

Role of Physical Therapy Program OF Patella Bone Fracture

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ABSTRACT

BACKGROUND OF STUDY :-

Patellar fractures is a break in the knee cap (patella) These fractures may be complete or Incomplete and usually occur as the result of a fall- because of direct impact with the ground Constitute 1% of all skeletal injuries.

AIM OF STUDY :-

The study amis to identify physical therapy in injury fracture patella and illustrate methods uses in Treatment.

SUBJECTS AND METHODS:-

This study includes five patients with patella fracture then application of physiotherapy program as ice therapy for 15 minutes , electro stimulation for 10 minutes , mobilization of patella Bone and exercise therapy.

Result:-

Physio therapy program on five cases .Different of treatment period was found as largest proportion of the Celsius was 64.5% and of the proportion Celsius all case through Treatment in time different was such as case one 75% , case two 60% , case three 45% , case four 90% and case five 52.5% .

CONCLOUSEN :-

In this study, most of the cases were medial age (19-43) years and the injuries were more in men Than in women and these injuries are not common in young people and the causes of injuries were The result of a traffic accident and the treatment program.

For injuries included the use of physical therapy to reduce pain and control and it reduces swelling and with continued exercise .Ina ddition, it works to prevent atrophy and reduces muscle weakness such as the work of active blood Circulation as well as, it increases muscle strengthening (The quadriceps and hamstring muscles), and early Treatment is useful for improving balance, coordination and gait.

Keywords:-

Exercises, Range of Motion , Rehabilitation, pain , patella bone Fracture , PhysicalTherapy.

INTRODUCTION

The patella is small bone located in front of knee joint where the thigh bone (femur) and shinbone (tibia) meet, it protects knee and connects the muscles in the front of thigh to your tibia. *Stuart Melvin J. and Madhav A. Karunakar ,(2010).* A study performed by *Austin D Hill at el. (2014)* Patellar fractures constitute 1% of all skeletal injuries, 8 and different modalities of internal fixation are being advocated and practiced. Most of these use wiring techniques such as corkage fractures of the patella are more common in males between the age of (20 to50) years and occurs when there is a break in the round, movable bone at the front of the knee called the patella. The bone is also commonly known as the kneecap and the patella lies within a large tendon, called the quadriceps tendon, which connects the thigh muscles to the lower leg bone. The patella helps to absorb stress put on the legs during physical activity, especially during walking, running, and climbing stairs.

Most patella fractures occur as the result of a fall- but not because of direct impact with the ground. In the split second after your body recognizes you are falling, the muscles above the knee quickly contract in an attempt to straighten the knee and break the fall. Sometimes this muscle Contraction, called an eccentric contraction, is so strong that the force overwhelms the patella, Breaking it before the knee hits the ground, Less the fractures may occur because of a sharp blow to the patella as a result of a car accident or other high-force trauma , a fractured patella can be painful and may make walking difficult or impossible. If a knee injury causes debilitating pain, or if the bone protrudes through the skin there a new technique used for fixation of these fractures *Austin D Hill at el. (2014).*

Treatment of fracture patella :-

Jason A. Freedman M.D (2012) They suggested the start of Treatment first involves the use of ice and medicine, to reduce pain and inflammation. If the bone fragments are out of alignment (displaced), immediate realigning of the bone (reduction) by a person trained in the procedure is required. Fractures that cannot be realigned by hand, or are open (bones protrude through the skin), may require surgery to hold the fracture in place with screws, pins, and plates. Once the bone is in proper alignment, restraining the knee is often needed, to allow for healing. After restraint, it is important to perform strengthening and stretching exercises, to help regain strength and a full range of motion .

These exercises may be completed at home or with a therapist.

RESEARCH METHODOLOGY

Research Objective :-

The study aims to shed light on fracture patella at physical therapy in injury fracture patella and identify the causes about patella fracture types and how can physical therapy control to reduce the trouble.

