Schröder et al. J Musculoskelet Disord Treat 2016, 2:012
Volume 2 | Issue 2

Journal of
Musculoskeletal Disorders and Treatment

Case Series: Open Access

Outcomes of Non-operative Management of Deep Gluteal Syndrome - A Case Series of Six Patients

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Abstract

Introduction: An increased understanding of posterior hip anatomy and biomechanics has led to advances in the diagnosis and management of Deep Gluteal Syndrome (DGS). Currently, there is limited information detailing the successful conservative management of DGS.

Material & methods: The detailed history, physical examination, imaging, diagnostic testing, and physical therapy of six subjects diagnosed with deep gluteal syndrome were retrospectively analyzed and reviewed. Conservative treatment included neuropsychiatry management, intra-muscular injections through CT guidance, intra-pelvic assessment/therapy, and a home exercise program. The Visual analog scale (VAS), modified Harris Hip Score (mHHS) was utilized to measure outcomes of the non-operative treatment.

Results: Improvement was obtained in (100%) of the subjects with the combination of home exercises program, intra-muscular CT - Guided injection, physical therapy, and neuropsychiatric counseling. Average VAS scores decreased from 7.16 to 1.6, and average mHHS scores increased from 60.01 to 74. The average time in conservative therapy was 20 weeks (range: 6-36).

Conclusion: The conservative management of DGS was successful with positive outcomes achieved through a multi-professional approach accessing and treating DGS with a combination of physical, mental and social factors.

Introduction

An increased understanding of posterior hip anatomy and biomechanics has led to advances in the diagnosis and surgical management of Deep Gluteal Syndrome (DGS) [1-3]. Currently, non-operative interventions for DGS are directed to the piriformis muscle, the most known cause of DGS. Positive outcomes have been achieved through utilization of intra-muscular injections associated to physical therapy strategies such as electro-thermo, soft tissue length-tension, and movement reeducation [4-7]. DGS is a condition involved with musculoskeletal, psychological and social factors. A multiprofissional approach may be necessary to manage DGS addressing these factors.

DGS is a condition which patients frequently present with posterior hip pain associated to inability to sit for 30 minutes, radicular pain of the lower back or hip, and paresthesia's of the affected leg. The feeling of motor weakness can also present during standing activities [2,3,8,9]. Due to the anatomical variability surrounding the sciatic nerve, the etiology of the DGS can result from multiple structures such as bone, fibrous scar bands, and muscles [10-12]. DGS can coexist with and may be misinterpreted by intra-articular hip pathologies, and intra/extra-pelvic nerves entrapments, which also may acts an isolated potential causes of posterior hip pain [4, 8,13]. Due to the difficult diagnosis, DGS commonly are associated to a chronic presentation with psychological and social disturbances. A comprehensive history, physical examination and imaging diagnosis are performed to precise the source of posterior hip pain, and rule out similar misinterpreted conditions [8].

The non-operative treatment of DGS is not well documented in the literature. The complexity of DGS, involving musculoskeletal, psychological and social components may require a multi-professional understanding and treatment strategy. The main objective in this study is to demonstrate the non-operative management of DGS through a case series of six subjects by a multiple approach to treatment.

Methods

This is a retrospective study that was previously approved by the Institutional Board Review (IRB) prior to data collection and meets the HIPPA requirements of Baylor University Medical Center.

Six subjects presenting with non-discogenic posterior hip pain for three months or more were included in the present study. Exclusion criteria were positive clinical or imaging findings for lumbar pathology (physical examination, lumbar spine radiographs, lumbar spine MRI) or previous surgical treatment for posterior hip pathology.

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Citation: Schröder RG, Martin RRL, Bobb VL, Khoury AN, Palmer IJ, et al. (2016) Outcomes of Non-operative Management of Deep Gluteal Syndrome - A Case Series of Six Patients. J Musculoskelet Disord Treat 2:012

Received: February 15, 2016: **Accepted:** April 25, 2016: **Published:** April 27, 2016

