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Physiotherapy Management Of Left Hip Femoroacetabular Impingement: A Case Report

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Abstract:

Introduction: Pathologies of the hip joint, groin, thigh and Lumbar spine have frequently been misdiagnosed secondary to the overlapping symptoms of these pathologies. However, with the advent of magnetic resonance and arthrography, coupled with increase clinical suspicion, a more precise and relatively accurate diagnosis is often achieved.

Aim: This paper reviews current studies on the hip pathology with the sole aim of bringing to light recent diagnostic criteria used in diagnosing hip pathologies precisely. It also brings to lime light the evidence based management of hip pathologies and a case a study reflecting the former.

Case Presentation: Mrs. Ab is 62 year old retired civil servant, who suddenly developed heaviness and numbness of the left lower limb (anteriorly), she also complained of deep ache at left lower quadrant of her abdomen. On assessment, she had a MODI AND LEFS score of 40 and 15 respectively. Rehab diagnosis was left hip pathology, left femoroacetabular impingement.

Management And Outcome: Patient was first treated for three physiotherapy sessions, alongside with home programs, and when re-evaluated, Mrs. Ab showed remarkable improvement of both the LEFS and MODI and subsequently re-evaluation at ninth treatment sessions showed further improvement of the above outcome measures.

Discussion: Findings agree with the fact that clinical criteria goes a very long way to detect the structures involved while radiological criteria pinpoints and confirms the diagnosis. Thus both should be used together.

Conclusion: Evidence based assessment and evaluation of conditions using the relevant instruments in physiotherapy leads to a proper mechanical diagnosis.

I. INTRODUCTION

The hip joint serves as a link between the upper body (axial skeleton) and the lower extremities. Consequently, the joint transmits forces from the head, neck, trunk, and upper extremities to the lower extremity, and vice versa. The hip joint is a very stable ball and socket joint surrounded by several powerful muscles which enables the joint to move in a wide range of motion in several physical planes (Campbell, Higgs, Wright, & Leaver-Dunn, 2001). Thus the hip joint is crucial to daily activities and people who engaged in athletic activities are often at greater need for hip stability since they engage in activities that subject their hip to greater than normal axial and torsional forces (Byrne, Mulhall & Baker, 2010). Relative to other joints in the body, the hip joint is unique anatomically, physiologically, and developmentally thus rendering the diagnosis of pathologic conditions a very challenging task. This apparent difficulty in diagnosing the hip pathologies has been less studied in the past relative to other joints. With the use of plain x-ray, patients were often miss-diagnosed.

However, with the advent of magnetic resonance imaging enhanced by arthrography, and increased clinical suspicion there is a better understanding of pathological process of the hip joint leading to a more precise diagnosis and management of the conditions of the hip joint (Byrne, et al., 2010; Mitchell, et al., 2003).

This paper reviews the recent studies on hip pathology with the aim of finding out the diagnostic criteria for the various hip pathologies and their differential diagnosis

especially from pathologies of structures around the hip which may present with similar symptoms and best approach (evidence-based) in the management of hip pathology. This report also describes a case of an adult with left femoroacetabular impingement, its physiotherapy assessment and management.

A. ANATOMY OF THE HIP JOINT

The hip joint is a synovial ball-and-socket joint. We will review the relevant anatomy of the hip under four headings; Bony, ligaments and capsular, neurovascular and muscular anatomy.

a. BONY ANATOMY

The innominate bones (ilium, ischium and pubis) jointly gave rise to a cup-shaped structure called the acetabulum of the hip joint with a lunate-shaped articular surface. Within this articular cartilage is a central area called the inferior acetabular fossa which is a fat filled space housing the synovial covered with fat pad and contains attachment for the ligamentum teres. Hip socket is completed inferiorly by transverse ligament which is inferior to the acetabular fossa. The labrum (a fibrocartilaginous substance) is attached to the rim of the acetabulum. The labrum is involved in the joint development, force distribution, and restriction of the movement of synovial fluid to the outer part of the joint (Ferguson, Bryant, Ganz, & Ito, 2003.)

