TRACTION OF THE LOWER LIMBS (INDICATION)

* Useful for reducing and immobilizing femoral shaft fractures; supracondylor and intercondylor , condlylor fracture of femur, condylor fractures of the upper end of tibia.
* Also useful for grossly infected fracture tibia , severe fractures of the ankle ; Motise, subluxation and dislocation.
* Dislocation of hip and knee joint
* Rheumatoid conditions especially in hip & knee joint
* Deformities e.g in poliomyelitis can all be corrected by continuous traction

Methods of skin traction in lower limbs are:

1. gallows
2. Bucks traction
3. .bryants
4. Harmoc tration / pelvic ship
5. Dunlop traction (upper limb)

GALLOWS TRACTION

* Used in children under 2yrs with weight of 12kgs
* Always applied bilaterally
* Hips should be level and suspended just above the bed – a height sufficient to pass a folded pillow under the childs bottom.

INDICATIONS

* Femoral fractures in children
* Hip conditions in children e.g SUFE
* Congenital condition of the hip
* Pathological conditions in children – DDH, CDH, perthes disease of the hip

B. BUCKS TRACTION

- used for femoral traction

- Hip and acetabular fractures

- Fractures in the socket hip joint ( i.e the ball & socket)

- Lower back

- Reduce muscle spasm

Application.

- Apply the adhesive / non adhesive strapping. Rope is attached to the boot and it has to go over the pulley at the end of the bed.

- weight should hang freely attached to the rope.

Approximate weight is approximately 5 – 8 pounds

1 pound – 0.45kg

BRYANTS

– unlike gallows

- Used in developmental dislocation of hip

- For the femur

- Congenital abnormalities of the hip

- The patient limbs are suspended literally in vertical position in the hip joint at 90

Over a period of days ,the hips are gradually moved ouward from the body using pulley system

The patient body provides counter – traction

Harmoc traction – pelvic sling

-Used to relieve pain in the lower back hips and legs. normally associated with low back disorders

-Immobilization or relieve pressure on the skeletal system

-Awaiting definitive treatment

- For treatment of pelvic fracture – here the patient is placed in a canvas ship or harmoc that is suspended by a tension spring to an overhead frame bar

-The pelvis is suspended such that its off mattress

-Consider padding along the edges of the sling so as relief pressure on coccyx

90°\ 90° Traction

-Used for fracture femur with wounds over post aspect of the thigh. Operative / post operative management

-Subtrochanteric and proximal 1/3 third femur; used in both children and adults

- Both hips and knee are flexed at 90°

- Skeletal traction is applied through lower femur or upper tibia

- 3 methods of supporting leg in 90°/90° traction

~Using b/k cast

~Using a steinman pin

~ Using Tulloch brown u loop

Dangers

1. the skeletal traction
2. Stiffness and loss of extension of the knee
3. Flexion contracture of hip
4. Injury to the lower femoral or upper tibia epiphyseal growth plates in children
5. Neurovasuiler damage

Consider padding along the edges of the skin or as needed to relieve pressure on the coccyx

Contraindications of skeletal traction.

-Maliganancy

- infections such as osteomyelitis

- Osteoporosis

- uncontrolled cardiovascular diseases

- inflammatory arthritis

- fracture in pregnancy

- tissue damage

- excessive bleeding.

- avascular injury mostly from too much weight being applied

- adverse reaction in anesthesia

Care of skin traction on the lower limb / precaution

1. Ensure the paents is fully informed and has understood the reason for the traction and consent is given.
2. Assess any skin problem – to reduce any risk of skin traction.
3. Prevent pressure sores developing over body prominences
4. Allow normal range of flexion of the limb
5. To prevent extensive set slipping and to allow traction to be transferred to the limb
6. To prevent bandage coming undone
7. To allow traction force to be applied
8. Maintain traction
9. Alow the body (child) or according to traction to prone counter traction
10. If treatment for fracture femur the child will only move themselves as pain allows
11. Maintain warmth and comfort
12. To prevent bandages wrinkling and causing potential tightness which causes skin problems and potential vascular compromise
13. To examine the skin without disturbing the adhesive traction
14. Check for vascular deficit
15. Avoid pressure on the popliteal nerve to prevent foot drop
16. To encourage patients mental social and physical development

Hamilton – Russel traction

* Indications
* Management of fracture shaft and above femur
* After arthroplasty operations of the hip – application.
* Below the knee skin traction
* Wt required is 3-6 kg in adult
* 0.28 – 1.8 kg in children
* It’s based on law of parallelogram of forces that the 2 pulley blocks at the foot of the bed theoretically doubles the pull on the limb
* Resultant traction is in axis 30° to the horizontal to the shaft femur

Perkins traction

* Used in rx of fracture tibia
* Fracture Femur – subtrochanteric region distally in all ages.
* Trochanter in less than 50yrs
* Perkins showed that by encouraging early muscular activity stiffness of joint was prevented by extensibility of muscles by reciprocal Innervattion principle.
* It’s the use of skeletal without any external splintage coupled with active movement of the injured limb

Application under GA and Aseptic precautions ;Insert Denham pin through Tibia.

* Attach simovic swivel to each end of pin
* Connect traction cord to each swivel to pass each cord over separate pulleys.

Lateral femoral traction-

Risky to femoral artery and other medial neurovabcular structures

INDICATION;

* + For the management Of central fracture dislocation of the hip with 2.5cm from the prominent part of the greator trochanter mid way between aneriori and posterior surfaces of femur
  + Threaded screw is used
  + Attach weight of 9kgs
  + Traction to take about 4-6wks

Used ;For tractures with medial or anterior force

Streched capsule and ligamentus tears may reduce acetabular fragments

Contradications

Other essential materials for traction are;

* Firm matteress or abed board with a facility to elevate the head and the foot end of the bed.
* An overhead frame,trapeze monkey rope and side raise to shift the position of the patient
* Bars,Pulley,Ropes/cords ,wt hangers skeletal traction apparatus and plaster cast material
* Traction must always be opposed by counter traction
* Constant care and vigilance to avoid all the hazards of prolonged bed rest

Other important equipement are;

* Stein man pin tongs
* Hammer/ introducer
* Splint –Brown splint &Thomas splint for fixed continuous traction
* Pearson splint
* Aseptic agents

Consider paddy along the edges of the rhy or needed t relieve pressure on the coccys.

Contraudication –Skeletal traction (after the lesso)

-Malficancy

-Infections e.g. Oesteomyelitn

-Osteoposis

-Uncontrolled cardiovascular diseases e.g. HIV

-Inflammatory arthritis

-Fracture in pregnancy

-Tissue damage

-Excessive bleeding

-Avascular lying mostly from too much weight being applied

-Adverse reaction in an aesthesis

**Other sliding traction**

1. Bricks extension skin tactic – Pelvic traction
2. Perkin traction
3. Russell traction
4. Tulloch –brown traction
5. 90-90 traction
6. Gallows/ brayant traction
7. Bowler brain frame