Diagnosis

A detailed history of the complaint was documented including duration of the symptoms and the presence or absence of trauma. The physical examination including an assessment of the osseous, capsulolabral, musculotendinous, neurovascular structures, and kinematic chain of the hip joint was performed by senior author (HM) and repeated by the physical therapist [14]. The seated piriformis stretch and active piriformis test were major, providing specificity and sensitivity to confirm DGS [8]. Palpation of the gluteal structures using the ischial tuberosity as reference helped to distinguish sources of pain. From lateral to medial, the sensation of pain at the sciatic notch characterizes the piriformis muscle; pain lateral to the ischium may represents ischial-tunnel syndrome or ischiofemoral impingement; and medial to the ischium pudendal nerve entrapment [15]. MRI imaging and diagnostic injection testing and history physical examination comprised the clinical diagnosis of DGS. Any history of previous pelvic surgery and urogynecological dysfunction was identified. Pelvic Floor Manual Muscle Test (PFMMT) [16,17] was utilized to evaluate the functioning and involvement of pelvic floor muscles.

Clinical data including: age, diagnosis, relevant history, surgical history and time from injury to begin physical therapy are given in Table 1.

Patient Management

Computed-Tomography (CT)-guided injections containing anesthetic, steroid and anti-inflammatory solutions (Marcaine, Kenalog, Sensorcaine, Depo-Medrol) were administered at the structure under investigation (piriformis muscle, obturator internus muscle, pudendal nerve, obturator nerve). Results of injection were utilized as treatment and/or differential diagnosis.

The neuropsychological assessment consisted of: Screener and Opioid Assessment for Patients With Pain (SOAPP-R); The Pain Catastrophizing Scale; Patient Health Questionnaire Somatic, Anxiety, and Depressive Symptom Scales (PHQ – SADSS); Minnesota Multiphasic Personality Inventory (MMPI-2-RF). These questionnaires evaluate the levels of anxiety, depression, drug abuse (opioids), and pain effects on personal behavior, personality and types of psychopathologies. Treatment strategies consisted of: psychological counseling, biofeedback therapy, and occupational

Table 1: Clinical and demographical data of the patients included in the study.

Pct/Gender	Age	Time of symptoms	Clinical Diagnosis/Image Diagnosis	Relevant History	Past Surgery
1/F	49	12 months	- Bilateral sciatic and Pudendal nerve entrapment	Low back pain; labral tear; Urinary dysfunction;	2 Cesareans
2/F	44	60 months	- Left sciatic and pudendal nerve entrapment - MRI – Cyst in the left ovarian. Multiple bilateral ovarian follicles.	Depression/anxiety;	
3/F	37	12 months	- Right sciatic and pudendal nerve entrapment	Constipation; Labral tear; hamstring partial avulsion; antero-inferior acetabular insufficiency; low back pain; prolapsed uterus.	Hip arthroscopy
4/F	21	24 months	-Right sciatic Nerve entrapment - MRI – venous vascular entrapment, ovarian hypertrophy/endometric mass.	Right ovary - vascular entrapment, endometric mass. Low back pain; Depression/anxiety; FAI, Hip Dysplasia.	
5/F	54	7 months	- Sciatic and pudendal nerve entrapment.	Constipation; low back pain; labral repair; femoroplasty; caplusar repair; teres debridment.	Hip arthroscopy
6/F	40	6 months	- Peritrochanteric sciatic impingement. - Increased Femoral Version - MRI - Tiny subchondral cyst left sacroiliac joint. Acute tear of the ligament teres; intrapelvic adhesions with secondary venous engorgement.	Low back pain; laparoscopy (endometriosis); FAI (cam); tear of the ligament teres; Strain of the Hamstring muscle; Advanced osteoarthritis in the SI joint; High sacral slope.	Laparoscopy (endometriosis) Cesarean

Figure 1: Home Exercises Program. (**a**) Hip circumduction (sciatic nerve mobilization): Oscillatory hip/sciatic nerve mobilization utilizing the greater trochanter to mobilize the SN into the deep gluteal space. The motion comprises: 45° flexion + max abduction and external rotation followed by 90° hip flexion, 15° adduction + hip extension; (**b**) Deep Rotators muscle stretch: Affected leg crossed with the knee being pulled towards the contralateral shoulder, stretching sensation at the gluteal region. The duration of the stretch should not be longer than 20 seconds; (**c**) Neural Mobilization (neural sliders): Rhythmical motion of the superior and inferior segments. Combination of Head/trunk flexion with plantar flexion, followed by trunk/head extension with dorsal flexion.

therapy for pain management, physical activities using tai chi, aquatic therapy and relaxation strategies.