Labral tears are the most common indicator for hip arthroscopy (Byrd, 2005) and are most likely to occur at the junction of the labrum and articular cartilage (McCarthy, 2001).

The femoral head is buried within a corresponding articular cartilage beyond the acetabular rim. The femoral neck connects the head and shaft of femur and varies in length according to body size. The normal angle made by the neck is 125±5° thereby facilitating free range of motion. Coxa valga and vara results when the angle exceeds 130° and less than 120˚ respectively. Femoral ante-version (slight anterior rotation of femoral neck) is measured as the angle between a medio-lateral line through the knee and a line through the femoral head and shaft and ranges from 15-20˚. The neck is most narrow midway down the neck. Abnormalities in this area and the area adjacent to the articular surface, such as a prominence resulting from a slipped capital femoral epiphysis (SCFE), can upset the normal femoroacetabular articulation leading to Cam type impingement. Conversely, abnormalities of the acetabulum such as osteophyte formation, with increased cover of the femoral head can lead to Pincer type impingement. Dislocation of the hip or fracture of the femoral neck can lead to avascular necrosis of the femoral head of femur consequently; the vasculature of the head of femur has been a subject of research. The head of femur is supplied from three sources; an anastomosis of vessels around the neck (major source of supply), medullary canal and a small vessel within the ligamentum teres (which represents little clinical relevance) (Byrne, et al., 2010).

b. LIGAMENTS AND CAPSULAR ANATOMY

Three major ligaments contribute immensely to the stability of the hip in addition to the stability provided by the configuration of the ball and deep socket. The iliofemoral ligament (the strongest ligament in the body) is lying anterior and has the shape of an inverted Y.

Originates from the ilium and inserts along the inter-tronchanteric line. It is taught in extension and relaxed in flexion keeping the pelvis from tilting posteriorly in upright stance and limiting adduction of the extended lower limb. The pubofemoral ligament lies inferior and posterior to the former and blends to its medial edge; this is the weakest ligament in the hip and contributes to the strength of the anterior-inferior portion of the capsule. The ischiofemoral ligament originates from the ischium and inserts laterally on superior lateral aspect of the femoral neck.

The capsule of the hip joint formed by these ligaments is very strong but there are two weak points, and even though the joint is hardly dislocated, excessive force/trauma can dislocate the hip joint through these weak points. the first anteriorly between the iliofemoral and pubofemoral ligaments, and the second posteriorly between the iliofemoral and ischiofemoral ligaments. The other weak point is located on the posterior aspect between the iliofemoral and ischiofemoral ligaments (Schuenke, Schulte, & Schumacher, 2006). The ligamentum teres already mentioned earlier (which is believed to play a role in joint nutrition)(Gray & Villar, 1997) and zona orbicularis (angular ligament) which encircles the femoral neck complete the ligaments of the hip and both has little contribution to the stability of the joint (Byrne, et al., 2010)

c. NEUROVASCULAR ANATOMY

Articular branches of the obturator nerve supplies the anteriormedial aspects of the joint while the anterior aspect is supplied by branches of the femoral nerve. The posterior-lateral aspect is supplied by branches of superior gluteal nerve, while the articular branches of nerves to quadrates femoris and sciatic nerve supplies the posterior-medial aspect. A full of the innervations of this joint could pave way for a more specific regional nerve block instead of the more common general anaesthesia for hip arthroscopy (Birnbaum, Prescher, Hessler, & Heller, 1997). The key vascular structures in the hip that must be borne in mind during

an anterior approach to the hip joint are from lateral to medial; femoral nerve, artery and vein. These could be located using surface anatomy between the anterior superior iliac spine (ASIS) and the pubic tubercle. However, the iliospoas provides an adequate separation between these vessels and the hip joint. The sciatic nerve passed through the posterior aspect of the joint and enters the thigh between the greater trochanter and the ischium.

