

Immediate Effect of Maitland versus Mulligan Mobilization with Movement in Osteoarthritis of Hip

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Abstract

Osteoarthritis of hip includes background that describes about both techniques, for decreasing the pain We took a female patient whose age is between 40 to 50 years who is suffering from osteoarthritis of hip. Apply the Maitland mobilization with others [IFT, stretching, MET] and mulligan with movements with others is more effective for relieving pain and increasing the functional activity and there is also further possibility in research if we increase the time of treatment

Background-

In clinical studies for pain reduction and improving mobility in osteoarthritis in hip, the approach of Maitland mobilization or Mulligan mobility with movement (MWM) has been extensively applied. However, there is insufficient experimental evidence to support the use of these mobilization techniques as a single intervention for the management Osteoarthritis of hip

Objective-

To determine which method of mobilization will be more efficient at reducing pain and improving mobility and function in the osteoarthritis of hip after intervention, based on Maitland mobilization and Mulligan MWM.

Methodology-

Once before the treatment and once after the treatment, the range of motion is checked with a goniometer and the difference is seen that how much difference is there in the range of motion.

Result-

The result is obtained that mulligan with mobilization plus others [stretching, IFT, MET] is more effective than Maitland mobilization.

Conclusion- There is also further scope for research if increase the duration of treatment in Mulligan with mobilization and others

Keywords: Osteoarthritis of hip, Maitland, Mulligan with mobilization, MET, IFT, stretching

Introduction-

Osteoarthritis, also known as degenerative joint disease, is associated with deterioration of articular cartilage and subsequently affects the underlying bone causing osteophyte formation at the joint margin, Altman et al., 1991 Larmer et al., 2014⁽¹⁾ Osteoarthritis of hip has an increasing prevalence noted in the middle ages and women are more predisposed than men⁽²⁾ (Nice2014). Treatment of osteoarthritis of hip

joints involves the use of long-term medications such as NSAIDs and opioid analgesics, intra-articular injections of steroids and, more recently, cartilage analogue injections, as well as surgeries such as chondroplasty and extensive hip arthroplasty to reduce economic burden. Burden increases. Physical therapy is known to play an important role in reducing pain and restoring mobility and function in OA of hip. These include range of motion training for the hip, strengthening the muscles surrounding the hips (quads, hamstrings, gluteus Maximus, gluteus medius, and gluteus minimus) (isometric or dynamic resistance training) It is included; mobility exercises (IT band, hamstrings,) aerobic conditioning, underwater exercises. Electrotherapeutic therapy such as hyperthermia, electrophysiotherapy (percutaneous electrical nerve stimulation, interference therapy or Faraday stimulation of surrounding muscles, ultrasound therapy) and more recent manual therapy⁽³⁾ (Page et al., 2011).

Manual therapy includes hands-on soft tissue or joint mobilization techniques that modulate pain and also improve contractile tissue extensibility and joint motion⁽⁴⁾ (French et al., 2011). Its neurophysiological effects are: - Mechanoreceptor-mediated analgesia that blocks nociception in the dorsal horn of the spinal cord⁽⁵⁾. gray matter and rostral chords mediate descending pain inhibition primarily through norepinephrine activity and, to some extent, opioid and serotonin activity⁽⁶⁾, resulting in maladaptive cognitive-affective mechanisms observed in pain neurosubstrates⁽⁷⁾. (Vicenzino et al., 2001), Skyba et al., 2003, Zusman, 2002, Mosely, 2003). In an RCT⁽⁸⁾ (Abbott et al., 2015) that divided subjects with OA of hip into four groups and included usual general practitioner care, manual physical therapy, multidisciplinary exercise physical therapy, and combined exercise and manual physical therapy. , West Ontario University and McMaster University arthritis index (WOMAC) scores improved similarly in both the manual therapy and exercise therapy groups compared with the usual care group. However, no further improvement was observed with the combination of exercise and manipulative therapy, rather an antagonistic interaction between exercise and manipulative therapy was observed⁽⁹⁾. Manual therapy is often used in combination with other interventions such as conventional exercise and electrotherapy for hip OA, so the individual effects on hip OA are unknown⁽¹⁰⁾ (NICE, 2008, RACGP, 2009). A systematic review of manual therapy for OA of hip concluded that there is no definitive scientific evidence for the effectiveness of manual therapy in reducing pain or improving function in OA of hip⁽¹¹⁾ (French et al., 2011).