The physical therapy approach included patient education strategies, muscle strengthening, stretching, neural mobilizations, manual therapy (soft tissue length-tension rebalancing, articular manipulations), lumbo-pelvic stabilization, muscular rebalance and proprioception training. These interventions were also directed at pelvic floor dysfunctions when appropriate.

Each subject received a handout containing a home exercises program including: piriformis muscle stretch, neural mobilization (sliders) and hip joint mobilization (Figure 1).

Outcomes of non-operative treatment were assessed by: modified Harris Hip Score (mHHS) [18] and Visual Analog Scale (VAS).

Results

All six subjects were female with an average age of 40.83 years (range 21-54 years). The duration of symptoms was an average of 20.16 months (range 6-60 months). Improvement was obtained in all subjects (100%) with the combination of home exercises program, intra-muscular CT - Guided injection, physical therapy, and neuropsychiatric counseling. Physical therapy and intra-pelvic evaluation/treatment were administered in 100% of the subjects. Only one subject did not receive injection as testing/treatment. Neuropsychiatric evaluation was referred for 100% of the subjects, with three subjects (50%) requiring neuropsychiatric treatment.

The average time of treatment was 20 weeks (range 6-36 weeks). Average VAS scores decreased from 7.16 (range 5-10) to 2.4 (range 0-3) and mHHS scores increased in average from 60.0 (range 36.3-93.9) to 74 (range 62.7-100) (Table 2). A table summarizing the details of physical therapy treatment, techniques and follow-up visits are given in Appendix A.

Discussion

The current study demonstrated a summary of a non-operative treatment strategy for DGS. The multidisciplinary approach addressed the main aspects involved with DGS utilizing a home exercise program, intramuscular injections, neuropsychological intervention, and supervised physical therapy.

Home exercises program

A group of complementary exercises utilized were designed to improve the function of the pelvic trochanteric muscles, sciatic nerve mobility, and hip range of motion. The piriformis muscle stretch was utilized to reduce contracture at the pelvic-trochanteric muscles, a mechanism that can contributes to increased gluteal pain [7]. Neural mobilizations exercises were utilized to increase the sciatic nerve range of motion and improve sensory and neural pain levels [19-21]. In case of neural tension and pain during neural mobilization exercises, the patient was instructed to release of sciatic nerve strain performing the exercise with the hip abduction [22]. Hip circumduction enhance the mobility of the sciatic nerve within the peritrochanteric space and help control muscular spasm/pain [23]. The clinicians involved in the treatment emphasized the importance of the home exercise program.

Intra-muscular CT-guided injections

Six subjects received intra-muscular CT-Guidance injection of anesthetic, steroid and anti-inflammatory solutions as a diagnostic tool and treatment. Three subjects required more than one intra-muscular injection to achieve improvement. One subject received piriformis and obturator externus muscles injections at different periods. In this case, the injection at the obturator externus muscle demonstrated better results than the piriformis muscle injection. This specific case may indicate the entrapment of the obturator nerve simulating symptoms of DGS [4,24]. One subject in the current study improved without the necessity of injections.

The utilization of intra-muscular injections combined with anesthetic, steroid solutions has become a valuable alternative for the treatment of syndromes related to excessive muscle contraction [5,25]. Fishman *et al.* demonstrated that 79% of patients diagnosed with piriformis syndrome improved symptoms by 50% at 10.2 months follow-up after physical therapy and injections (solution containing 1.5 mL of 2% lidocaine and 0.5 mL containing 20 mg triamcinolone acetonide) [5]. A mixed outcomes result has left the indications for intra-muscular injections as a treatment source. The necessity of multiple injections is recommended by the many clinicians literature when the relief of symptoms continues for at least three weeks [25-27]. Factors related to positive outcomes are proper patient selection, identification of etiology, anatomical variations and psychological and pathomechanic variations [28-30].