d. MUSCULAR ANATOMY

There are about twenty two muscles acting on the hip joint to provide stability and forces required for movement. These muscles have been grouped in various ways. They have been divided into three; the inner hip muscles, outer hip

muscles and muscles belonging to the adductor group (Schuenke, et al, 2006). They have also been divided into superficial and deep group (Byrd J, 2004). They can also be divided based on their actions across the joint (Byrne, et al., 2010). The hip joint as a ball and socket joint permits movement in all directions thus there are hip flexors, extensors, adductors, abductors internal and external rotators. Each group of muscle contribute to movement in different directions. However, the action of these muscle groups on the hip joint are relative to their position to the hip joint, consequently, a change in the axis of rotation of the hip results in a change in the muscles lines of action and this phenomenon is referred to as inversion of muscular action and often results in muscles' secondary actions (Byrne, et al., 2010).

Following the complex nature of the anatomical framework of the hip joint, any alteration in the structures of the joint could lead to joint pain and instability which could pose a big challenge to the clinician. This is compounded by the fact that symptoms resulting from intra-articular hip pathology such as low back pain (LBP) and gluteal pain could be similar to symptoms of pathology of surrounding structures such as spine, pelvis.

B. DIFFERENTIAL DIAGNOSIS OF HIP PATHOLOGY

Hip pain are gradually gaining attention as a major challenge affecting athletes at all competitive levels, the pains are often chronic and possess serious diagnostic challenges (Holmich, 2007). Co morbidity of hip and lumbar spine pathologies is a common occurrence leading to disability (Clohisy, et al., 2009; Devin, McCullough, Morris, Yates, & Kang, 2012). Low back pain (LBP), glutei, groin, thigh and knee pain are experienced by patients with both hip and lumbar pathology thus diagnosis and treatment becomes complex because of the overlapping symptoms and misdiagnosis is often the case (Buckland, Miyamoto, Patel, Slover, & Razi, 2017).

Despite an apparent consensus on the multiple causes of chronic groin pain there was no generally adopted diagnostic criteria and nomenclature (Rankin, Bleakley, & Cullen, 2015). A diagnostic categorization that was based on 3 clinical entities: adductor-related pain/osteitis pubis, hernia and lower abdominal pain, and iliopsoas-related pain was developed (Holmich, 2007) but recently updated to include two additional clinical entities; hip joint pathology and pubic bone stress injury (PBSI). Armed with this criteria, clinicians can distinguish pathologies of the hip from other pathologies presenting with similar symptoms. Furthermore, Buckland et al., (2017), believed that a thorough patient history and a complete physical examination in addition to plain and advanced imaging studies and diagnostic injections are necessary to identify the primary source of patient's symptoms and delineate the primary pathology and guide the appropriate treatment.

Clinical entity	Clinical criteria	Radiological criteria
Adductor related	Pain on palpation of adductor origin, pain on passive stretch. (Diagnosis based on presence of all clinical criteria independent of imaging.)	Positive adductor pathology on MRI.
Iliopsoas related	Pain on hip extension stretch (modified Thomas test), pain on palpation and resisted hip flexion. ''Clicking iliopsoas'' also included. (Diagnosis based on presence of all clinical criteria independent of imaging.)	MRI- or USS-positive iliopsoas bursa or pathology.
Abdominal wall related	Tender rectus abdominis on palpation and resisted sit-up. Positive ''sportsman's hernia''—tender conjoint tendon, dilated superficial ring, pain and cough impulse on invagination of scrotum. Presence of inguinal or femoral hernia. (Diagnosis based on clinical criteria alone.)	Positive groin USS. (Imaging was used to support clinical diagnosis when clinical findings were not definitive.)
Pubic bone stress injury related	Tender over central pubic symphysis. Central pain on adductor squeeze. (Diagnosis based on presence of all clinical criteria independent of imaging.)	Increased signal on MRI scan at symphysis.
Hip joint related (intra-articular	Reproduction of pain and restriction during hip range of motion. (Diagnosis based on positive clinical criteria with positive imaging findings on radiographs or MRI.)	Positive radiograph or MRI. Relief of pain during intra-articular injection. (Injection is occasionally required to confirm clinical findings in the absence of imaging abnormalities.)

