# Mechanical Traction

CERVICAL & LUMBAR SPINE

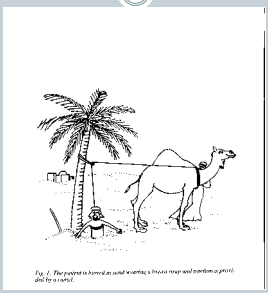
## Introduction

- Overview of Spinal Traction
- Possible Effects
- Indications
- Factors to Consider
- Procedure for C/S & L/S
- Demonstration

## Early Traction – 3500BC

- Kubja requesting Krishna help straighten her spine
- Krishna stands on her toes and lifts her chin to remove her spinal deformity

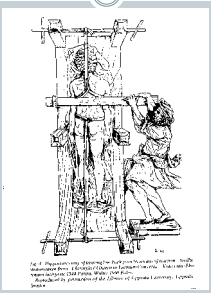
## Pharaohs' Egypt



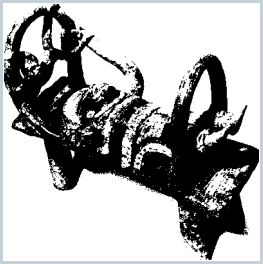
## Hippocrates Traction

- Hippocrates (460 BC to 377 BC) used axial traction to correct spinal deformity

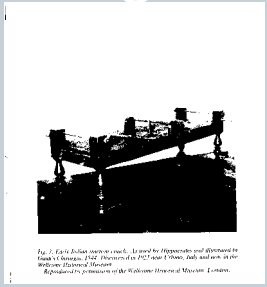
## Hippocrate's Traction Table



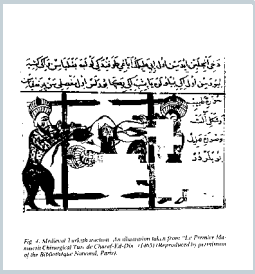
## Pre-colombian



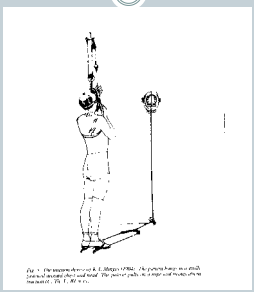
## Italian Traction Couch



## Medieval Turkish Traction

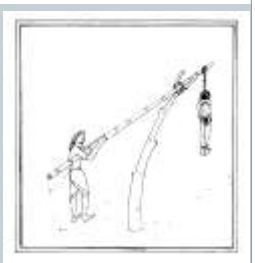


## 1904 Home Traction???



## Tribal Bonesetters in India

- Observed technique cited in Kumar 1996
- Author watched a 'bone-setter' perform traction on a 9 year old with scoliosis



## Today's Western Traction

## Possible Effects

- Separation of the vertebral body
- Mobilization of the joints
- Modification of afferent impulses (mechanic-receptors)
- Relief of pain (inhibition of afferent neurons)
- Improved fluid exchange (arterial, venous, lymphatic)
- Stretch of muscle
- Disc nutrition
- Reduction of muscle spasm

## Indications - Sustained

- Acute/severe nerve root pain
- Recent neurological changes
- Pain is severe/irritable
- Symptoms of gradual onset without history of trauma
- Where LF, Rot towards, and E are markedly restricted by distal symptoms

## Indications - Intermittent

- Conditions where joint or root irritability is low
- Where marked stiffness is present ( may be preceded mobilization)
- Marked degeneration on x-rays
- As a longitudinal technique, particularly where symptoms are bilateral

## Indications-intermittent

- Pain arising from the lumbar spine without "obvious" loss of ROM
- "Ache" arising from the lumbar spine in presence of marked bony/degenerative changes
- Lumbar pain with a diurnal rhythm increasing through the day after a pain free morning
- Where no further progress is obtained with manual therapy

## Factors to Consider

- Types of Apparatus and suspension
- Weight and build of patient
- Level (s) to be treated ( u/c best treated in sitting; L/c best treated supine)
- Position of adjacent body part
- Sustained/intermittent

## Factors to Consider

- Poundage - loading
- Duration
- Frequency of sessions
- TMJ problems
- Dentures
- VA signs
- Headache (may be aggravated by lumbar traction)
- Latent thoracic problems

## Information Derived from Research

- Positioning in flexion opens joints posteriorly
- Weight of 20# or more produces separation of vertebrae (greater separation occurs posteriorly in the C/S)
- 20-25# eradicates the normal cervical lordosis
- 30# x 7 seconds achieved separation
- 50# x 7 seconds achieved slightly more