Neuropsychiatric assessment

Three subjects reported a history of depression and anxiety. One subject was referred to a neuropsychiatric evaluation after recurrence of symptoms. Common findings in this group were the chronicity of DGS and urogynecological dysfunctions, such as pain during intercourse, urinary incontinence, prolapsed uterus and endometriosis. Subjects with chronic pelvic pain commonly exhibit signs of anxiety and depression associated with the lack of definitive diagnosis, absence of local pathology, and a decreased quality of life scale [31,32]. A very few studies shows the effectiveness of an isolated neuropsychiatric treatment for chronic pelvic pain. However, cognitive therapy with a physical approach tends to produce good results in subjects diagnosed with chronic pain conditions [28,29]. Three subjects received a psychological evaluation with treatment. Out of these, two subjects obtained successful outcomes. Deep gluteal pain can affect personal and social life especially in those with chronic symptoms. Studies are needed to better understand the psychological influences of DGS and how these can be managed with psychological counseling.

Physical therapy intervention

The most common movement impairment was related to muscle weakness and poor neuromuscular control between lower extremities and the lumbopelvic segment. The physical therapy strategy utilized in this case series was designed to re-establish normal patterns of hip joint function and its biomechanical link with the lumbopelvic segment.

The first strategy for the physical therapist was an educational training addressing activity of daily living (ADL's). Educational training targeted the reduction of repetitive motions and avoiding repeated positions, such as the seated position with the affected side in constant internal rotation for an extended period of time (Figure 2). These positions may overstretch the external rotators of the hip joint

Table 2: Outcomes of the non-operative treatment.

Sbj	Pre VAS	Pre mHHS	Time in Tt (weeks)	Injection	Intra-Pelvic Assessment/treatment	Psychological treatment	Post VAS	Post mHHS
1	7	56.1	23	Piriformis	Yes	No	1	65.1
2	5	93.9	6	None	Yes	Yes	0	70.4
3	7	36.3	23	Piriformis and Obt. Int	Yes	Yes	4	62.7
4	6	70.4	20	Piriformis	Yes	Yes	0	100.1
5	8	63.8	36	Piriformis	Yes	No	3	66
6	10	39.6	12	Piriformis/SI joint	Yes	No	2	81.4

VAS - Visual Analysis Scale; mHHS - Modified Harris Hip Score; Tt - Treatment

[33,34], leading to weakness and lack of neuromuscular activation and stabilization of the lower limb during functional tasks [30]. Another complication related to these positions could be an increased strain of the sciatic nerve as recently observed in a biomechanical cadaveric study [22].

Myofascial therapy, muscular stretch and joint mobilizations were also utilized to decrease pain and re-establish proper muscular length and muscular activation. Neural mobilizations exercises were utilized to restore the ability of the nerve to tolerate compressive, tensile and frictional loads experienced during the normal kinematics of the hip joint [35-37]. The rehabilitation of the hip muscles and kinematic chain represents a key factor to succeed conservative management of DGS. A weakness of the gluteal muscles has been related to stiffness of the tensor fascia latae, and positioning the lower extremity in internal rotation. This mechanism may contributes to overstretching of the deep gluteal rotators [38-40] The strengthening of the hip abductors and external rotators has produced positive outcomes in improving lower extremity balance [30,41,42]. Muscular strengthening of the hip deep external rotators, abductors and extensors was associated to proprioceptive activities in order to reestablish the correct motion of the lower extremities.

Figure 2: Positions that patients with DGS should avoid during ADL's. (**a**) Crossed legs; (**b**) Hips internally rotated.

Five subjects presented with low back pain. Postural dysfunction plays a critical role in the muscular activation of the lumbopelvic stabilizators, alignment and lower extremity function [43-45]. Decreasing low back pain with lumbopelvic stabilization can improved the neuromuscular control and pain associated movement syndromes of the lower extremities [46]. Postural exercises and lumbopelvic muscle strengthening were designed to improve mobility and stability of the upper body in order to allow a better central stabilization for the lower extremities motion.

All subjects diagnosed with DGS were evaluated and treated after PFMMT. Four subjects showed positive findings of pudendal nerve entrapment with signals of tenderness or weakness of the pelvic floor muscles and tensions in the sacro-spinal and sacrotuberous ligaments. Episodes of urinary incontinence, pain during intercourse, history of pelvic surgery, endometriosis and ovarian cyst were also found. One subject reported a poor outcome with pelvic floor therapy. This subject ultimately achieved a positive outcome with a piriformis injection along with physical therapy approach. Dysfunctional pelvic floor musculature may lead to the recruitment of nearby global muscles such as the deep gluteal muscles to compensate for a weak pelvic floor and abdominal musculature [16,17,47]. The piriformis and obturator muscles perform a dual function that involves the hip joint stabilization, and making up the pelvic walls as part of the parietal fascia [38]. Pelvic floor therapy was focused on muscle function, enhancing activation of hypo-active muscles and relaxing hyperactive muscles [16,47-49]. A few studies have described the

