Managing Mechanical Perineal Pain in Cyclists: A Case Report of a Novel Cause of Saddle Sores, Adventitious Bursitis

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Cycling | **Perineal pain** | **Saddle sores** | **Bike fit** | **Bursitis**

Headline

Differential diagnosis of perineal pain in cyclists is relatively broad. Here we report on adventitious bursitis as a novel cause of pain and illustrate the principles of assessing and managing perineal symptoms of mechanical origin. Evaluation includes identification of the underlying extrinsic and intrinsic contributing factors. Management involves addressing these underlying causes which may include saddle selection, bike fit and reducing excessive movement of the pelvis on the saddle via improving the musculoskeletal capabilities of the cyclist.

Aim

This report outlines the differential diagnosis and management considerations for a common cycling complaint, perineal pain, in the context of a novel condition not previously reported in the literature.

Design

Case report.

Introduction

Differential diagnosis of perineal pain in cyclists includes nerve damage (pudendal neuropathy), and skin lesions (saddle sores) which may or may not be associated with infection (folliculitis, furunculitis). Skin lesions may progress to perinodular induration which is a fibrous mass or nodule in the perineum. All pathologies are thought to be related to excessive compression and friction at the rider-saddle interface (1). In this report a case involving a recreational cyclist with a novel cause of saddle pain is presented.

Case Description

A 25yro recreational female road cyclist (approximately 100km per week) presented with a history of left ischial pain related to cycling. She reported a gradual onset of pain one month prior to presentation, that became significantly worse after two weeks of continued cycling and worse again in the week prior to presentation. At the time of presentation, cycling for one minute was too painful. She noted no redness but a painful palpable lump in the region of the ischial tuberosity. She reports that her pain began as she increased her cycling volume prior to initial consultation in preparation for a triathlon. Periodic bilateral flank (low back) pain was experienced prior to this episode but was not troublesome at initial consult.

Examination revealed a small, tender cyst or ganglion-like structure palpable on the inner edge of the left ischial tuberosity. The skin was of normal appearance. An adventitious bursa or fibrous nodule was suspected. She was referred for an ultrasound scan which demonstrated an adventitious bursa measuring 20 x 7 x 11mm in size overlying the origin of adductor magnus.

Management of this condition consisted of three primary components, with a specific focus on cycling since this was the only activity associated with the patient's pain:

1. A hydrocortisone / local anaesthetic bursal injection and complete rest from cycling for two weeks.
2. Evaluation of cycling posture and mechanics via a bike fit (i.e. evaluation of extrinsic causes).
3. Evaluation of the musculoskeletal capabilities of the athlete (i.e. intrinsic causes), particularly with respect to any abnormal postures or motion noted during the bike fit.

1. Injection & Rest

Initial management included a hydrocortisone / local anaesthetic injection followed by two weeks of rest from cycling. After this time the palpable lump was no longer present nor tender.

2. Bike fit & biomechanical evaluation (extrinsic causes)

A bike fit was performed as described in detail elsewhere (2). The primary feature noted during the bike fit was exaggerated lateral rocking of the pelvis when pedalling (Figure 1), which was worse on the left side (probable cause of increased perineal friction). Contributing factors to pelvic rocking included a saddle which had a structural defect (bent down on the left side) and an excessive downward saddle tilt (14mm nose down), which was judged to be causing the athlete to slide forward onto the nose of the saddle, likely increasing perineal compression along with increased weight bearing on the hands. Despite appropriate adjustment of the bicycle to fit the athlete and replacing the saddle with a new and more ergonomically sound design, excessive pelvic rocking was still present. This necessitated a more thorough evaluation of the musculoskeletal capabilities of the rider.

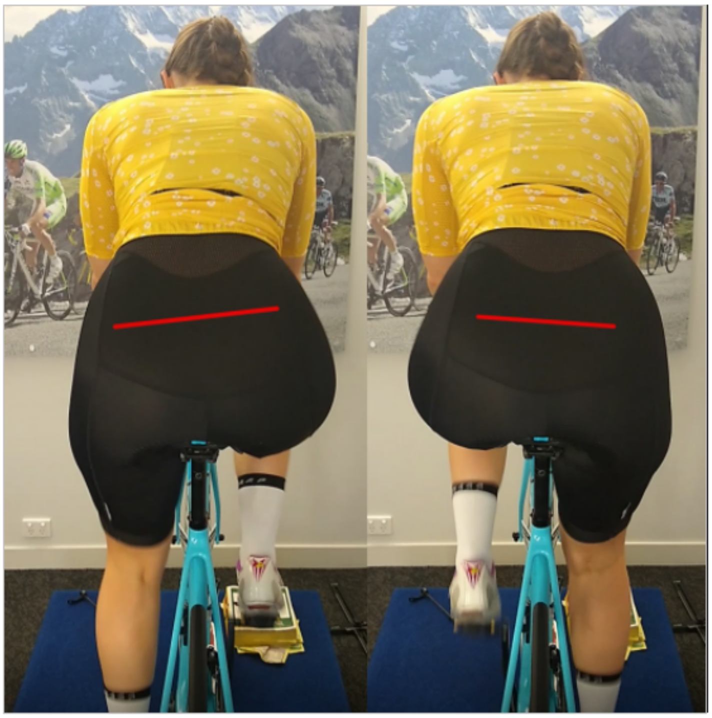
3. Musculoskeletal assessment (intrinsic causes)

