

American Society of Orthopedic Professionals

Orthopedic Lecture Series[©]

Bone/ Structures, Fracture Types and Skeletal Disorders/ Specialty Casts and Appliances/Surgical Procedures, Positioning and Devices

Lesson 11: Traction

Traction

- ▶ The application of a pulling force in the treatment of skeletal and muscular disorders, or abnormalities
- ▶ Generally used for disorders of the extremities, vertebral column, or pelvis
- ▶ Is used in treatment of many types of disorders, including dislocations, fractures, and muscle spasms
 - It may be used short-term, or for longer periods of time
- ▶ Used to bring the fragments of a fracture into alignment, to ease pain and muscle spasms
- ▶ 2 main types of traction
 - Skeletal
 - Skin



Skin Traction

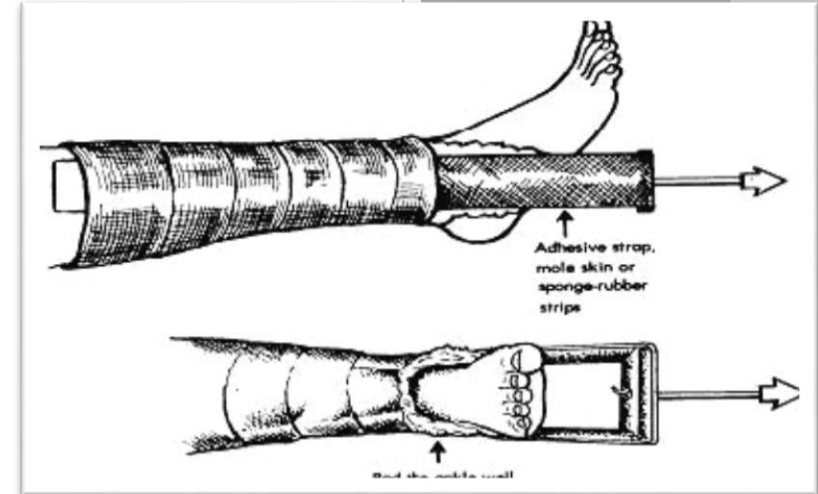
- ▶ Involves the use of weights attached to the skin by various devices
 - Weight ranges from 5-7 pounds
- ▶ Skin traction is preferred in cases where only light weights are required as it is noninvasive
- ▶ The weight are attached to the skin by means of tape, straps, boots, or cuffs
- ▶ The skin attachment devices must be loose enough to allow proper circulation
- ▶ Skin traction is usually applied while the patient is in a hospital bed

[Skin Traction video](#)



Buck's Traction

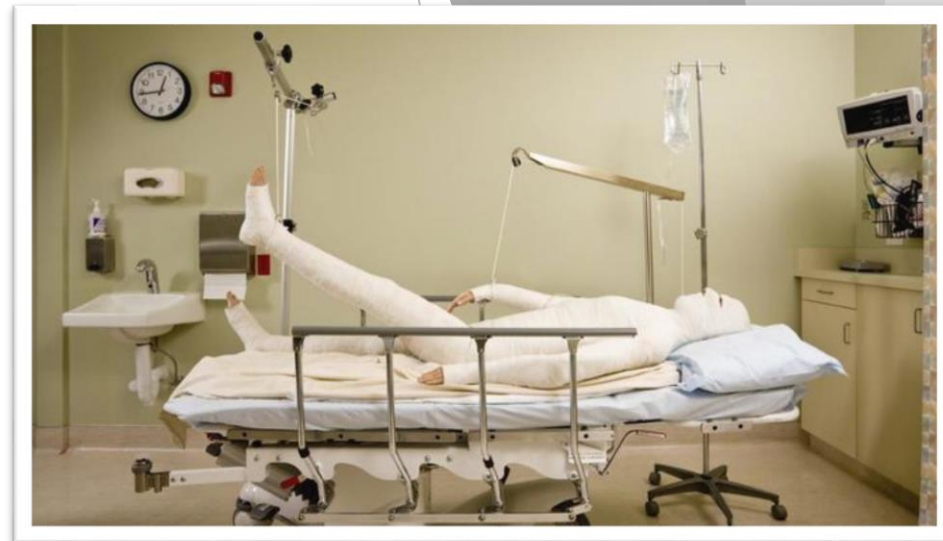
- ▶ It provides a longitudinal traction on an extremity by means of an apparatus involving adhesive tape attached to the skin
- ▶ A cord attached to the adhesive tape is fed through a pulley
- ▶ A weight is attached the other end of the cord to provide necessary tension
- ▶ Today, a special splint is often used in place of adhesive tape
- ▶ Commonly used to treat patients with fractures who are waiting to undergo a surgical procedure
- ▶ Disadvantages
 - Extensive soft tissue injury would rule out this form of traction as it would be painful and could exacerbate the damage to the tissue
 - The pressure exerted in this form of traction could cause ischemic changes in patients with poor peripheral circulation
 - Long term use of this technique could lead to skin shearing and the development of pressure sores