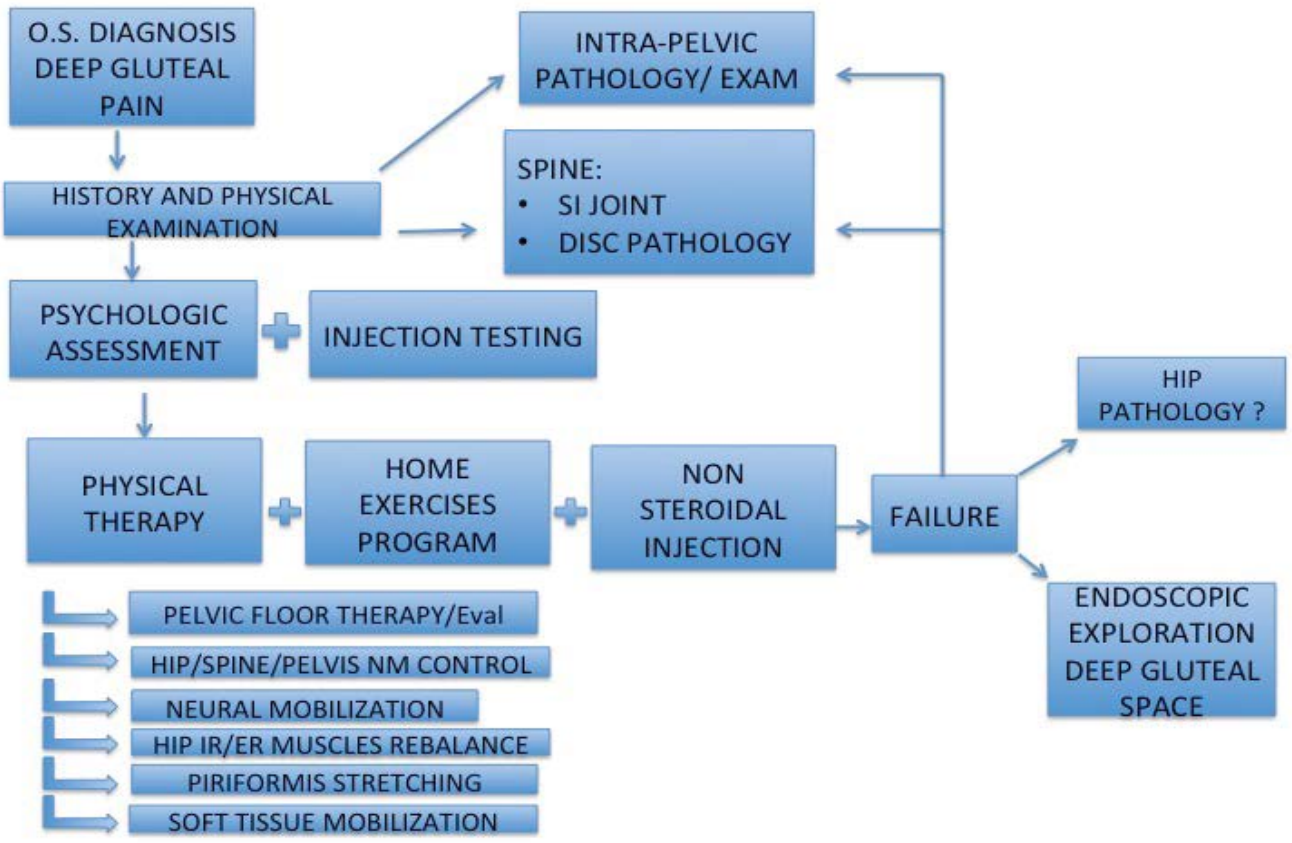

Figure 3: Treatment organogram.

pelvic floor evaluation and treatment of pelvic floor dysfunctions associated with sciatic nerve entrapment in the sub-gluteal space [50,51]. The structural integration of lumbopelvic and hip structures by eliminating compensatory patterns represents another key factor in the conservative management of DGS.

