**Mid-Term Assignment (Spring-20) (DPT 6TH Semester)**

**Course Title: Menual Therapy**

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**Answer no: 01**

**Mulligan concept is use in the treatment of the following conditions:**

1. Used for treating lateral epicondylitis (Tennis elbow)
2. Used for treating cervicogenic headache condition
3. Used for treating cervical/neck pain
4. **Used for treating lateral epicondylitis ( Tennis elbow):**

**Lateral epicondylitis:**

It is Tendinitis of extensor carpi radial brevis. Form by repetitive strain injury; show the pain on lateral aspect of elbow in gripping activities and resistance application to extensor muscle of forearm. Mobilization with movement (MWM) technique used for tennis elbow to reduce pain strengthen and grip and improve function (ADL) and patient of LE, we apply the MWM technique. Using of mulligan technique with traditional treatment its more effective in the treatment of, LE than the using of traditional treatment a lonely. And traditional treatment we use NSAIDs corticosteroid injection, cryotherapy, friction massage, rest, ultrasound and electrical stimulation. The traditional treatment is fail to treat the LE a lonely, (fail to improve quality of collagen in tendons. That’s why we use both the traditional treatment with MWM. MWM is modern technique used for the treatment of LE. It includes a sustained, lateral glide to the elbow joint with the normal movement of the elbow. The MWM used to correct faulty position of the elbow, because the mulligan concept mainly work positional fault. The MWM reduce pain, improve the pain free gripp strength and increase the ability to tolerate the resistance. After mobilization we apply tapping technique. It is place around the elbow joint upon the extensor carpi redialis muscle. It reduces the load over these muscle and increase grip strength of the hand. The mulligan technique and tapping technique are use combine, it has better outcomes in LE patients, then the tapping technique a lonely it shows that mulligan technique has significant effect on LE patient ( reduce pain, improve in pain free grip strength and improve ability of work). To check the LE in patient we perform the test,

* Active rest extension test; to check what the patient feel in performing activity
* Cozens test; the fore arm are pronated and make fist and radially deviated. The physiotherapist resists the radial deviation and the patient feels pain on lateral aspect.
* Thomsen test
* Mills test or passive stretching

Now we compare the effectiveness of mulligan MWM technique with the supervised exercise program in reducing pain and strength of hand grip in LE patient. Both MWM and supervised exercise program are used in reducing pain and improve grip strength. When these both are applied for LE patient in the same time period the MWM shows more effectiveness in reducing pain and improve grip strength and then the supervised exercise program.

**Procedure of MWM**:

The patient is lying in supine position. The elbow is extended and the forearm is pronated. The built is place around the shoulder of the therapist and the patient elbow (near to the elbow joint). The PT performs the lateral glide and the built keep sustain the glide and ask the patient to perform the fist without pain.

Procedure of supervise exercise program:

It includes the extensor carpi radialis brevis muscle, static stretching which is followed by eccentric strengthening. Static stretching is applied with extended elbow, forearm pronated and wrist flexion with ulnar deviation the stretching force is applied by how much is the patient tolerance. It is performed before and after the eccentric exercise. In eccentric strengthening exercise the patient elbow is full extended, the forearm are pronated and the wrist as at maximum extension. From here the patient slowly lower the wrest into flexion. Ask the patient to continue the exercise when mild discomforted appears then stop exercise.The MWM is more effective in pain relieving than the supervised exercise program because MWM produce sensory input to recruit and which activate descending pain inhibitory system, which results in some or all pain relieving pain effects. Its produce hypoalgesic effect during its application and sympathoexcitatory effect.

The ultrasound therapy is also used to treat L.E but it is not effective when it gives lonely. But is more effective when ultrasound therapy is combined with mulligan MWM, it’s reduce pain and improve grip strength. After some session of applying US therapy and MWM, programmed progressive exercises are given which enhance strength and facilitate return to work. These exercises improve quality of injured tissue and allow them to absorb the force safely which are imposed by the lifestyle of patient. Before the applying of treatment the PT must be check the pain intensity (by VAS), the weight test (that how much weight is lifted by patient forearm), the grip strength (ask the patient to hold an object in hand and given the force to that object like ball). For the home of patient prescribe the following exercise;

* Stretching exercise
* Isometric exercise
* Concentric and eccentric exercise

Tell the patient to perform these exercise 3 times a day. If they don’t feel pain in performing this then tell them to increase the resistance and weight.