Mulligan mobilization with movement (MWM)

It is based on the concept that small positional errors in the articular surfaces of a joint occur after injury or stress, exacerbating movement limitation and pain by active contraction of muscles in the wrong position of the joint. Therefore, MWM includes passive accessory gliding as a correction technique applied perpendicular to the articular surface by the therapist to correct for position errors. Combined with the subject actively performing the problem movement and maintaining multiple repetitions, pain should be reduced or eliminated consistently during use and pain-free function should be restored (Mulligan, 2011).



Figure 1-mulligan with mobilization

Maitland mobilization involves continuous analytical assessment of the nature of the disorder. This primarily involves identifying the pain mechanisms that drive dysfunctional motor patterns and using clinical reasoning to integrate theoretical concepts with the clinical manifestations of the disorder to create dynamic features to formulate Includes doing diagnostic hypothesis. Appropriate interventions addressing all components of the disorder are delivered according to symptom priority. Maitland mobilization uses passive mobilization to gain range of motion lost due to pain and stiffness and to restore optimal kinematics between articular surfaces depending on degree, frequency, dose, severity and sensitivity of mobilization. Physiological and auxiliary oscillatory movements are applied to the joint. The type of impairment (SIN) is determined⁽¹²⁾ (Hengeveld and Banks, 2014). Maitland's mobilization technology has been successfully used in most studies of manual therapy for OA of hip. The RCTs conducted included controlled treatments of stretching, isometric quadriceps, closed chain exercises, and static cycling, anterior-posterior (AP) slides on the femur in all directions. Maitland joint mobilization was performed, including a slide of As a result, the experimental group had better pain relief⁽¹³⁾ (Nor Azlin and Su Lyn, 2011). We found that pressure pain thresholds were globally elevated when participants with OA of hip underwent 6 minutes of hip mobilization and received skin input intervention alone after a 1-week rest period. Baseline pain was followed by a continual passive effect, significantly increased range of motion (CPM), and increased vibratory perception threshold acuity in subjects undergoing joint mobilization, but not after cutaneous intervention⁽¹⁴⁾. (Courtney et al., 2016). Mulligan MWM has been clinically proven to be effective in reducing pain and improving joint mobility in osteoarthritis of the hip. There is no shortage of published literature on the effectiveness of his MWM in treating OA of hip joints. Mulligan MWM in addition to trunk stabilizing exercises and electrotherapy (heat therapy, ultrasound, interferometry) in patients with OA of hip showed improved WOMAC scores and significant pain compared to the control group A group that received only trunk stabilization and electrotherapy in which relief was achieved⁽¹⁵⁾ (Nam et al., 2013).



Figure 2-Maitland mobilization



Figure 3-MWM

According to the literature available to date, there are very few high-quality studies comparing Maitland mobilization and Mulligan MWM when used alone without conventional intervention for hip OA, so their efficacy should be evaluated separately. It is difficult to judge. Most of the studies conducted to date have focused on the long-term effects of repeated joint mobilization sessions in conjunction with exercise and electrotherapy interventions. Therefore, less emphasis was placed on the immediate or short-term effects of a single mobilization session. Short-term or immediate effects of mobilization, where positive and significant, appear to be more clearly defined. Given the longstanding morbidity and economic burden associated with OA hip, repeated intervention sessions can be difficult for patients with OA hip. Therefore, the aim of this study was to determine whether Maitland mobilization or Mulligan MWM mobilization techniques are more effective immediately after treatment to reduce pain and improve mobility and function in OA hip was.

