and editing, R.A., F.B. All authors have read and agreed to the published version of the manuscript.

Competing interests

R.A. is founder of Moved Academy and Movement Ayahuasca, two companies which teach and apply the concepts introduced in this paper. E.C. is a practicing movement specialist as well as an instructor at Moved Academy and facilitator at Movement Ayahuasca. G.W.F. is a qualified Breath Teacher with The Breath-Body-Mind Foundation, New York. F.B. declares no conflicts of interest.