Study Selection :-

Physiotherapy program after surgical of knee fracture

Aims of physiotherapy for fracture patella :-

Reducing pain , swelling and increase range of motion gradually of knee joint , Preventing atrophy, Strengthening of muscle (quadriceps and hamstring) ,teaching patient how to use crutches in treatment period *Yara Eddine , Jackson Missouri (2008)*.

Physiotherapy program including:

▪ Ice therapy :-

Begin immediately after surgery. Using icing machine or ice (if machine not prescribed) every 2 hours for 20 minutes daily until your first post-operative visit. Also Icing is a perfect time to perform elevation and decreases pain and inflammation.

▪ **Electrical stimulation :-**

Aim is a muscle stimulation and nerve (not stress extensor mechanism).

▪ **Continuous passive motion :-**

(CPM) machine (6 to 8) hours per day in 2 hour sessions at slow, comfortable speed start At (50) degree of flexion, and increase (10) degree per day up to (90) degree. If CPM not used, passive flexion / extension of knee (500) cycles, three times a day.

▪ **Exercises therapy :-**

- Range of Motion (ROM) exercises of knee joint.

▪ **Passive extension of knee joint:-**

patient sits in a chair and place heel on the edge of a stool or chair, relax thigh muscles and let. The knee sag under it is own weigh until maximum extension is achieved.

▪ **Heel props:-**

place rolled up towel under the heel and allow le to relax.

▪ **Prone hangs:-**

. Patient lies face down on a table /bed with the legs hanging off the edge of the table, allow the legs to sag into full extension.

▪ **Flexion of knee joint :-**

Passive flexion of knee joint - Patient sits on chair /edge of bed and let knee bend under gravity may use the other leg to support and control flexion.

Wall slides- Patient lies on back with the involved foot on the wall and allow the foot to slide down the wall by bending the knee; use other leg to apply pressure downward.

Heel slides- use patient good leg to pull the involved heel toward the buttocks, flexing the knee, Hold for (5) seconds; straighten the leg by sliding the heel downward and hold for (5) seconds.

Quadriceps sets - Patient will sit in full extension.

Isometric quadriceps- Patient will set at(20degree -30degree) of knee flexion .then straight leg will raise.

Hamstring isometric- Patient will set in full extension.

Patella mobilization- Physiotherapist will do mobilization of patella of patient for improving patella movement.

Hip- Patient will do abduction and adduction of hip joint *.Jason A. Freedman M.D (2012).*

(Table 1) show time and type Exercises & Goals :-

Phase	Time	Exercises/ Active	Goals
Early post OP	0-2 weeks	Brace on at all time - Keep locked in extension -remove only for bathing Weight in extension Avoid active knee extension	Pain and swelling control
Phase1	2-6 weeks	Continue with brace--bear weight in extension Avoid active knee extension PT ROM EX 0-2 weeks = 0 to50 degrees. 2-4weeks = 0-75 degrees. 4-6weeks=0-90 degrees. Seated passive flexion Active assisted extension Quadriceps isometrics	Tendon healing Pain and swelling control ROM to 90 degree
Phase2	6-12 weeks	Brace unlocked to 60 degree with good quadriceps control. Avoid aggressive flexion ROM Continue patellar mobilizations Home exercise program	Improve ROM to 120 degree Improve quadriceps strength
Phase3	12-20 weeks	Knee flexion ROM Quad/hamstring strengthen Step up/step down Home exercise program	Full knee ROM Improve quadriceps flexibility
Phase4	20 weeks	Continue lower extremity strengthen Running program Home exercise program	Improve to full ROM Improve quadriceps strength

Experimental Areas:-

1. central Hospital – Emsalata.
2. central Al mogaruf – Al kames.
3. central Zelaten Physiotherapy.

Material:-

- Ice therapy.
- Electro stimulations.
- Hot back.
- Crutches.
- Cpm.