From Rankin, et al., 2015. MRI, magnetic resonance imaging; USS, ultrasound scan.

Table 1: Criteria Used for Clinical Entities

C. PATHOLOGIES OF THE HIP JOINT

Magnetic resonance (MR) arthrography is a technique of choice in the assessment and classification of various hip pathology. Uniformity in the classification system is necessary

for free flow of communication among the various medical teams involved in the management of these pathologies.

With the use of MR arthrography, and arthroscopy, the intra-articular anatomy of the hip is divided into two compartments; peripheral and central compartments.

The peripheral compartment is made up of

- ✓ Capsule
- ✓ Synovial folds (plicae).

The central compartment is made up of

- ✓ Labrum
- ✓ Cartilage
- ✓ Ligamentum teres

The diagnostic capacity of MR arthrography is enhanced by including leg traction. Recommended imaging strategy in the diagnosis of intra-articular hip pathology is the combination of radiographs such as an x-ray and MR arthrography including dGEMRIC evaluation of cartilages.

Below is a summary of the major intra-articular pathologies of the hip joint.

a. TRAUMATIC LABRAL TEAR

This results from major trauma, twisting, or slipping during athletic activities. These tears are often associated with adjacent chondral damage. Labral tears are one of the risk factors for hip osteoarthritis (OA).

b. FEMOROACETABULAR IMPINGEMENT (FAI)

FAI is classified into three types; the CAM characterized by head-neck deformity, Pincer associated with acetabular over coverage of the head of femur and mixed type with a varying degree of combination of the CAM and pincer types.

CAM-Type Femoroacetabular Impingement

This condition is marked by an abnormal morphology of the femoral head-neck junction. Flexion of the joint results in the sliding of the eccentric part of the head into the anterior-superior acetabulum inducing compressive and shear stress leading to the separation of the labrum and cartilage. This repetitive pathological contact between the bony structures of the femur and acetabulum lead to a progressive damage of articular structures especially the cartilage leading to chondral delamination.

Pincer Type Femoroacetabular Impingement

This type is characterized by limited range of motion as a result of deep hip socket, where the rim of the acetabulum over covers the head of the femur. This leads to an abnormal contact between the labrum and the femoral neck at the limits of movement thereby causing labral injuries. In the pincer FAI, the articular cartilage is relatively safe from damage except a narrow band along the rim of the acetabulum. Among the injuries that could be seen in the labrum are mucoid degeneration, intra-substantial labral tears and labral calcification. In advanced cases, a contre-coup injury-posterior inferior quadrant lesions of the cartilage could occur. This results from increased pressure between the posterior-medial aspect of the femoral head and the posterior inferior acetabulum.

Mixed Type Femoroacetabular Impingement

The mixed CAM-pincer impingement, the injury to the labrum and articular cartilage is usually a variable combination of the two patterns already discussed.

c. ADULT HIP DYSPLASIA

Several cases of hip OA of the hip in young adults results from undetected and delayed diagnosis of hip dysplasia. Adult hip dysplasia has an estimated prevalence of 0.1% of the general population and is subdivided into two sub-types. Type I is marked by a shallow acetabulum that lies more vertical than normal with a radius of curvature greater than the femoral head leading to joint incongruence and instability. Type II is characterized by an acetabulum that provides a less than normal cover for the head of the femur with a radius of curvature similar to the head and thus the joint is congruent and stable.