Russell's Traction and Hare Traction

1. Russell's traction

- ▶ Uses skin traction on the lower leg to suspend the distal thigh by means of a sling
- ▶ It is considered an improvement to Buck's traction
- ▶ Split Russell's traction is often used to treat fractured hips in the elderly



<http://www.ask.com/health/russell-s-traction-cdc54c3d912729a5>

2. Hare traction

- ▶ A form of temporary traction used while transporting acute injury cases
- ▶ Used in the field to treat fractured femurs
- ▶ The splint consists of a long leg splint, a ratchet device to allow adjustment, and straps to help immobilize the leg

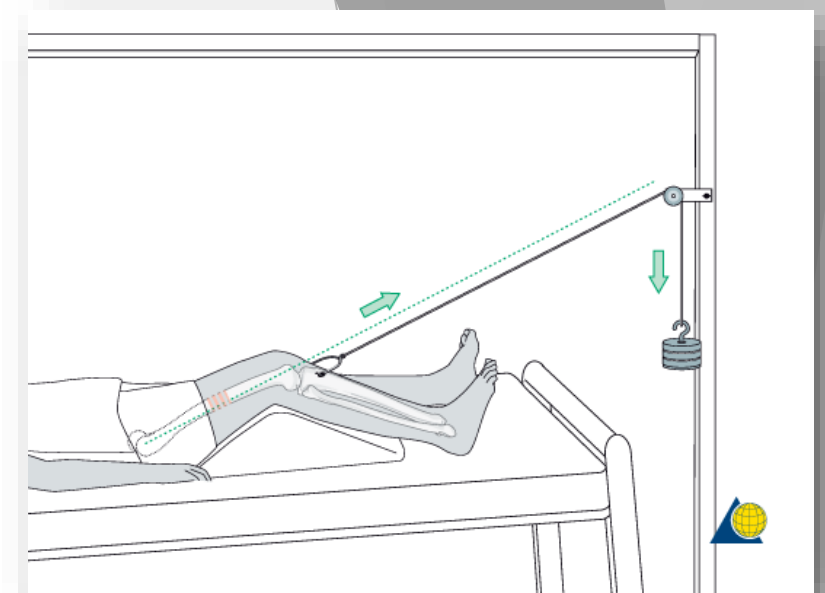


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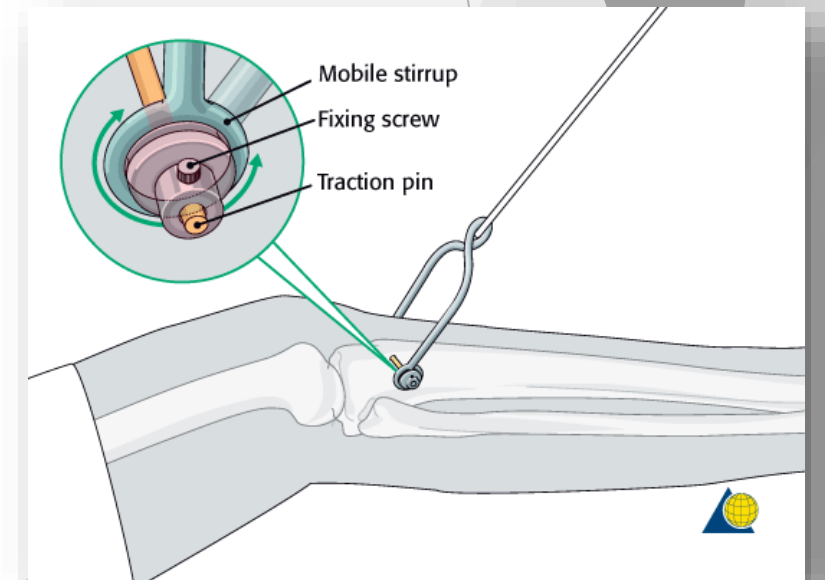
Skeletal Traction

Skeletal traction

- ▶ An invasive procedure that uses hardware placed in the bones
- ▶ These pins, or screws, are applied during a surgical procedure under anesthetic
- ▶ Is used when larger amounts of weight are required that can be used with skin traction
- ▶ Allows the use of 25 - 40 pound weights
- ▶ This hardware can be left in the bones for a number of months
- ▶ The hardware may cause inflammation of the bone



https://www2.aofoundation.org/wps/portal/surgerymobile/contentUrl=/srg_32/05-RedFix/NonOP/EHS2010/32EHS_4-Skeletal-traction.jsp&soloState=precomp&title=&Language=en&bone=Femur&segment=Shaft



Bryant's Traction

- ▶ Used to maintain alignment of femoral fractures in children up to 2 years of age, or those weighing less than 30 lbs.
- ▶ Involves the use of compressive wraps around the leg
- ▶ A rope extends from the wrap to the traction weight
- ▶ Longitudinal traction is then applied and pulls the femoral head distally
- ▶ Modified Bryant's traction is used in the reduction of congenital hip dislocations in young children
- ▶ Congenital hip dislocations are often associated with tightness of the soft tissues surrounding the hip joint
- ▶ This traction is maintained for a period of time to gently stretch the soft tissues around the hip
- ▶ Reduction is attempted once the hip joint is considered mobile enough