Associated factors with deep gluteal syndrome

Female subjects composed the entire population of the present study. Particular anatomical characteristics of the female pelvis may be related to hormonal changes, pregnancy, structural abnormalities such as hip dysplasia and femoral anteversion. Hip pathologies related with instability [52-55] such as: labral tears, hip dysplasia, and ligament teres injury were constantly found in this present work. The joint incongruence and abnormal motion may overload intra/extra-articular structures to provide joint stability. The neuromuscular control of the hip joint provided by the piriformis, quadratus femoris, obturator/gemelli complex, gluteus minimus and medius is not completely understood. The deep pelvitrochanteric muscles may be overload in case of hip joint instability, consequently causing symptoms of DGS.

To date the present work is the only known that addressed the multi-factorial aspects of DGS. The literature shows positive outcomes through intra-muscular injections and physical therapy, however there is a lack of discussion in the literature about the chronicity of DGS and its negative effects in the psychosocial behavior. Furthermore, the utilization of pelvic floor therapy as a treatment strategy showed an additional diagnostic and treatment approach for those presenting posterior hip pain.

The present work has several limitations. First, the lack of comparison population may make this case series study prone to bias. Second, a small sample of female subjects composed the present study. Third, the treatment flow varying between subjects generated a lack of ability to generalize and compare cause and affect of the approach presented in this study.

Conclusion

The present study demonstrated that positive outcomes were obtained through the combination of home exercises program, supervised therapeutic exercises, pelvic floor therapy, intra-muscular injection, and neuropsychiatric assessment/treatment (Figure 3). The current study establishes a commonality of rehabilitation techniques needed to further the establishment of a standardized approach to the conservative management of DGS.

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Appendix A: Treatment flow addressed for each subject.

Patient	OS Findings and diagnosis	PT Findings	Treatment Course
1	• Posterolateral pain at the buttock area. • Low back pain. • DGS.	• Sitting time = 15-30 min. • Antalgic gait with short stride length, increased pain with long stride. • Sacrotuberous and sacrospinous tenderness at palpation; • Muscle spasm in pelvic floor muscle: Muscle testing (Pelvic Floor /Laycock)- Moderate.	- Patient received two doses of Piriformis injection (95% relief of pain); - Pelvic Floor therapy. - Rehabilitation directed to increase hip/pelvis muscle balance: • Miofascial releases, spine and pelvic mobilizations; • Deep external rotators strengthening; • Proprioceptive/closed kinetic chain activities; • Neuromuscular reeducation; • Therapeutic exercises, stretching/flexibility activities; • Postural exercises to decrease low back pain. • Educational training (HEP); - Patient was discharged referring an increased sitting and walking time (45-59 min), and negative piriformis tests.
2	• Pain on palpation at the sciatic nerve tract distal to the piriformis. • Since 2009 doing therapy for chronic pudendal nerve pain (**Pudendal nerve** is worse with sitting and moving on lifting items) • DGS	• Sitting time = 11-20 min/Walking time = 0 -10 min. • Left hip pain, paresthesia. Poor deep external rotators of the hip and pelvic muscle strength. • Increasing guarding of hip and pelvic floor muscles, poor hip strength, decreased CORE stabilization.	- NPT associated with PT. - Pelvic Floor therapy. - Rehabilitation directed to increase hip/pelvis muscle balance: • Miofascial releases, spine and pelvic mobilizations; • Neural mobilization tech; • Neuromuscular reeducation; • Proprioceptive activities; • Stretching/ flexibility activities; • Educational training (HEP); - Patient discharged from therapy with satisfactory improvement of the hip and pelvis function and pain.
3	• 12 weeks post op (Labral Plasty repair/ femoroplasty). • DGS (Sciatic and pudendal nerve entrapment) • Hip instability in ER + ABD; • Positive Straight Leg rise against resistance.	• Sitting time = 21-30 min/Walking time = 31-40 min. • Low back pain. • Increased rectal and vaginal pressure. • SI pain. • Prolapsed Uterus - Uterus is sitting in nerve	- Pir. Injection. - Pelvic Floor therapy. - Rehabilitation directed to increase hip/pelvis muscle balance: • Miofascial releases, spine and pelvic mobilizations; • Neural mobilization; • Deep external rotators strengthening • Neuromuscular reeducation; • Proprioceptive activities; • Stretching/ flexibility activities; • Educational training (HEP); - After four weeks with improvement of the symptoms, patient complained of bilateral pudendal nerve pain. - Received an Obt. Inj. with excellent progress. - Rehabilitation directed to increase hip/pelvis muscle strength. - Patient referring incontinence issues associated with hypersensitivity at the pudendal nerve. - psychological evaluation. - Obt. Injection. - Decreased sensitivity around pudendal nerve. Patient has less restriction in adductors and gluteal area - Using pessary the patient referred relief of symptoms. - Patient referred relief of symptoms and satisfaction with treatment