However, with reduced coverage for the femoral head, there is an increased pressure on the femoral head leading to fatigue, fracture, separation of rim fragment, degenerative changes, labral tears, and intra-osseous cyst at the acetabular roof. Meanwhile, in the type I, hypertrophy of the labrum and capsule, labral detachments, and cysts around the hip joint are often seen in MRI.

d. LIGAMENTUM TERES INJURY

The role of this ligament in the stability of the hip joint is doubtful. However, it is believed to play a key role in the stability of the hip at the extremes of range of motion during athletic activities. Ligamentum teres is tightest in adduction, flexion and external rotation of the hip joint.

e. TRAUMATIC HIP INSTABILITY

This is a spectrum of injury ranging from major trauma with osseous injury and hip dislocation to minor trauma with dislocation/subluxation, to micro trauma caused by repetitive motions.

Micro-traumatic hip instability resulting from overuse is a common feature athletes involved in repetitive hip rotation, with axial loading. There may be damage to the ilio-femoral ligament or labrum leading to micro-instability. Generalized capsular laxity could also be implicated in hip joint instability. This could be congenital or acquired with the latter relating to lack of muscular support. The sign of generalized laxity as described by Beighton's criteria include the ability to move the thumb to the radial aspect of the forearm, recurvatum of the knees, hyper-extension of the elbows and the metacarpo-phalangeal joints and the ability to voluntarily dislocate or subluxate the hip. Hip instability could as well result from iatrogenic sources.

Surgical procedures involving the joint capsule can predispose an individual to chronic hip instability.

f. DEGENERATIVE JOINT DISEASE

This refers to age-related degenerations of the articular structures of the hip joint leading to OA. This could result from FAI or adult hip dysplasia.

D. ASSESSMENT AND MANAGEMENT OF HIP PATHOLOGIES

Evidence based clinical examination and assessment of the hip joint pain is complex and requires a systematic approach for proper diagnosis (Reiman & Thorbog, 2014). A broad focus approach followed by a more specific measure to narrow down the differential diagnosis was suggested by Reiman and Thorbog, (2014). The further suggested the use of physical assessment to obtain impairments, activity and participation restriction for athletes with hip-joint related pain and hence serving as a guide to management. This approach rules out more medically serious pathology initially by the use of highly sensitive tests earlier and then narrowing down the differential diagnosis to get to the particular diagnosis

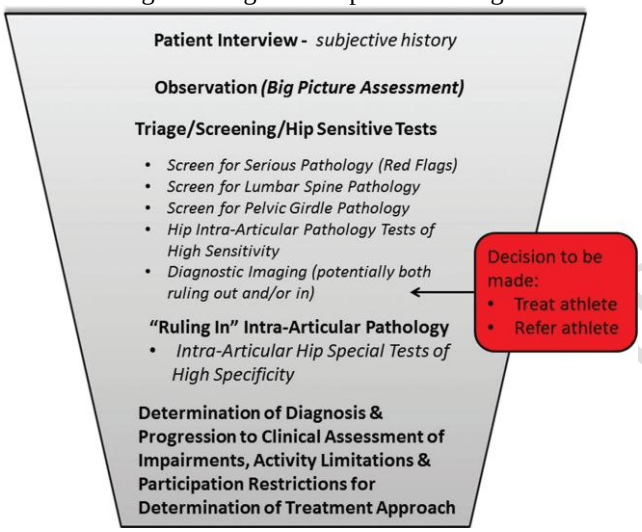

Figure 1: Examination Sequence (Funnel Approach) for Hip-Joint Related Examination with Progression to Determination of Treatment Approach. Adopted from Reiman and Thorbog, (2014)

This approach requires that the assessing clinician be able to reasonably determine the primary diagnosis and the important differential diagnosis and the additional investigations that is required for the assessment of the specific impairments, activity limitations, and participation restriction order to arrive at individualized management plan for the patient.

It has been suggested that an integrative approach to the assessment of the hip joint which included the subjective history, physical examination and radiological examination is necessary in making a medical diagnosis of the hip joint with a more emphasis on the subjective history (Roshan, & Rao, 2000).

