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CASE REPORT

Hip and groin pain in a cyclist resolved after performing a *pelvic floor fascial mobilization*[☆]

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Received 26 October 2015; received in revised form 6 March 2016; accepted 20 March 2016

KEYWORDS

Pelvic floor fascial mobilization;
Hip and groin pain;
Pelvic floor;
Fascial manipulation

Summary Pelvic floor muscle assessment in situations of hip/groin pain in both male and female patients can be a key element in treatment success. We present herein, a 32 year old male professional cyclist, exhibiting right hip and groin pain during cycling and prolonged sitting. The pain commenced after the patient suffered a right hip severe contusion in 2013 causing a tear in the tensor fascia lata and gluteus medius muscle. The patient did not complain of pelvic floor dysfunctions. After receiving several series of conventional physical therapy for the hip/groin pain, the patient experienced partial pain relief and slight improvement of hip range of motion. His pelvic floor muscles and fascial involvement were subsequently assessed. Two sessions of *Pelvic Floor Fascial Mobilization (PFFM)* were performed and the patient fully recovered. The authors suggest that *PFFM*, a novel fascial-oriented manual therapy of the pelvic floor approach, can be used for both hip/groin and pelvic floor pain or dysfunction.

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Introduction

The pelvic floor muscles and fascia are involved in multiple functions such as continence, pelvic organ support, sexual function, respiration and containment of intra-abdominal pressure, and also with limited range of motion of the hip joint and projected pain to the lower limbs (Carriere and Markel-Feldt, 2006; Chaitow and Jones, 2012; Wise and Anderson, 2012; Verral et al., 2007). When treating dysfunctions of the hip and groin areas, pelvic floor muscle

[☆] A short version of this case report was presented as a poster at the Fourth International Fascia Research Congress, Washington DC, USA, September 2015 and was accepted for presentation as a poster in the coming Interdisciplinary World Congress on Low Back & Pelvic Girdle Pain, taking place in Singapore on October 31–November 3, 2016.

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involvement is almost never considered (Giordano, 2014; Martin et al., 2010), while literature mentions mainly obturator internus muscle as a source for chronic hip pain (Rohde and Ziran, 2003; Godfroid and Stalens, 1995).

Currently, most physical therapy treatments for hip/groin or pelvic floor dysfunctions utilize different types of exercises (Machotka et al., 2009; Serner et al., 2015; Almeida et al., 2013). Many studies have assessed chronic hip/groin pain, however, very few have reported on the pelvic floor muscles or fascia, except for those who treat and specialize in pelvic floor treatment (Lee and Lee, 2011; Panayi, 2010; Podshun et al., 2013).

The aim of this case report was to demonstrate the importance of the pelvic floor myofascial assessment in cases of hip/groin pain and to propose *Pelvic Floor Fascial Mobilization (PFFM)* as an optional treatment technique for both hip/groin and pelvic floor pain or dysfunction. Herein, the PFFM technique was used in treating chronic pain in the hip and groin area unresolved by common physical therapy methods. Since PFFM was developed by S.N., no other written documentation about this specific method by other published authors is available. While similar methods exist, PFFM is the only method that ties in with the principals of Stecco's fascial manipulation[®] (Stecco, 2004; Day et al., 2012; Stecco and Stecco, 2009)

Case presentation

A 32 year old male professional cyclist presented with a complaint of pain in the right hip and groin during cycling and prolonged sitting. The pain commenced after he had experienced a right hip severe contusion and tear of the tensor fascia lata and gluteus medius muscles in 2013. The patient did not complain of any pelvic floor dysfunctions.

Medical history

In the past, the patient had suffered multiple injuries to the lower limbs due to cycling crashes involving both knees and hips including: a left hip contusion (2012), a right anterior cruciate ligament reconstruction (2003) and a left meniscal tear and repair (1997). The patient received several series of conventional physical therapy (10 treatment sessions) including myofascial release, dry needling, mobilizations of the hip joint, stretching and therapeutic exercises, with partial pain relief and slight improvement of the hip range of motion. Since no amelioration in hip pain appeared after conventional physical therapy, and since patient mentioned within his complaints sensation of "inner hip pain", he was therefore referred to pelvic floor physical therapy clinic by his physical therapist with a recommendation for evaluation.

Methods

PFFM was developed (by S.N.) to evaluate and treat restrictions in fascial movement both internally (per vagina and per anus) and externally in the pelvic floor area. PFFM is a manual therapy technique associated with the sequences and movement planes of Stecco's Fascial Manipulation[®] technique relying on similar main principles:

Myofascial units, body segments, centers of perception, centers of coordination, centers of fusion, movement plans, myofascial sequences and the connection between specific points and a given dysfunction (Stecco, 2004; Stecco and Stecco, 2009).