Traction in Fracture Care

- ▶ The muscles surrounding a fracture of a long bone may contract, and displace the major fragments.
- ▶ This causes malalignment of the joint, swelling, and increased pain.
- ▶ This displacement can also cause increased pressure on nerves, or blood vessels, which can lead to irreversible damage to soft tissues distal to the fracture.
- ▶ Traction often dramatically reduces the pain caused by the injury.
- ▶ The patient can be kept in traction until surgical fixation can be performed.
- ▶ In rare cases where the patient is unable to tolerate surgery, traction may be used on its own to allow healing



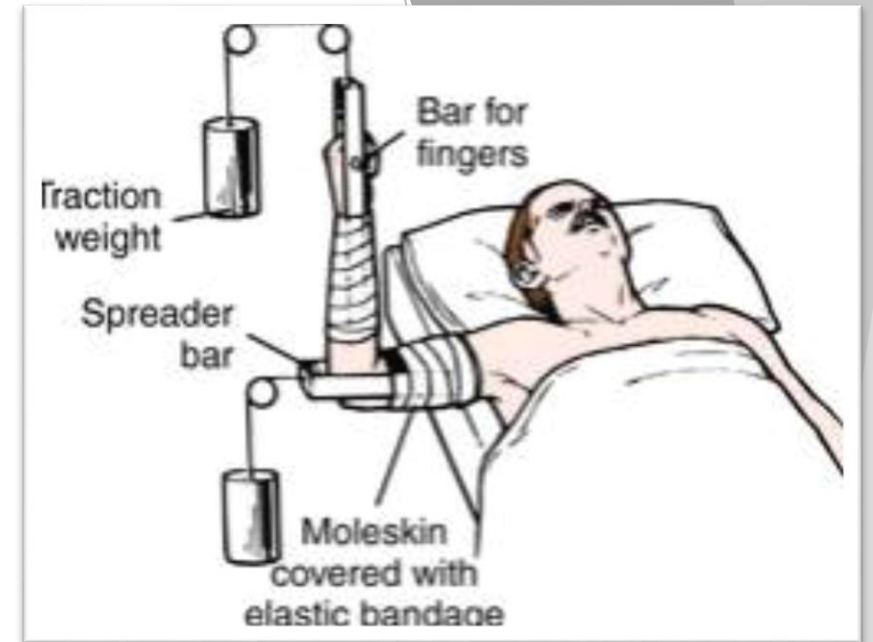
http://www.wildernessemergencycare.com/book/splint_femurs.htm



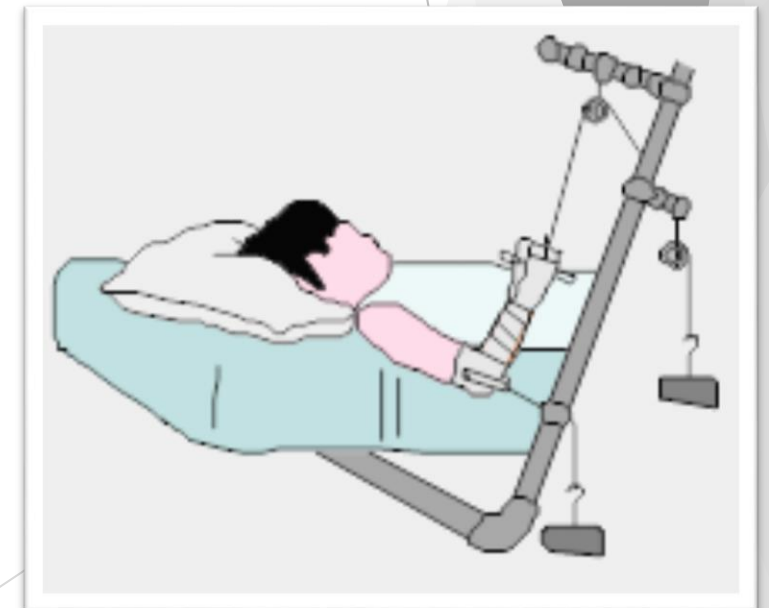
<http://remotemedicine.blogspot.com/2012/04/traction-splints.html>

Dunlop's Traction

- ▶ Most frequently used to treat supracondylar elbow fractures in children
- ▶ Helps maintain the reduction, and helps prevent neurovascular compromise
- ▶ Often involves skin traction, but it also involves a combination of skin and skeletal traction
- ▶ The patient is positioned face up in the hospital bed with the affected extremity positioned at the edge of the bed
- ▶ This form of traction works by applying weight traction at the distal end of the humerus, and counteracting this with longitudinal traction of the forearm
 - The forearm traction must hold the elbow at a 90 degree angle



<http://medical-dictionary.thefreedictionary.com/Dunlop+skin+traction>



<http://www0.sun.ac.za/ortho/webct-ortho/general/trac/trac-4.html>