E. REHABILITATION OF HIP PATHOLOGY

With the evolution of hip arthroscopy, there is an increased diagnosis of intra-articular hip pathology and improved management approaches including rehabilitation. Even though mechanical problems are corrected through surgery, functional deficits require a thorough rehabilitation process (Voight, Robinson, Gill & Griffin, 2010). Although there is a consensus on the importance of rehabilitation in the management of hip pathology, there is a limited evidence-based research to back the rehabilitation guideline (Griffen, Henry & Byrd, 2000). Rehabilitation techniques for other joints such as knee, elbow and ankle following minimally invasive surgery is also applied to the hip joint.

Rehabilitation is aimed at reducing patient's symptoms and improving function and is applied systematically depending on the prognosis and the functional needs of the patient (Voight, et al., 2010). Since patient education is a fundamental plan in the rehabilitation process, the clinician should ensure that during the assessment process, the patient's level of understanding of the pathology, goals expectations and recovery time is established. The patient must be able to understand the precautions, and the recommended progression of the situation (Voight, et al., 2010). Rehabilitation process should be formulated in collaboration with the surgeon and other healthcare teams so that reasonable goals and expectations can be planned for patient centered outcome (Voight, et al., 2010).

Though pathology specific rehabilitation, protocols have been developed for routine arthroscopic procedure, general rehabilitation guidelines follows the following phases:

- ✓ Mobility and initial exercise
- ✓ Intermediate exercise and stabilization
- ✓ Advanced exercise and neuro-motor control
- ✓ Return to activity

Post operation recovery begins with pre-operative patient education which may be a pre-rehabilitation program targeting impairments such as pain, swelling, and cardiovascular endurance. A pre-operative rehabilitation session may thus include instructions, explanations, and demonstrations of expected post-operative rehabilitation protocol ((Voight, et al., 2010)

II. CASE STUDY

A case of Mrs Ab, a 62year old retired civil servant

BIO DATA

- ✓ Name: Ab
- ✓ Age: 62 years
- ✓ Sex: female
- ✓ Religion: Christian

XHISTORY

Patient is a 62 year old retired civil servant who went for a burial in her village with some of her children. She suddenly fell when she went to urinate in the toilet. She attempted to get up holding the sink but it was difficult. She alerted her children who came to assist her to her feet. With support of her children, she limped back into the house. She complained of deep ache at her left lower quadrant of the abdomen,

heaviness and numbness at the left lower limb especially the anterior aspect. The children took her to her doctor's clinic where she was admitted and placed on some medications including IV infusion. Two days later, she was discharged with a walking stick. The left lower lateral quadrant deep abdominal ache persisted while the left lower limb heaviness and numbness abated minimally. Patient was placed on NSAIDs and antibiotics, symptoms remained the same. Patient went for checkup at the doctor's clinic and was booked for abdomino-pelvic ultrasound. As she was getting ready for the ultrasound, one of her sons met a friend who introduced him to a physiotherapist and advised him not to take any other step until the mother sees a physiotherapist.

OBJECTIVE EXAMINATION

The patient came into the physiotherapy clinic with an obvious limping gait (antalgic), supporting herself with a walking stick, sat down on a chair without much difficulty. After the necessary introduction, patient was guided to complete intake forms that included

History and interview form (HI)
Medical screening form (MS)
Modified Oswestry low back index form (MODI)
Lower extremity functional scale form (LEFS)

SCORES

MODI 40(80%)
LEFS 15(18.8%)

Apart from hypertension, the HI and MS did not reveal any other systematic abnormalities, hence a green flag for physiotherapy.

