

A Comparative Study of Pelvic Traction and Bilateral Leg Traction in the Conservative Management of Low Backache

Dr Sama Anoop Reddy, Dr Abhishek V Shetty

Abstract: **Background:** Low backache is the commonest complaint with which the patients present to an Orthopaedic Surgeon. Nearly 80% of the population suffer from low backache at one or the other stage in their lifetime. The management of these patients includes bed rest, analgesics, back exercises, traction and at times even surgery. Dillane, Fry and Kalton reported that nearly 79% of men and 89% of women suffered from low backache at some point of time in their life. The exact cause of which was unknown. This amounts to significant loss of income for the nation because the productivity is lost due to absenteeism. **Materials and Methods:** We evaluated 93 patients with low backache due to various causes. Out of these, 44 patients were put on bilateral leg traction and the other 49 patients on pelvic traction. Patients between 20 to 70 years of age were included in the study. Their foot end was elevated while they were on traction. Pain severity was assessed based on the following pain severity scales: Body diagrams, Thermometer pain rating scale, Visual analogue scale (VAS), Mc Gill Pain questionnaire method, Numeric rating scale, Wong Baker faces pain rating scale. The purpose of this study is to evaluate whether Pelvic traction OR Bilateral leg traction is superior in the conservative management of low backache. **Results:** The analysis of the data has showed that bilateral leg traction has got significant pain relief as compared to pelvic traction, but there is no difference between bilateral leg traction and pelvic traction in regards to time duration taken for the pain relief.

Keywords: Pelvic traction, Bilateral Leg traction, analgesics, Physiotherapy

1. Introduction

The estimated yearly prevalence of Low Backache is 5-20% in US and 25-45% in Europe. 76% of all claims of back strain and sprain injuries to back were highest among truck drivers, operators of heavy instruments, and construction workers.

The incidence of Low backache is on a rise. A few of the causes are:

- Faulty posture adopted by the younger generation while sitting or studying.
- Working on computers for hours together by sitting in a defective posture
- Driving vehicles especially two wheelers on faulty roads which are uneven, especially in our country.
- Increase in geriatric population due to increased life span of an individual. This is secondary to improved quality of health care in our country. Hence degenerative disorders of spine, leading to low backache has increased.

The management of these patients include Bed rest, Analgesics, Back exercises, Traction and at times even Surgery.

2. Method

Patients included in this study suffered from low backache due to either one of the causes mentioned below:

- Acute Lumbosacral strain.
- Acute on Chronic Lumbosacral strain.
- Intervertebral Disk Prolapse without significant Neurological deficits.
- Pyriformis Syndrome.
- Grade I to Grade II Spondylolisthesis.
- Lumbar Spondylosis.
- Low backache due to Degenerative Disc Prolapse.

- The number of patients were categorised based on the age group affected as follows

11-20 years	(n=5)
21-30 years	(n=14)
31-40 years	(n=20)
41-50 years	(n=33)
51-60 years	(n=11)
61-70 years	(n=7)
71-80 years	(n=3)

Exclusion Criteria

Patients suffering from low backache, who were medically unfit for surgery, Extended/Sequestered disc prolapse, Extremely obese patients who had difficulty in applying pelvic traction belts.

The following categories of patients were excluded from the study:

- Extremely obese patients
- Patients with low backache who had associated co-morbid conditions like Hypertension or Past history of Ischaemic Heart Disease, in whom foot-end elevation could not be given along with traction.
- Patients with Prolapsed Intervertebral Disc with SLRT less than 45° with associated Neurological Deficits, in whom surgery was indicated.
- Grade III to Grade IV Spondylolisthesis in whom Surgery was indicated.
- Any illness leading to Low backache where in there was a primary pathology in the lower lumbar spine which required other modalities of treatment. For eg: unstable lumbosacral spine, tuberculous spondylitis.

3. Results

All patients with Bilateral leg traction were put on a traction weight of 3kg on each leg, which was gradually increased to 4 ½ kg weight in each leg.

All patients on pelvic traction were initially put on a traction weight of 5kgs, which was gradually increased to 1/4th of the body weight. If the patient could tolerate the traction well, the traction weight was gradually increased daily to even 1/3rd of the body weight.

Patients were on analgesics, muscle relaxants and either sedatives, anxiolytics or anti-depressants. Physiotherapy was also given.

Statistics below shows the results of treatment with Bilateral leg traction and Pelvic traction:

	Slight Pain	Moderate Pain	Quite Bad Pain	Very Bad Pain	Unbearable Pain
Bilateral Leg Traction	0	17(38%)	15(35%)	12(27%)	0
Pelvic Traction	2(0.04%)	14(28.92%)	25(51%)	6(12%)	2(0.04%)

CHI SQUARE TEST = 8.546

P = 0.073

Visual Analogue Score Pain Scale

	Mean	Standard Deviation
Bilateral Leg Traction	4.8	1.32
Pelvic Traction	6.08	1.39

P < 0.005

Wong Baker Faces Scale

	Median
Bilateral Leg Traction	3
Pelvic Traction	3.6

P = 0.046

So by Visual analogue score Pain scale and Wong baker faces scale it is evident that **bilateral leg traction has got better pain relief than pelvic traction**

4. Discussion

Although the results have shown that Bilateral leg tractions is superior to Pelvic traction, Pelvic traction has certain advantages over Bilateral leg traction, those being:

- More traction weight could be applied through pelvic traction in contrast to Bilateral leg traction.
- Pelvic traction is in close proximity to the site of lesion in contrast to Bilateral leg traction. Hence, traction acts almost directly over the site of lesion, Hip joint being the only joint coming in the way of traction.
- In contrast to this leg traction has to surpass 2 joints before reaching the site of lesion, that is the Hip joint and the Knee joint. Hence effect of traction could possibly be reduced.
- The complications of Bilateral leg traction like peeling of skin, allergy to the adhesive plaster used for traction,

Lateral Popliteal Nerve palsy can be avoided with Pelvic traction.