According to Stecco's Fascial Manipulation Method[®] (Day et al., 2012; Stecco, 2004), the human body is divided into 14 segments. Each segment comprises joint(s), segments of muscles that move the joint and the fascia surrounding these muscles. The segments are known by their Latin abbreviations i.e. CP for Caput = Head, CL for Collum = neck, TH for Thorax, PV for Pelvis etc. Each segment contains six myofascial units (MFU) regulating their movements on three-dimensional planes: sagittal, horizontal and frontal. Each MFU is composed of mono-articular and biarticular muscle fibers and together with the joint, the muscle nerve components and the deep fascia, with each of its sub-components (epimysium, perimysium and endomysium), act as binding elements. The MFUs direct the movement on a specific plane.

The name of each MFU is identified by the initials of the movement it performs and the initials of the body segment it moves. Movement directions are also abbreviated in Latin, i.e., for the sagittal plane: AN = Ante, RE = Retro (representing forward and backward movements, i.e. flexion/extension of the back); for the frontal plane: ME = Medio and LA = Latero (representing abduction and adduction movements) and for the horizontal plane: IR = Intra and ER = Extra (representing rotational movements). For instance, a knee extension would be abbreviated as AN-GE = ante-genu.

Center of Coordination (CC) is defined as a focal point located in the deep fascia (of every MFU) where vector forces of the muscles fibers (in the MFU) converge during a precise movement. Center of Perception (CP) is the defined area (within the MFU) where distribution of symptoms (i.e. pain) is perceived (by the patient).

The biarticular muscle fibers of each MFU link the uni-directional MFUs to form a myofascial sequence. Each myofascial sequence synchronizes the movement of several segments in one direction on one plane. Sequences on the same spatial planes are considered reciprocal antagonists.

Centers of Fusion (CF) are the converging points of the vectors for every two adjacent MFUs and are responsible for coordinating the movements in intermediate directions between the two planes (i.e. AN-LA-CX represents the movement direction of the hip between the two planes of flexion and abduction) CFs are principally located over the retinacula surrounding the joints (Day et al., 2012; Stecco, 2004; Stecco and Stecco, 2009).

Since the key fascial areas (CCs) are different than the areas where pain or symptoms are perceived (CPs), treatment is applied at a distance away from the painful area which is advantageous in cases of acute phase or trauma.

Areas of the most common fascial densifications in the pelvic floor region were found empirically, based on the evaluation of dozens of patients. These fascial densification areas were placed over the specific muscles and identified using the terms introduced by Luigi Stecco in his method. According to the PFFM technique, the pelvic floor segment is called "Genitalia" (GX) (originally from Genitalia + Coxa). The centers of coordination (CC's) and

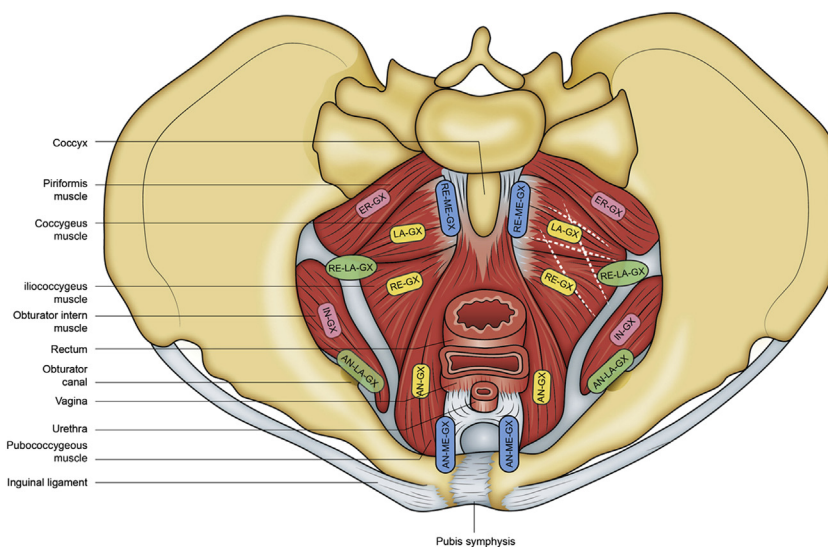


Figure 2 Anatomical map of center of coordination and centers of fusion of a female pelvic floor (GX body segment).



