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

Hippocrates’ 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 'bonesetter' 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 by 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
- 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 severe 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
- Occiput-spreader
- Chin Spreader
- 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

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<th>Symptoms</th>
<th>Sign</th>
<th>Time</th>
<th>Weight</th>
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<td>Same</td>
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### 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#
- 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; 30 minutes for N.R.

### Any Questions?