Methods:-

Use ice therapy or cold therapy over leg for (15) minutes every (2) hours to decrease pain and inflammation, after use electro stimulation to stimulation muscle and nerve take (10) minutes all Ten days, sometime use hot back to increase blood circulation take (5) minutes for (2) weeks, after use crutches post operative for approximately(8) weeks following surgery, That brace use walking with brace locked in extension may be unlocked and CPM use to give knee range of motion and start at (0-30) degrees every (12) hours for (6)weeks.



**(fig 1) use system Ice therapy .
stimulation**



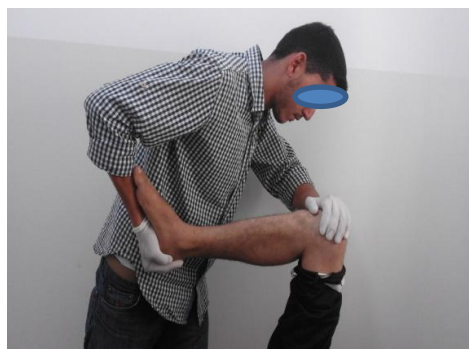
(fig 2) use system Electro



(fig 3) Use Exercise stretch quadriceps



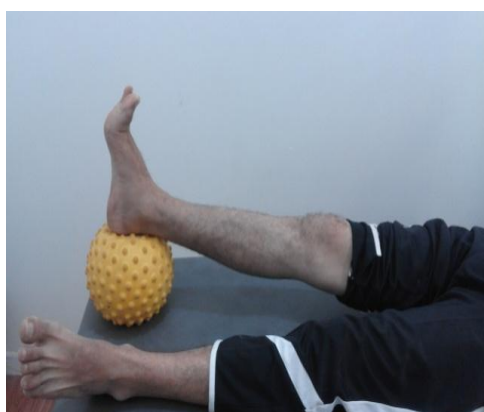
(Fig 4) Patella mobilization



(Fig 5) passive flexion .