Figure 3 Hip internal rotation assessment. a. Left internal rotation before treatment. b. Right internal rotation before treatment. c. Left internal rotation after treatment. d. Right internal rotation after treatment.

(Fig. 3b), an impaired contraction of the pelvic floor muscles during active contractions as well as an anticipatory reaction when intra-abdominal pressure increased upon coughing was visually observed. Palpation revealed a high

resting tone and tenderness of the right obturator internus (IN-GX RT***), right and left Iliococcygeus (RE-GX RT***, RE-GX LT**) and a mild elevated resting tone (with no pain) of the left obturator internus (IN-GX LT*).

Intervention

Two treatment sessions (25 min each, 7 days apart) included internal pelvic floor fascial mobilization over three fascial restricted points (IN-GX RT, RE-GX RT, RE-GX LT) and 4 "external" fascial restricted points (ER-CX RT, RE-LA-CX RT, LA-CX RT, RE-CX LT, according to the Stecco Fascial Manipulation method (Day et al., 2012; Stecco, 2004). The intervention was performed by a physical therapist specializing in pelvic floor rehabilitation with 15 years of experience (S.N.), who is also a certified fascial manipulation practitioner (Level 3) and the developer of PFFM.

In addition, the patient was asked to perform hip stabilizing exercises, including one-legged squats, step-up/step-down, lunges as conventional recommended exercise for hip (Lee and Lee, 2011). Patient was taught the exercises by the PT and performed them under her supervision to a satisfactory level. Patient was asked to continue his training without feeling aggravation and/or pain.

Follow-up examination

After the first session an immediate significant difference was observed in the hip joint range of motion (60°) (Fig. 3d) and the pelvic floor muscle function in both active recruitment and anticipated contraction. Pain in sitting dramatically decreased (NPRS 0/10), and for cycling also significantly decreased (NPRS 3/10).

After two sessions, treatment was terminated because the patient became pain-free (sitting and cycling NPRS 0/10), with a normal range of hip internal rotation. He returned to his usual sports and work activity. In a follow up phone call that was one month after termination of treatment the patient was still pain free.

Discussion

According to our clinical experience and in the published literature (Panayi, 2010; Podschun et al., 2013; Verrall et al., 2007), reporting on hip/groin pain cases, no specific complaints describing pelvic-floor functions (i.e. continence, sexual or pain) have been found; however, in many of these cases, pelvic floor muscle dysfunction was found.

In this case study, we have seen a patient presenting hip pain and no symptoms related to pelvic floor (i.e. incontinence, erectile dysfunction etc.). After initial evaluation, PT recognized densification in several pelvic floor structures, that resulted in limited hip range of motion and impaired contraction of pelvic floor muscles.

Treatment included two treatment sessions and a month of exercises patient performed. Pain levels decreased to 0/10 and remained in that level for another month.

Currently, by using the PFFM approach, dozens of patients are being successfully treated for groin/hip/pelvic/pelvic floor pain and dysfunction and peri-partum cases that included hip and groin pain during pregnancy and after birth.

PFFM also developed a precise map of fascial densifications in the pelvic floor area (Figures 1 and 2), thus allowing

a more precise re-assessment of the patient and better communication between the therapists (Weir, 2015).

The main innovation in PFFM technique comprised by both the definition of pelvic floor CF's (which are not located on muscle bellies like CC's), and the suggestion for a different manual strategy for treating these points, which involves combined movement of "glided friction" along with hip movement in order to regain the gliding movement of the tissues. This gliding motion utilized in PFFM is more well suited for treating densification in these areas.

Since patients presenting hip/groin pain are usually assessed by orthopedic or sports-specializing physical therapists, one should be aware and recognize the possible necessity of referring the patient to a pelvic-floor therapy specialist. The authors are aware of the limitations of a single case report, but believe that the significant and rapid changes in the pelvic floor tone, pain levels and hip range of motion merit further research. Results of this case report as well as of many other successful treatments (unpublished data) provides us with a basis to suggest that PFFM can be used as an effective tool in treating musculoskeletal pain and dysfunction in the pelvis, hip or lower limbs. Controlled studies are needed to evaluate the effectiveness of this method performed in different conditions.

Funding

None.

Conflicts of interest

None.

Acknowledgments

I would like to take this opportunity to express my deep gratitude to the Stecco family for their professional and personal support as I developed the *Fascial Mobilization for Pelvic Floor* method, continuing the organized and substantial lines dictated by the Stecco method.

The author would like to thank Mrs. Phyllis Curchack Kornspan for her editorial assistance.

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