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The Effect of Muscle Energy Technique (MET) on Post Fracture of Proximal Humerus (Greater Tubercle)

Ms. Swati Rohit

Student, Physiotherapy, Peoples College Of Paramedical Science And Research Centre

ABSTRACT

Background: Proximal humerus fracture , especially fracture of the greater tubercle , is a common shoulder injury that usually happens due to falls or accidents. This injury causes pain , swelling , muscle tightness , and limited shoulder movement These problems make daily activities like lifting the arm or combing hair difficult. Physiotherapy treatment such as Muscle Energy Technique (MET) helps in reducing pain and improving shoulder movement.

Objective: To find out the effect of Muscle Energy Technique (MET) on pain relief and improvement of shoulder range of motion after proximal humerus fracture .

Case Description: A 43- year old female patient came with right shoulder pain after falling from a vehicle . X-ray showed a fracture of the greater tubercle . She had severe pain(VAS 8/10) and was unable to lift her arm properly. Shoulder movements like flexion and abduction were very limited.

Intervention: Muscle Energy Technique (MET) was applied to shoulder flexion , abduction , and elbow movements . Along with MET , pendulum exercises and active range of motion exercises were also given. Treatment was done for 3 weeks with a total of 7 sessions .

Outcomes: VAS Scale for pain , Goniometry for ROM , MMT (Muscle Strength)

Results: After treatment ,pain reduced from 8/10 to 3/10 . Shoulder movements improved significantly Flexion improved from 40degree to 130 degree , abduction from 30 degree to 120 degree , and muscle strength improved from grade 2/5 to 4/5.

Conclusion: Muscle Energy Technique (MET) is helpful in reducing pain , improving shoulder movement , and increasing muscle strength after proximal humerus fracture . It can be used as an effective physiotherapy treatment for shoulder rehabilitation.

Keywords: Muscle Energy Technique(MET), Proximal Humerus Fracture , Greater Tubercle Fracture , Shoulder range of motion in post- fracture proximal humerus patients.

SCOPE OF STUDY

Proximal humerus fractures are common injuries that often lead to restricted shoulder mobility and functional limitations . Proper rehabilitation plays a vital role in restoring joint function and preventing long- term disability .

This study focuses on the role of Muscle Energy Technique (MET) as a safe effective physiotherapy intervention in managing post – fracture stiffness and pain . The findings of this study can help

physiotherapists understand the usefulness of MET in improving range of motion , reducing muscle tightness, and promoting early recovery in shoulder rehabilitation.

INTRODUCTION

A proximal humerus fracture is a fracture of the upper arm bone near the shoulder . This fracture occurs most often in elderly patients due to falls , and in younger people , it can caused by high- energy trauma such as a road accidents or sports injury .[2]

The main symptoms include severe shoulder pain, swelling, bruising, and limited shoulder mobility.

In most cases (more than 80%), the fracture is not significantly displaced, so it is usually treated with a sling, which is worn for approximately 6 weeks. Complete bone healing can typically take up to 12 weeks. [1]

Proximal humerus fracture (particularly fracture of greater tubercle) - are common upper limb injury that typically result from falls or road traffic accidents . This conditions leads to the development of pain, swelling , reduced range of motion (ROM) , and rotator cuff dysfunction .[5]

These fractures account for about 6% of all bone fractures and are the third most common .About 80% of these fractures are minor (the bone doesn't dislocate significantly), so they can treated without surgery .[2]

This fracture will also involve muscles such as the rotator cuff muscle:

These muscle attach here : Supraspinatus , infraspinatus , teres minor , a muscle group that stabilize the shoulder joint .

This injury is particularly common in older people, whose bones become weak (Osteoporosis) . In people over 60 , it often results from a minor fall .

In younger people , it is more likely to result from a serious cause , such as a road accident or a fall from a height

In this article , we will learn through our study how focusing on the post fracture of proximal end of humerus and after that muscle become tight and ROM become restricted and apply Muscle Energy Technique (MET) is an effective physiotherapy approach that helps to reduce pain and improve joint mobility.

OBJECTIVES

To evaluate the effectiveness of Muscle Energy Technique (MET) in reducing pain and improving shoulder range of motion in post fracture proximal humerus patients. The intervention was carried out over a period of 3weeks through regular therapeutic sessions.

CASE DESCRIPTION AND ASSESSMENT –

A 43-Year- old female patient presented with a right shoulder injury following a fall from a vehicle (scooty) .