Assessment of muscle function demonstrated muscle weakness in the gluteus medius and maximus during the repeated single leg squat test (3) with an inability to maintain a level pelvis on even a single repetition. Reduced muscle length on the Thomas Test in the iliopsoas muscles with associated palpable hypertonus, and hypertonus and tenderness in the quadratus lumborum muscles, were noted. There was an inability to dissociate hip flexion-extension from lumbopelvic motion. Low load abdominal muscle activation was possible but unable to be maintained when moving the lower limb, despite a high load test (the side plank as described by Evans and colleagues

(4)) being considered normal (>90 seconds isometric hold). In line with these observations, palpation of the anterolateral abdominal wall during the bike fit confirmed an absence of muscle tone when pedalling. It was judged that these musculoskeletal deficiencies were the primary cause of the pelvic rocking present when cycling, resulting in excessive friction of the perineum on the saddle and likely overload of the quadratus muscles as they attempted to stabilise the pelvis (a potential cause of flank pain reported by the cyclist prior to initial consultation).

A rehabilitation program was commenced approximately two weeks after the initial injection, with exercises matched to the load the cyclists' muscles could control. The goal was prevention of recurrence by reducing friction (motion) at the saddle / rider interface. A key focus was on muscle endurance (high repetitions) as a road cyclist needs to activate the torso musculature at a low level to prevent unwanted rocking of the pelvis and spine for hours at a time. Another emphasis was being able to breathe freely during all exercises rather than using a breath-holding strategy. The purpose of maintaining respiratory control was to ensure that the diaphragm was available for the ventilatory demand of cycling rather than being recruited for trunk stability (5).

Initial rehabilitation aimed to achieve appropriate muscle activation in the gluteals and abdominal muscles whilst learning to move the hip independently from the pelvis and lumbar spine ("dissociation" of hip motion from lumbopelvic motion). Using the gluteal muscles as an example, rehabilitation began with low loads (such as lifting the weight of the leg for gluteus maximus) since the patient was unable to handle higher loads (such as single limb stance) in testing. The low load phase of rehab focussed on daily exercises and gradually increasing the number of repetitions per set (to increase capacity or endurance). Once enough consecutive repetitions at low load levels were accumulated without compromising movement quality (indicating a level of motor learning and muscle endurance had been achieved), load was progressed to a medium level. For example, for gluteus maximus this involved drills in two-legged stance. Finally, higher load exercises (for example, full body weight in single leg stance for the gluteals) were introduced whilst maintaining stability of the lumbopelvic complex and excellent activation of the gluteals and abdominals.



A. B.

Fig. 1. Comparison of pelvic lateral rocking at left and right bottom dead centre of the pedal stroke. Line indicates the level of the posterior superior iliac spines. Note that in (A) there is a larger pelvic drop at left bottom dead centre, and that the level of lateral pelvic tilt is large in both (A) and (B).

Outcome

The rider was able to resume cycling in a reduced capacity after 3 weeks (initially 30 minutes per ride) and was able to gradually progress in a symptom-free manner over several weeks, despite not having altered the motor pattern on the bicycle. She was encouraged to practice activation of the deep abdominal muscles whilst riding to assist in transfer of the off-the-bike exercise to cycling, and to enhance he endurance capacity of these muscles.

Over a six-month period, the athlete was able to gradually improve strength and move her lower limbs whilst maintaining a stable pelvis under a variety of load and postural conditions with maintenance of normal respiration. The tone and tenderness in the quadratus and iliopsoas muscles reduced over this time. To monitor the transfer of these motor changes in cycling, the cyclist took serial videos in training which showed gradual improvement in her ability to remain stable on the saddle for increasing durations of time without recurrence of pain (for example, lateral rocking was controlled for one hour prior to fatigue and return of excessive rocking, and over time controlled for two hours and so on). There was no symptom recurrence, including no low back pain, at 4-year follow-up.

Practical applications

- This case study illustrates a process that might be used in the assessment of a range of cycling complaints, namely differential diagnosis of the causes (extrinsic causes such as bike fit and component selection versus intrinsic musculoskeletal causes).
- Management can be specifically directed to the extrinsic or intrinsic causes present, with a key goal being prevention of recurrence.

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