(Fig 6) Isometric quadriceps

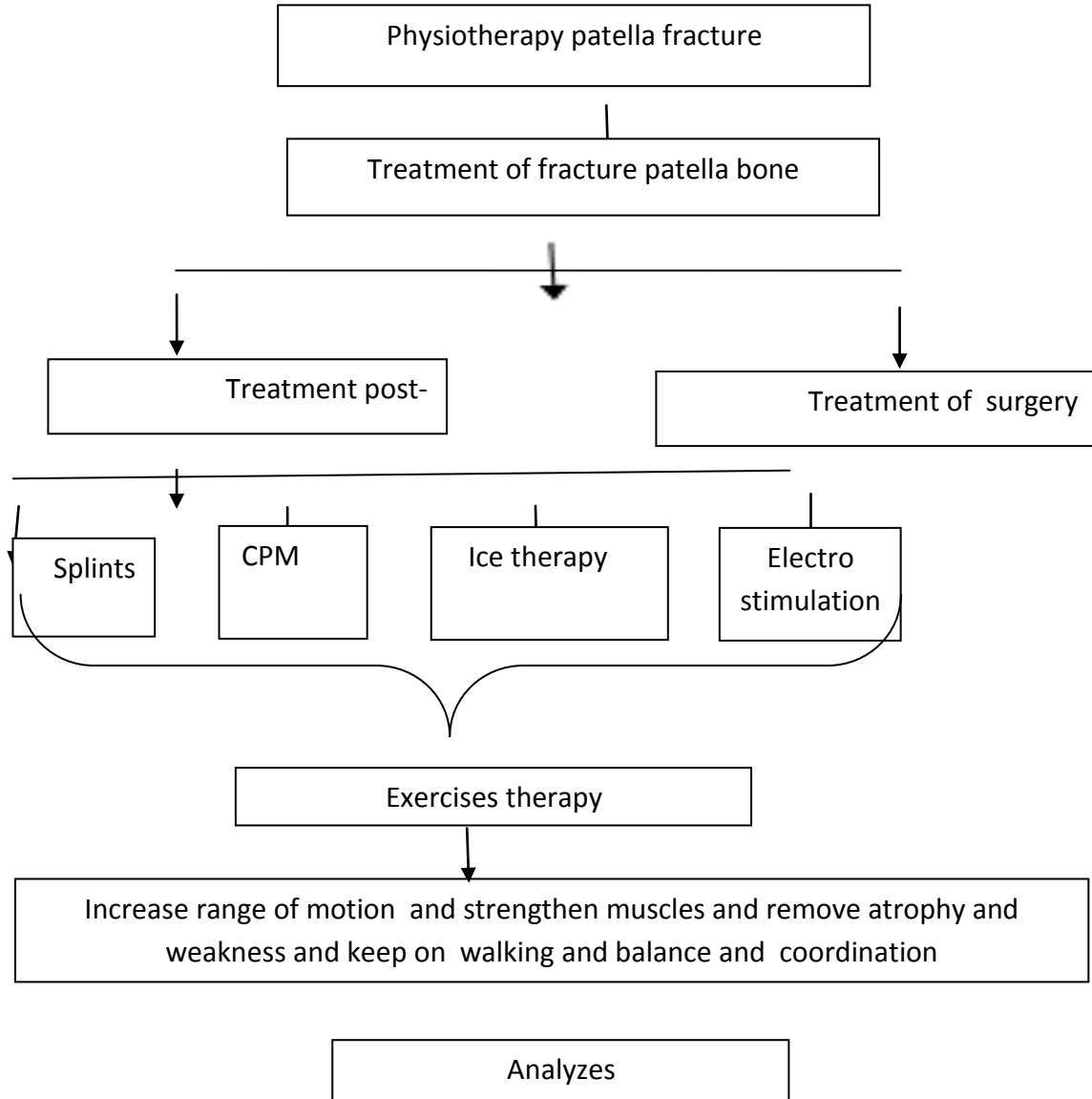


(Fig 7) Isometric hamstring



(Fig 8) Abduction hip joint

(Table 2) This plan shows design study :-



RESULT AND DISCUSSION

Experimental Areas:- Al magariaf health center of physiotherapy in Al khums city.

RESULT:-

(Table 3) of the show of the information about cases.

Case number	Age	ROM per PT	ROM post PT	Time of treatment
1	23years	30degree	125degree	5 months
2	34years	38degree	120degree	4months
3	35years	10degree	118degree	3months
4	43years	20degree	128degree	6months
5	19years	25degree	125degree	3.5months
6	41	30degree	130degree	4months
7	29	20degree	125degree	4months
8	23	30degree	130degree	5months
9	37	10degree	125degree	3months
10	39	30degree	120degree	6months
11	42	25degree	125degree	5months
12	32	20degree	110degree	4.5months
13	24	15degree	120degree	4months
14	27	30degree	125degree	5months
15	23	25degree	135degree	3.5months
16	24	30degree	130degree	6 months

Physiotherapy program treatment of sixteen cases different were through appointee Period, was largest proportion of the Celsius she 64.5% and of the proportion Celsius all case Through treatment in time different take (3 to 6) months were case one 75% ,case two 60% , case three 45%, case four 90% and case five 52.5%.

Discussion:-

Table (2) shows : Age and Range of motion to cases , time treatment and proportion celsius through the previous study to have taken physical therapy to break the femur Postoperative focused on strengthening the muscles around the thigh and the extent to motor mil hip and knee joint and learn proper walking. *Jospt (1991)*

Success rate of about 80% delegation solidifies physiotherapy about 6 months.

The search focused on eight people aged between (16-43) years and used ice therapy and electrotherapy , the CPM , passive and active therapeutic exercises passive for strengthening hip muscles using different weights ,duration of treatment 3 sessions per week and each session stretched between 40-60 minutes

a success rate of about 80% over the duration of the treatment six months.