Material and method

First of all we took a female patient whose age is between 45-50 years who is suffering from osteoarthritis of hip due to osteoarthritis of hip extension; internal rotation and abduction movement are restricted. Posterior glide for improving the extension and medial glide for improving the abduction is given by Maitland mobilization technique we use muscle energy technique, IFT and stretching. Range of motion is measured by goniometer which is flexion-80,extension-10,internal rotation-20,external

rotation-50,abduction-25,adduction-20.Then the patient was given by Mulligan with mobilization of 3rd grade along with muscle energy technique, stretching and IFT was given for 10-15.When we use Maitland mobilization technique with muscle energy technique and other for 10-15 days then the result obtained that mulligan with mobilization with other is more effective for improving the functional activity ,decreasing the pain and increasing the range of motion in the case of osteoarthritis of hip. Not only only increase the range of motion but also increase the tendency of work that’s why MWM is better.

Methodology-

Before treatment patients range-

Flexion- 80

Extension-10

Internal rotation-20

External rotation-50

Abduction-25

Adduction-20

After treatment-

Measurement-

	Maitland	MWM
Grade	3	3
Flexion	80-90	80-100
Extension	10	10
Internal rotation	20-25	20-35
External rotation	50	50
Abduction	25-30	25-35
Adduction	20	20

Goniometer	Maitland	MWM
Flexion	10	20
Extension	Same	Same
Internal rotation	5	10
External rotation	Same	Same
Abduction	5	10
Adduction	Same	Same

Interferential therapy-

Intensity	Method	Channel
2 to 10 Hz	Sweep	2

Muscle energy technique-

Duration	Session	Day
10-15min.	1	Everyday

Stretching-

Repetition	Session	Day
8-10	1	Everyday

Result-

After Maitland plus others [IFT+ stretching and MET] for 15 days application hip range of motion was found increased is such amount flexion from 80 to 90, internal rotation from 20 to 25 abduction from 25 to 30. Therefore Mulligan with mobilization with others was applied for 15 days and found significant effect over pain, range of motion and functional activity .So we can say that mulligan with mobilization is more effective in case of OA of hip. After applying the Maitland mobilization with others measured all the range of hip joint by goniometer which are mentioned above and after applying the Mulligan with mobilization the difference are clearly visible that MWM is more effective for the treatment of osteoarthritis of hip.

Discussion

The aim of this study is to compare two one was Maitland mobilization with others [stretching, IFT, MET]

And other was Mulligan with mobilization with others [stretching, IFT, MET] and the purpose of both technique was reduction of pain and improving the functional activity and increasing the range of motion of the hip joint. Both techniques are beneficial for increasing the range of motion. This study's purpose to focus on the Maitland mobilization and Mulligan with movement mobilization which applied on a female patient whose age is between 40 to 50 who is suffering from osteoarthritis of the hip. The results obtained in this study state that, there is difference between

Immediate, effects of Maitland mobilization and Mulligan MWM in OA of hip and also that Mulligan, with mobilization is more effective in reducing pain and improving functional mobility and pain free range of squat angle

When both technique applied with other [Stretching, IFT and MET] then found that mulligan with mobilization is more effective for reducing the pain increasing the range of motion and gives pain free movement in case of OA of hip. Mulligan technique is significantly more effective technique then the Maitland. Take the Mulligan belt which is known as mulligan belt applied this on the patient and the work of the belt is to help the mobilization with movement. The intent of MWM is to restore pain free motion at joints that have painful limitation of ROM. This may be justify by the rationale that both intervention are based on similar mechanics of pain relief like mechanical effect based on similar mechanics of pain relief like mechanical based pain inhibition by silencing the slow conducting articulate nocicepted. However additional effect of MET + others cannot be ignored because that's additional effect gives more relief.

The result of this experimental study has identified the effectiveness of Mulligan mobilization with others [stretching, MET, IFT] for reducing pain and improve the functional ability of the hip osteoarthritis patient. Mulligan with mobilization technique increases the range of motion of the joint and also help to patient for achieving his daily life activity which is not able to do due the osteoarthritis of the hip joint. Those patients who are suffering from osteoarthritis of hip are feel stiffness in hip joint mostly in the morning. They face difficulty to walk that's why therapist recommends the patient to do active exercise.

Conclusion

This study says that Mulligan with mobilization with the help of MET and others are more effective than the Maitland for decreasing the pain and increasing the functional activity in case of OA of hip. There is also further scope for research if increase the duration of treatment in Mulligan with mobilization and others.

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