4	• Positive piriformis active test and postero/lateral pain. • Numbness and tingling on the lateral aspect of the hip. • Low back pain. • DGS	• Tenderness over the sciatic notch area and sacrotuberous ligament. • No muscle spasm or tightness in the pelvic floor • Good pelvic floor contraction (Do not have any floor dysfunction that would correlate with pain). • Abdomen non-tender to palpation. • Muscle atrophy in the lower extremity. • Posture – patient stand with mild increase in lumbar lordosis, mild increase in anterior pelvic tilt. • Antalgic gait, with unequal iliac crest and shoulder height.	- Pir. injection. - Pelvic Floor therapy. - Rehabilitation directed to increase hip/pelvis muscle balance: • Miofascial releases, spine and pelvic mobilizations; • Neural mobilization; • Deep external rotators strengthening; • Neuromuscular reeducation; • Proprioceptive activities; • Stretching/ flexibility activities; • Educational training (HEP); - Pir. Injection made the pain worse. - Tenderness over her sciatic notch area and sacrotuberous ligament. - Improvement of function in the PFM and hip. - Patient with good improvement in restriction in pelvic floor and hip. - Patient was discharged until remove the endometria mass. - Relief of symptoms and improvement of function.
5	• Lateral posterior pain, 10 weeks post op. (labral plasty repair/ femoroplasty/caplusar repair/ligament teres debridment) • DGS	• Sitting time = 21-30 min/Walking time = 21-30 min. • Decreased hip deep external rotators and pelvic muscle strength. • Increased pelvic floor spasm, decreased pelvic floor contraction. • Pudendal nerve involvement and pelvic floor dysfunction. • Neural tension (posterior neural chain).	- Pir. injection (65% relief of pain). - Pelvic Floor therapy. - Rehabilitation directed to increase hip/pelvis muscle balance: • Miofascial releases, spine and pelvic mobilizations; • Neural mobilization; • Deep external rotators strengthening • Neuromuscular reeducation; • Proprioceptive activities; • Stretching/ flexibility activities; • Educational training (HEP); - Pelvic Floor Therapy did not improve the symptoms. - Pir. injection (90% relief). - Rehabilitation directed to increase hip/pelvis muscle balance. - Patient discharged from therapy with improvement of pain and function.
6	• Greater trochanteric impingement of the Sciatic nerve • Seated Piriformis stretch is positive • DGS.	• Sitting time = unable to sit/Walking time = 5 min • Anterior pelvic tilt; flexed hips and knees; limited lumbar motion; • Piriformis and hamstrings with severe shortness. • Patient was unable to perform the pelvic floor exercises • Pushing or pulling and lifting aggravate the pain. • ROM and functional tests for CORE, SI joint and lumbar are positive for pain. • PFM test with substitution with pelvic tilt associated with involuntary contracture (pain at intercourse). • Limited lumbar ROM.	- Pir. injection (70% relief of the pain in the SI joint). - Pelvic Floor therapy. - Rehabilitation directed to increase hip/pelvis muscle balance: • Miofascial releases, spine and pelvic mobilizations; Neural mobilization; • Deep external rotators strengthening • Neuromuscular reeducation; • Proprioceptive activities; • Stretching/ flexibility activities; • Educational training (HEP); - Patient not experiencing sciatic nerve pain. - Pain after walking activities - SI joints still the worst. - SI joint belt. - Improvement of 60% in the lumbar ROM. - Sitting time = 2 hours/walking time = 15 min. Patient required continued skilled intervention to restore facet function of the lumbar spine and form force closure of the SI joint. The patient showed negative objective signs of lumbar SI dysfunction. - Four weeks of treatment, the patient meets all goals in therapy and was discharged.