CONCLUSION & RECOMMENDATION

Conclusion:-

After first experience a result include :

Most cases were age medial (20-60) years ago and were in men more than woman but we found this injures uncommon in young people and more common types fracture she the fracture Comminute that result about accident or full on knee joint.

In this study. The role of physiotherapy was found with patella fracture in patient to reduce and Control pain and swelling then it increases (ROM) of knee joint and continuing exercise work on preventing atrophy and it reduces weakness muscles such as work active blood circulation It increases strengthening hip muscles and aslo early treatment is useful in order to improve balance , coordination and walking such as our proportion succeeds largeness. The patient will be taken to retreating and self- rehabilitating in generally patient with patella fracture and internal fixation needs period of physiotherapy program between four to eight months.



Recommendations for patients with patella fracture :-

- (1) Avoid movements sudden and fast.
- (2) Avoid direct full flexion on knee joint .
- (3) Avoid putting a pillow behind effected knee as this can cause problems getting knee straight.
- (4) Avoid indirect injuries from sudden contraction of the quadriceps muscle .
- (5) Not lift weight bearing direct.
- (6) Preserving fitness of body.

Recommendations for researchers and academics :-

We recommend to give more time, any period of time not less than 12 months at least, to do more research on the physical treatment of occipital rump fractures and separating the ages of the injured. Gender differences also took into account to clarify the differences in the physiotherapy program in force for age groups and gender.



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الخاتمة

خلفية عن الدراسة :

ختامًا لهذا البحث الذي درسنا فيه كل ما يتعلق بمشاكل كسر الرضفة من أسباب و أعراض و طرق التشخيص و العلاج ، و بينا الأشخاص الذين يعانون من كسر الرضفة ، كسر الرضفة قد يكون كامل أو غير كامل و يحدث كنتيجة سقوط بسبب التأثير المباشر بالأرض و تشكل 1% من الإصابات الهيكلية .

الهدف من الدراسة:

هو معرفة الهدف الرئيسي للعلاج الطبيعي والطرق المستخدمة لتطبيق العلاج لكسر الرضفة.

الطرق و المواد:

في هذه الدراسة سجلنا خمس حالات و طبقنا عليها العلاج الطبيعي الذي يشمل العلاج بالتلج و يأخذ 15 دقيقة ، و التحفيز الكهربائي الذي يأخذ 10 دقائق و جهاز cpm الذي يأخذ 6 أسابيع ، و كل هذه الأجهزة توضع علي الركبة و من تم استخدام التمارين .

النتيجة :

من معالجتنا إلى خمس حالات مختلفة كانت خلال فترة زمنية معينة ، كانت نسبة النجاح الكبرى لجميع الحالات هي 64.5% و النسبة المئوية إلى كل الحالة خلال المعالجة لفترة زمنية في الحالة الأولى كانت 75% و الحالة الثانية كانت 60% و الحالة الثالثة 45% و الحالة الرابعة 90% و الحالة الخامسة 52.5% .

الاستنتاج :

استنتجنا إن معظم الحالات كانت في العمر المتوسط أي من 25-60 سنة و لكنها تحدث في الرجال أكثر من النساء و كانت غير شائعة في المراهقين كانت نتيجة حادث أو سقوط مباشر علي الركبة و مع استخدام العلاج الطبيعي لتخفيف الألم و الانتفاخ و الاستمرار علي التمرين الذي يعمل علي منع الضمور و الضعف في العضلات و تعمل علي تنشيط الدورة الدموية و زيادة تقوية العضلات (quadriceps and hamstring) و العلاج المبكر مفيد لتحسين التوازن و التنسيق و المشي .

الكلمات الدليلية :

رضفي ، كسر ، معالجة ، علاج طبيعي ، إعادة تأهيل ، كسور ركبة ، الرضفة عظمية ، مضاعفات ما بعد الجراحة .