Radiological findings confirmed a fracture of the greater tubercle and a possible avulsion fracture of the distal clavicle .The patient experienced pain , swelling, and restricted shoulder movement .

She said that when she was unable to lift the arm and cannot comb their hair , she gets discomfort or moderate pain in right shoulder gradually from front and back of shoulder region

And on taking history , she told that she is getting this pain from 2 week after conservative treatment .

On examination , it was found that her right shoulder .muscle are into tight and overall posture become forward slouched
Additionally, the therapist checked ROM , where she was experiencing pain and difficulty moving or lift arm above 40degree , and when asked about his pain using the VAS scale 8/10
After taking an assessment , when she had no other medical / surgical history .
Through this complete assessment , the therapist assessed that she had tightness over shoulder region and ROM restricted .

UNIQUENESS OF THE STUDY –

In my research , I primarily focused of this case study was the application of the Muscle Energy Technique (MET) . The rotator cuff muscles play an important role in greater tubercle fractures of the proximal humerus , and pain , muscle tightness , and restriction of shoulder movement are commonly seen after this fracture.[2]
The uniqueness of this study is that it specifically used Muscle Energy Technique (MET) to reduce pain , decrease muscle tightness , and improve shoulder ROM. Gentle exercises were also included so that patients could easily perform daily activities such as arm raises and hair growth.
This study highlights that MET is a safe and patient participation based technique that is helpful in accelerating recovery in post-fracture shoulder rehabilitation.

PROCEDURE

In this technique , the patient gently contracts (applies force) the muscles , while the therapist applies force in the opposite direction . The patient then relaxes , and the therapist passively stretches the muscles .[3]
Typically , a MET application consists of 3 to 5 contractions, each held for approximately 5 sec. Each contraction is followed by a stretch , which can range from 3-5 sec to 30-60 sec. [3]

PRINCIPLE

The patient gently contracts the muscle (for 5-10sec) then relax and a stretch is applied .
Technique 1: Shoulder Flexion MET
The patient is positioned in a supine or sitting position.
The therapist moves the arm to a pain-free range.
The patient is instructed to push gently against resistance (for 5-7 sec)
After relaxation , the stretch is increased. 5-10 repetition
Technique 2: Shoulder abduction MET
Same procedure .
The arm is raised out to the side
The patient performs a gentle contraction.
After relaxation , the range of motion is increased.
Technique 3: Elbow movement MET
For elbow flexion / extension
Gentle contraction + relaxation .
Used to improve Range of Motion (ROM).

Additional exercises:
Active ROM exercises.
Pendulum exercises.
Gentle Strengthening (at a later stage).

Results

ASSESSMENT	PRE- TREATMENT	POST - TREATMENT
Pain (VAS Scale)	8/10	3/10

ASSESSMENT(MOVEMENT)	PRE- TREATMENT	POST- TREATMENT
Flexion	0-40 degree	0-130 degree
Abduction	0-30 degree	0-120 degree
External Rotation	0-10 degree	0- 50 degree
Internal Rotation	Limited	Improved
MUSCLE STRENGTH ASSESSMENT	**PRE- TREATMENT**	**POST TREATMENT**
Shoulder abductors	2 /5	4 /5
Shoulder flexors	2 /5	4/5

The patient received treatment for 3 weeks , for a total of 7 sessions. After treatment , the range of motion (ROM) of the left shoulder improved significantly , with significant improvement observed in abduction , flexion , and internal rotation movements. Additionally , the hypertonicity of upper trapezius , SCM, Scalene , and pectoral muscles was significantly reduced after treatment.

DISCUSSION

After 3 weeks of treatment , when the effect of Muscle Energy Technique (MET) was discussed , the patient reported approximately 60- 70% pain relief and that raising the arm was much easier. Noticeable improvements were also observed in shoulder ROM, with flexion improving from 40° to 130° and abduction from 30° to 120°. Muscle tightness also significantly reduced , making daily activities such as combing and arm lifting easier. This suggests that the MET technique is beneficial for post- fracture proximal patients and aids in recovery.[2][4]

CONCLUSION

Muscle Energy Technique (MET) is an effective and safe physiotherapy intervention for managing post – fracture stiffness and restricted mobility in proximal humerus fractures . The application of MET significantly reduced pain, improved range of motion , and enhanced muscle strength in the affected shoulder. [2]
Regular physiotherapy sessions combined with patient participation contributed to functional recovery and improved daily activity performance . Therefore , MET can be recommended as an effective rehabilitation technique in the management of proximal humerus fractures following conservative treatment.

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