## Information Derived from Research

- U/C segments do not separate as easily as lower
- Rhythmic traction produces 2x the separation as static
- Lumbar spine research does not document efficacy of Rx
- Once removed, restoration of normal dimensions occurs more rapidly posteriorly than anteriorly
- Less separation occurs in elderly patients

## Clinical Experience

- Attempts should always be made to achieve results with minimum duration and poundage
- Poundage sufficient to equal natural opposition tendencies maintaining the integrity of the resting joint is often enough to relieve pain and limitation
- Approx. 1% of patients (particularly those with low sacral pain will get sever L/S pain after treatment. To avoid the first treatment is always a **dummy run**

## Equipment

- Pulley System
- Tru-trac
  a. Sitting
  b. Supine (not effective below C5/6

Harness should be adjustable in three dimensions

a. Occiput-spreader
b. Chin Spreader
c. Chin-Occiput

## Patient Position

- Primary consideration is patient comfort and ease of application
- Must consider both
  a. Angle of head on neck
  b. Angle of neck on trunk
  c. Ideally main traction effect should be directed to the main level involved

## Precautions

- Patient with VA symptoms always treated sitting, never left unattended!
- C-traction can exacerbate dormant lumbar/thoracic problems
- C-traction can produce nausea with strong or prolonged traction
- C-traction in sitting can produce suboccipital burning if not properly adjusted
- Greater than 20# may produce increased discomfort

## Procedure (Lower C/S Initial treatment)

- Patient Position
- Apply Halter
- Connect rope-pulley –in line with level to traction
- Assess Symptoms
- Palpate interspinous space
- Apply gentle traction (force should be sufficient to move C5-usually 4-5#
- Make Adjustments

## Procedure Lower C/S- Initial treatment

- Sustain Pull 10 seconds- reassess

1. Irritable/severe group do not produce complete relief of severe distal symptoms; Improved maintain 5"; Worse/complete relief ½ , maintain 5"
2. Chronic/non irritable Improved-maintain 7-10 minutes; ISQ: Add 2-3# for 7-10 minutes more; Worse: ½ # for 7-10 minutes

- Lower slowly, allow pt. To rest 5-10 minutes
- Reassess

## Subsequent Visits

1. Severe/Irritable:
   Improved - repeat; ISQ- increase 5 min.;

   Worsening - ??right technique, ?nature of the pathology, clarify c/o worse and o/e ISQ then ½ # and time;

   c/o worse and o/e worse - STOP!

## Subsequent Visit

- Chronic not severe
  - Improved- increase time, same #
  - ISQ- increase time and #
  - Worse- c/o worse and o/e ISQ ½ # and same time; c/o worse and o/e worse STOP

## Other Considerations

- Build up to:
  1. 15 minutes for joint problems
  2. 20-30 minutes for nerve root
  3. 20-25# (occasionally 35-40 #)
  4. Note: try to achieve results with minimum duration and #; progress time before # and progress only when improvement stops.
  5. With no improvement after 3 visits traction is not likely to be effective at this stage

## Scheme for progression

| Symptoms | Sign | Time | Weight |
|---|---|---|---|
| Better | Better | Same | Same |
| ISQ | ISQ | Increase | Increase |
| ISQ/Better | ISQ | Increase | same |
| Better | Worse | Same | same |
| Worse | Better | Same | Same |
| Worse | ISQ | Same | ½ # |
| Worse | Worse | ½ | ½ # |

## Procedure for L/S

- Patient Position supine/prone
- Apply Belt-thoracic at the widest part of the chest; pelvic applied standing
- Position pt. So level to be treated is at the break in the table
- Tack up the slack
- Assess symptoms-local and referred
- Apply Traction
  - A. if irritable 10-12#
  - B. if not irritable 20-30#

## Procedure for L/S

- Wait 10 seconds and reassess
- After traction – release slowly, ask patient to rock pelvis gently and keep rocking until table is closed
- Close table
- Allow pt. To rest when severe or irritable
- Instruct how to get up from table
- Reassess
- Instruct pt may feel stiff and funny for several hours after treatment

## Subsequent Treatment

1. Improved – irritable pt. # ISQ, increase time 5 minutes; non irritable pt. Increase 5 #, 5 minutes;
2. ISQ- irritable pt repeat; non irritable pt increase 5# and time 5-10 min.
3. C/o worse, O/E ISQ repeat or decrease #, time the same
4. C/o worse, O/E worse –**STOP**
5. Frequently build to 50-70# in light build and 100-130# in heavy build
6. Increase time 15 minutes for joint problem; 30minutes for N.R.

## Any Questions?