

INNOVATION ARTICLE

A Modified Method of Traction for Young Children with Congenital Dislocation of the Hip as a Preliminary to Reduction

K L Pan, FRCS, H Rasit, MS (Ortho)

Department of Orthopaedics, Faculty of Medicine and Health Sciences, Universiti Malaysia Sarawak, Sarawak General Hospital, Kuching

Summary

Many authors agree that preliminary traction prior to closed or open reduction for congenital dislocation of the hip is helpful. Different ways of traction have been used and each of them has its own advantages and disadvantages. One of the problems in the very young child is the difficulty in maintaining a suitable traction that is biomechanically effective. We found that using a rocker bed made the traction more "user friendly" for the child, the parent and the doctors.

Key Words: Congenital dislocation of the hip, Modified traction, Rocker bed

Case Report

A six-month old female infant presented with congenital dislocation of the right hip. She was admitted to the paediatric orthopaedic ward for initial traction, using a split Russell's traction. However, with this traction, it was difficult for the child to maintain her position. She would often be pulled to the end of the bed or turn herself into a prone position, causing the ropes to be entangled. She was generally irritable and had difficulty in sleeping. Her mother had to remove parts of the traction in order to "hand-rock" her to sleep or to feed her until the mother took it on herself to lie the baby on a rocker-bed with a soft netting, with the traction apparatus still on (Fig 1). It was found that this solved the problems faced previously to a considerable extent. Baby was able to complete two weeks of traction followed by reduction, arthrogram and cast immobilisation under general anaesthesia.

Discussion

The use of preliminary traction for the management of neglected developmental dislocation of hip is

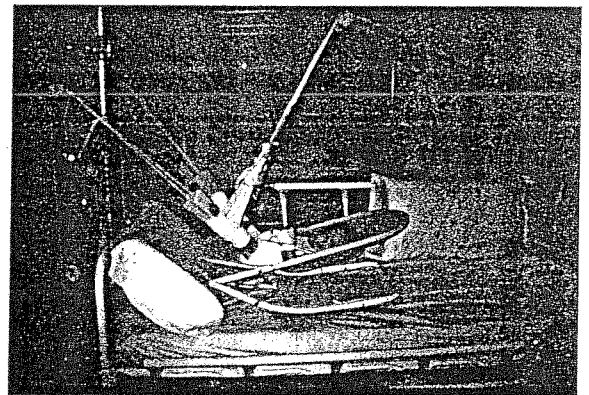


Fig 1: Modified traction on a rocker bed

controversial. In a recently published paper by Langenskiöld¹ a study was made on prereduction traction as a single variable during closed treatment of developmental dislocation of the hip in children aged 6-48 months. Thirty-three hips were reduced without preliminary traction and 65 hips after traction. At a mean follow-up of 11 years, it was found that the group

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with traction had significantly better results statistically in relation to the incidence of avascular necrosis of the femoral head.

Various methods of traction have been used. It may be in the form of overhead Bryant's traction, split Russell's traction with the hip in semiflexion, straight Buck's unilateral traction, or skeletal traction with a threaded pin through the distal femur, depending on the age of the child.

Split Russell's traction, with the hips flexed 30 to 60 degrees and the knees flexed 20 to 30 degrees, is the type recommended by Tachdjian². Traction with the hips in complete extension will cause compression of the hip capsule by the taut iliopsoas tendon and, therefore, may interfere with the blood supply to the femoral head. The purpose of traction is to elongate the shortened pelvifemoral muscles; traction applied with the hips in 90 degrees of flexion will not stretch the hip flexors (especially the iliopsoas) and the hip adductors. It is thus recommended that the hips should be in semiflexed position of 45 degrees (with a range from 30 to 60 degrees) and gradually abducted.

In this patient, we have added on a rocker bed to the split Russell's traction. It prevents the patient from

being pulled down and makes it more difficult for him or her to turn over into a prone position. Parents are able to "rock" the child at any time without having to remove the traction. We have found that this simple modification has reduced the child's irritability and increased the compliance to longer periods of traction. This rocker bed is easily available up to 2 years of age and culturally acceptable in this part of the world.

Editor's Note: Editor agrees with the reviewer that although innovative, the method of traction described is of limited value due to:

1. Rocker bed can only accommodate a small toddler up to about two years of age.
2. The amount of traction on a rocker bed may be difficult to quantify and vary when rocked.
3. It will be important to ensure at all times that the child's buttock is not resting on the bed.
4. As the rocker bed cannot be tilted, no counter-traction is available. Limb cannot be gradually abducted.
5. Finally, child's initial irritability or reluctance is no a problem in traditional skin traction. Being dynamic traction, desirable force is constant applied across the joint and twisting and turning of bed does not matter.

1. Langenskiold A, Paavilainen T. The effect of prereduction traction on the results of closed reduction of developmental dislocation of the hip. *J Pediatr Orthop*, 2000; 20(4): 471-74.

2. Tachdjian MO. *Pediatric Orthopedics* (2nd ed.) W Saunders Company, 1990; 342-3.