**Reference**:

Topic; Mulligan technique for tennis elbow

Link no 01: <https://www.researchgate.net/profile/Patchava_Apparao4/publication/301250385_EFFECTIVENESS_OF_MULLIGAN_MOBILISATION_WITH_MOVEMENT_COMPARED_TO_SUPERVISED_EXERCISE_PROGRAM_IN_SUBJECTS_WITH_LATERAL_EPICONDYLITIS/links/59f2eecd458515bfd081f08b/EFFECTIVENESS-OF-MULLIGAN-MOBILISATION-WITH-MOVEMENT-COMPARED-TO-SUPERVISED-EXERCISE-PROGRAM-IN-SUBJECTS-WITH-LATERAL-EPICONDYLITIS.pdf>

(Accessed 20 April 2020)

Link no 02:

[https://sci-hub.tw/https://www.sciencedirect.com/science/article/abs/pii/S0031940605607468](https://sci-hub.tw/https:/www.sciencedirect.com/science/article/abs/pii/S0031940605607468)

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Link no 03:

[https://sci-hub.tw/https://www.sciencedirect.com/science/article/pii/S1013702510000060](https://sci-hub.tw/https:/www.sciencedirect.com/science/article/pii/S1013702510000060)

(Assessed 20 April 2020)

1. **Used for treating cervicogenic headache condition**

Mulligan technique is used to treat cervicogenic headache. Cervicogenic headache is pain which is reffered from the neck and goes to one or more region of the head or face. Headache is arise from the structures of the cervical spine include zygopophyseal joints. Signs and symptoms of cervicogenic headache include unilateral head pain without shifting to side. It combine with neck pain and cause movement restriction of the neck. The diagnosis showed that it is caused by dysfunction of C1 and C2. Flexion-rotation test is done for the diagnosis of cervicogenic headache (normal range of movement is 44degree and affected is 17degree) and rotation. The PT check the rotation by full flexed the patient neck and then rotate to one side and then to another side.

**Procedure of self SNAGs**:

The belt or rubber covered strap was placed on the post arch of the C1 and drown horizontal forward. The purpose of the strap is to facilitate rotation in same direction at C1-C2 which is limited. The patients apply forward pressure on strap or belt and rotate the head to the restricted side of rotation. Keep sustain and the therapist apply over pressure at the end range in rotation.

Self SNAGs has better improvement in rotation. Self SNAGs improve movement of C1-C2 that’s why reduction in pain occurs, its mean that the decrease in the symptoms of the cervicogenic headache occurs. The C1-C2 self SNAGs reduces the headache symptoms by the neuromodulation effect of joint mobilization. In gate control theory mechanoreceptor are stimulated in the joint capsule and surrounding tissue which cause in inhibition of pain at spinal cord. The descending pain inhibitory system is activated by periaqueductal gray area of the mid brain. That’s why the C1-C2 self SNAGs reduce pain, it also decrease joint stiffness and improve cervical rotation. Mobilization breakdown the adhesion and stretch the surrounding tissues.

In cervicogenic patient the deep neck flexors have decrease strength and endurance. It is related to other cervical joint dysfunction. It treating focused on joint manipulation and mobilization. And cervicogenic rehabilition reduce tightness and improve active ROM. The mulligan technique and muscle energy technique effective in improving cervical mobility among the cervicogenic patient. Mulligan defines a unique mobilization method for articular dysfunction management and cervicogenic headache. The muscle energy technique helps in releasing and relaxing muscle and also promote healing mechanism of the body, it improve joint mobility.

Cervical flexion are cervical range of motion is check by the cervical range of motion device, which is consist of plastic frame which is placed on the head over the ears and the nose and secured by welcro strap. The two inclinometers are attached to frame and indicate the head position with respect to line of gravity. Other inclinometers indicate the position of head in rotation in relation to reference position. The mulligan technique and muscle energy technique improve cervical flexion in cervicogenic patient. Self SNAGs report improvement in range of movement and neck pain and the muscle energy technique lengthen the shortened cervical muscle and fascia to normalize grass cervical range of motion. The muscle energy testing stimulate joint proprioceptors by the production of joint movement or the stretching of joint capsule and capable of reducing pain by inhibiting the small diameter nociceptive neuronal input at the spinal cord level.

The mulligan technique (SNAGs) shows its effect in relieving pain in short time than the other treatments. It is effective in reducing the duration time of headache and neck pain and in development of neck function.

**Use of mulligan SNAGs technique**:

First the PT held the patient with his trunk and the patient head is wrapped with his arm and the ring finger placed on the trouble spot above the small vertebral joints. The PT place thenar eminence of the opposite hand on the ring finger which touches’s the lesion site. The PT performs gliding in upward direction (45degree). The hand which touches spinous process will be relaxed in order not to squeeze too hard. The power of gliding comes from other hand. Gliding in applied three times per second and width of gliding starts from the middle to the end. The PT kept on gliding the small joints and turned the patient head to that side which has limited mobilization and pain. The position is maintain for ten second and over pressure is applied by the patient own hand ( two second) and then slowly returned to the original position. SNAGs is effective in reducing pain duration time.