5. Conclusion

The analysis of the data has showed that bilateral leg traction has got significant pain relief as compared to pelvic traction, but there is no difference between bilateral leg traction and pelvic traction in regards to time duration taken for the pain relief.

References

- [1] Clark JA, Kesterton L. Halo pelvic traction appliance for spinal deformities. J Biomech 1971; 4:589-595.
- [2] O'Brien JP, Yau ACMC, Smith TK, Hodgson AR. Halo pelvic traction: A preliminary report on a method of external skeletal fixation for correcting deformities and maintaining fixation of the spine. J Bone Joint Surg [Br] 1971; 53B:217-229.
- [3] Hodgson AR. Halo-pelvic traction in scoliosis. Israel J Med Sci 1973; 9:767-770.
- [4] O'Brien JP, Yau ACMC, Hodgson AR. Halo pelvic traction: A technic for severe spinal deformities. ClinOrthop 1973; 93:179-190.
- [5] Yau ACMC, Hsu LCS, O'Brien JP, Hodgson AR. Tuberculous kyphosis: Correction with spinal osteotomy, halo-pelvic distraction, & anterior and posterior fusion. J Bone Joint Surg [Am] 1974; 56A:1419-1434.
- [6] Tredwell SJ, O'Brien JP. Avascular necrosis of the proximal end of the dens: A complication of halo-pelvic distraction. J Bone Joint Surg [Am] 1975; 57A:332-336.
- [7] Clark JA, Hsu LCS, Yau ACMC. Viscoelastic behaviour of deformed spines under correction with halo pelvic distraction. ClinOrthop 1975; 110:90-111.
- [8] Kalamchi A, Yau ACMC, O'Brien JP, Hodgson AR. Halo-pelvic distraction apparatus: An analysis of one hundred and fifty consecutive patients. J Bone Joint Surg [Am] 1976; 58A:1119-1125.
- [9] Dove J, Hsu LCS, Yau ACMC. The cervical spine after halo-pelvic traction: An analysis of the complications in 83 patients. J Bone Joint Surg [Br] 1980; 62B:158-161.
- [10] Michelle .H.Cameron, pelvic traction, "physical agents and rehabilitation" ,2nd edition ,Ch.10, p. 307-340
- [11] Ethan Saliba , Susan Saliba ,pelvic traction, "Therapeutic modalities for musculoskeletal injury , 2nd edition by Craig R. Devagar, p.226-236
- [12] Arthur.J.Nitz, pelvic traction, "Orthopedic and sports physical therapy" 3rd edition by Terry.R.Malone , Thomas. Mc.Poil, p.124,545,547.
- [13] Cailliet , " Neck and Arm pain" , 3rd edition , p. 145-160
- [14] Robert .F.Window, Dennis.M.Lox ,pelvic traction, " Soft tissue injuries diagnosis and rehabilitation" p. 13,28,56.
- [15] Jhon Crawford Adams, David Hamben,pelvic traction, "Outline of fractures" p. 41-42, 31,220-233,257-258.
- [16] Marian Tidswell, pelvic traction, "Cash's textbook of orthopaedic physiotherapy" p. 21,137-138.
- [17] Barbara J.Behrens, Susan L. Michlortiz, pelvic traction, "Physical agents theory and practice" p. 100-117.
- [18] Lane Twomey, pelvic traction, "Musculoskeletal

- physiotherapy” p. 252-256
- [19] Ronald Mc Rae, Maxesser, pelvic traction , ”Practical fracture treatment “ 4th edition , p. 46, 56, 238,125.
- [20] Ralph M. Buschbacher, pelvic traction,”Practical guide to Musculoskeletal disorders”,2nd edition , p.24.
- [21] Hutson , pelvic traction ”Back pain”recognition and management , p. 47-48.
- [22] ParleneHertling, Rudolph. M.Kessler , pelvic traction “Management of common Musculoskeletal disorders-4th edition , p.880-900.
- [23] Anderson, G., Schultz, A., and Nachemson, A. (1968) Intervertebral Disc Pressure During Traction. . Scand. Journal of Rehabilitation Medicine Suppl. 9. 88-91
- [24] Nachemson, A. and Efstrom, G. (1970) Intravital, Dynamic Pressure Measurement of Lumbar Discs. Scand. Journal of Rehabilitation Medicine Suppl 1-114
- [25] Ramos, G., and Martin, W. (1994) Effects of Vertebral Axial Decompression on Intradiscal Pressure. J. Neurosurgery, 81. 350-353
- [26] Hutton, W.C., et al. (1997) Analysis of ChondroitinSulfate in Lumbar Intervertebral Discs at Two Different Stages of Degeneration as Assessed by Discogram. Journal of Spinal Disorders 10. 47-54
- [27] Melrose, J., Ghosh, P., et al. (1997) Topographical Variation In The Catabolism Of Aggrecan In An Ovine Annular Lesion Model Of Experimental Disc Degeneration. Journal of Spinal Disorders 10. 55-67
- [28] Fremont, A.J., et al. (1997) Nerve Ingrowth Into Diseased Intervertebral Disc In Chronic Back Pain. Lancet 350, 178-181
- [29] Shealy, C.N. and Leroy, P.L. (1998) New Concepts in Back Pain Management: Decompression, Reduction and Stabilization in Pain Management, A Practical Guide for Clinicians: St. Lucie Press, Boca Raton, Fl. Chapter 20 p. 239-257