PHYSICAL EXAMINATION

STRUCTURAL

Head and neck- head tilted to the right
Right shoulder slightly depressed with slightly elevated left shoulder
Chest wall properly aligned
Slightly reduced lumbar lordosis but marked lateral curvature of the trunk

INTEGUMENTORY

Nil obvious skin problems

TESTS

LUMBAR SCREENING TEST (LST)

Apart from the segmented mobilization of L3-L5 that produced restricted movement and little pain at segments, other LST did not reproduce the patient's symptoms.

DERMATOMES FOR LEFT LOWER LIMB

L1- normal tactile sensation (NTS)
L2- compromised tactile sensation (CTS)
L3- CTS
L4- CTS
L5- NTS
S1- NTS

MYOTOMES FOR LEFT LOWER LIMB

L2-L3 (compromised) ---------- Hip joint
L4-L5 (intact) ---------- Knee joint
L5-S1 (intact) ----------Knee joint
L4-L5(intact) ----------Ankle joint
S1-S2 (intact) ----------Ankle joint
L5-S1(intact) ----------Foot

OTHER TESTS

Gillet- Did not reproduce symptoms (NRS) (-)
Long sit innominate – (NRS (-)
SIJ distraction – (NRS (-)
FABERS- Reproduced symptom (RS) (+) for left hip only
Gaenslen- (RS) (+) for left hip only
POSH- (RS) (+) for left hip only
Hip quadrant- (RS) (+) left hip
Piriformis <90° - (NRS) (-)
Piriformis >90° - (NRS) (-)
FAIR- (NRS) (-)
Long axis distraction- abates symptoms
Rectus femoris length – (RS) (+)
Iliopsoas length – (RS) (+)

CLINICAL IMPRESSION

Left hip pathology (? Left femoroacetabular impingement)

INTERVENTION

Long axis distraction (5 repetitions each for 10 seconds) Hip glides: anterior, posterior, inferior and lateral (each 5reps each for 10seconds).
Iliopsoas stretch
Rectus femoris stretch
Passive movement to the hip joint
Cycling (stationary)
Back extension exercises (in prone lying)
Home program: auto-iliopsoas stretch, and cycling (in the air)
Appointment: two times per week
Patient to be evaluated after three treatment sessions.

RE-EVALUATION

Patient walked into the clinic with support and a reduced limping gait
LEFS -28 (35%)
MODI- 25(50%)
Minimal clinically importance difference (MCID) for LEFS -13, MODI -15.

Clinical inference: the MCID for LEFS and MODI are up to and above the normal figures, hence, intervention was continued as planned. Reevaluation was subsequently done after three weeks.

RE-EVALUATION AFTER THREE WEEKS

Patient walked into the clinic with an almost normal gait and unsupported.

Head and neck- properly aligned
shoulders- left still slightly elevated
Chest wall – properly aligned
Lumbar lordosis – improved
LEFS- 60(75%), MODI- 12(24%)

Intervention was continued as planned with patient advised to be more active at home. Patient started missing sessions, subsequently and finally discharged herself.

RESULT TABLE

MODI	1st Visit	After 3 RX sessions	After 9 RX sessions
Value	40	25	12
%	60	41.6	20

Comment : On re-evaluation after 3 treatment sessions the minimal clinically important Difference(MCID) Was 15 and 28 after 9 treatment sessions

LEFS	1st Visit	After 3 Rx sessions	After 9 Rx sessions
VALUE	15	28	60
%	18.8	35	75

Comment: MCID after 3 treatment sessions was 13 and after 9 treatment sessions 45.

III. CONCLUSION

With improved diagnostic capacity offered by MRI, arthrography and athroscopy, pathology specific rehabilitation approach to hip pathologies has been established. Patient health outcomes have been improved as was the case of Mrs Ab. However, there is not enough evidence to support the rehabilitation offered to patients with hip pathologies and thus further research into the mechanism of rehabilitation and pathology-specific rehabilitation is recommended.

Evidence based assessment and evaluation of conditions using the relevant instruments in physiotherapy leads to a proper mechanical diagnosis. This guides to a proper scientific intervention that put the patients back on their feet and on time.

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