Reference:

Topic: “mulligan technique for cervicogenic headache”

Link no 01:

https://sci- hub.tw/https://www.jospt.org/doi/abs/10.2519/jospt.2007.2379

(Accessed 21 April 2020)

Link no 02:

<https://www.researchgate.net/profile/Gehan_M_Ahmed/publication/331585453_Comparing_Mulligan_Technique_and_Muscle_Energy_Technique_in_changing_cervical_mobility_in_cervicogeneic_headache/links/5c816eb592851c6950608bab/Comparing-Mulligan-Technique-and-Muscle-Energy-Technique-in-changing-cervical-mobility-in-cervicogeneic-headache.pdf>

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Link no 03:

[https://sci-hub.tw/https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4025547/](https://sci-hub.tw/https:/www.ncbi.nlm.nih.gov/pmc/articles/PMC4025547/) (Accessed 21 April 2020)

1. **Used for treating cervical/neck pain**

**Neck pain:**

The pain located in neck region and caused by degenerative disk disease, neck strain, cervical spondylosis and osteoarthritis. It is increasing in intensity, frequency and severity. There is different type of mobilization used to treat neck pain but here we describe the effectiveness of mulligan mobilization in the treatment of neck pain. The mitland mobilization and mulligan mobilization both decreased pain, disability and improve ROM. But mulligan mobilization is more effective in improving pain, ROM and disability.

The mitland mobilization technique is passive and oscillatory movement to the vertebral and spinal joint which treats pain and stiffness.

Grade 1: it is small amplitude movement which is performed below the resistance range and is good for treating high irritable condition and pain relief is by working on neural structure.

Grade 2: it is wider in amplitude but below the resistance. Use of grade1 and 2 are good when palpitation show pain before restriction of movement.

Grade 3: it is a large amplitude movement which is performed in resistance and use to improve ROM.

Grade 4: it is small amplitude, performed with resistance and use in chronic aches of low irritability.

Grade 5: it is high velocity thrust and use in manipulation.

Mulligan technique includes NAGs, SNAGs and MWM.

NAGs: it include natural apophyseal glide and apply on cervical spine and patient is in passive form.

SNAGs: it is sustained natural apophyseal glide. The patient will actively move a painful and stiff joint or PT perform this.

MWM: it is the mobilization with movement. Apply to the peripheral joints. It is the combination of physiological movement and glide.

Give the NAGs less than 6 repetition and SNAGs 6 repetition in 3 sets. SNAGs help in painful movement dysfunction which is caused by degenerative changes and facilitate pain free movement throughout the available range. The zygoapophyseal joint glide is improve by NAGs and SNAGs which improve the range of spinal movement. The mulligan mobilization is more effective in improving pain, ROM and disability. And the mitlande techniques only improve pain and disability.

The neck pain is common musculoskeletal problem and cause by over stress on musculoskeletal system due to postural disorder. Prevalence of the neck pain increases along with aging. The mulligan technique is applied for treatment in neck patient. It is easy and widely used by PT. it include many methods like SNAGs and NAGs. The mulligan technique is effective in relieving pain, neck disability index, ROM, depression and quality of life than the other traditional treatment. Before applying the mulligan technique the PT must check the pain (severity of pain during activities by visual analog scale), neck disability index (that how much the patient life is affected by neck pain), ROM (vertebrae ROM is checked by goniometer), depression (is measured by depression inventory) and quality of life ( check physical function, body pain, energy, social functioning and mental health).

In traditional therapy (include TENS and exercise) we apply hot pack which cause vasodilatation and reduce muscle spasm and improve soft tissue elasticity. The TENS show it’s analgesic effect by hate control theory of pain. In dorsal horn of spinal cord electrical stimulation of some receptor sites which release endorphins and produce analgesia. With TENS prescribe exercise to the patient. The exercise include ROM exercise and postural exercise. In the mulligan technique we apply SNAGs and NAGs. The positional fault in joint can cause limitation of movement, to correct it first we apply SNAGs. The NAGs is apply between the C2 and C7. The mobilization in NAGs is done by oscillatory movement. The SNAGs are the combination of mobilization with active movement of vertebral coloum.it is done without pain at the end of joint movement. SNAGS is applied with thumb and support by other. The PT applied passive intervertebral movement and the PT maintain this glide and ask the patient to move actively in any range of movement. The traditional therapy only improve pain, ROM (except for right and left rotation). Whereas the mulligan techniques improve pain, ROM, quality of life, functional level and depression. Both treatment program decreased neck pain but the mulligan techniques has greater effect on pain reduction as compared to traditional treatment. It also correct positional fault and reduce pain.

NAGs, SNAGs and self SNAGs are given to those patient which have mechanical neck pain. Before and after the mulligan mobilization the pain is measure by numeric pain rating scale and disability level is measure by neck disability index. The mulligan techniques improve symptoms of pain and disability in short term effect level among chronic mechanical neck pain patient. Mulligan mobilization technique (NAGs, SNAGs and self SNAGs) reduce pain and improve function in those patient which have mechanical neck pain.