

**EARLY RESULTS OF EARLY HIP SPICA CASTING
AND SKIN TRACTION IN THE TREATMENT OF
PAEDIATRIC FEMORAL DIAPHYSEAL
FRACTURES IN MULAGO HOSPITAL:**

A RANDOMIZED CLINICAL TRIAL.

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ABSTRACT

Introduction

Femoral shaft fractures are among the commonest fractures of the lower extremity in children and commonly require hospital admission. The main concern in the treatment of femoral diaphyseal fractures in children is the problem of limb shortening and deformity. However, fracture site characteristics such as, the rapid healing potential, overgrowth and high remodeling power make conservative treatment a better option compared to surgery which has risks of infection. In Mulago hospital, the treatment of choice for femoral diaphyseal fractures in children is the traditional method of skin traction for 3 – 4 weeks, followed by hip spica casting for another 3 - 4 weeks till union occurs, and yet there is limited space for admission of paediatric orthopaedic conditions including femoral diaphyseal fractures on Paediatric wards where only one cubical is available with fourteen beds.

Early hip spica casting has not been used on the grounds that it may cause angulations at the fracture site, and limb shortening and that the technique requires great attention to detail.

However, no clinical trial had been done to compare the safety of the two methods in Mulago hospital.

Objectives

To compare the time of union, degree of limb shortening, angulations in coronal and sagittal planes, length of hospital stay and complications after early hip spica casting and skin traction in the treatment of paediatric femoral diaphyseal fractures in Mulago Hospital.

Methods

A randomized clinical trial was carried out at the Accident and Emergency (A&E) department and Paediatric wards of Mulago Hospital. Sixty two paediatric patients, of either sex, aged 8 years and below with closed, isolated diaphyseal femur fracture, and limb shortening of equal or less than 2.5cm at time of admission and whose parents/guardians consented for the study were enrolled. Patients with multiple injuries, pathological fractures, clinical evidence of infection and neurovascular injury were excluded from the study.

Thirty one patients were treated by early application of a single hip spica cast and an equal number was treated by the traditional method of skin traction (Gallows' traction or horizontal skin traction) for 3-4 weeks followed by a late spica cast for 4 weeks.

Antero-posterior and lateral radiographs were taken on admission, directly after casting or skin traction, at 3-4 weeks and at 8 weeks. From these, fracture union, the degree of limb shortening, angulations in coronal and sagittal planes were compared between the two treatment options as well as length of hospital stay, and complications of treatment. Arbitrary criteria for an acceptable reduction were established at the initiation of the study as follows: 15° varus-valgus angulation, less than 20° anterior-posterior angulation, no detectable rotational malalignment, and no more than 2.0cm of limb shortening. Limb shortening was judged from clinical examination and from radiographs. Rotational malalignment was judged by asymmetry of internal and external rotation of the hip with the hip joint extended.

Results

All the 62 diaphyseal fractures united in acceptable positions by the 8th week of treatment in both groups. All the studied variables, time to union, degree of limb shortening, varus and valgus angulations, anterior and posterior angulations, produced comparable results in both treatment groups. The only exception was length of hospital stay where the mean hospital stay after early hip spica casting was 3.3 days compared with 27.4 days in the skin traction group. (p-value 0.000). Minor skin complications were seen in both groups. There was no incidence of refracture, joint stiffness, nerve palsies or compartment syndrome in children treated by both methods. There was no record of premature removal of the cast by traditional bone setters or by family members. The children of walking age were able to stand and walk at the time of last follow up for both treatment options.

Conclusion

Findings from this study revealed that early application of a hip spica cast produces comparable results to those achieved by skin traction when used to treat closed, isolated femoral diaphyseal fractures in children less than 8 years of age in Mulago hospital. In addition,

- it promotes shortening of hospital stay,
- increased availability of beds
- early reunion of the child with the family and
- Indirectly reduces the cost of medical care in the hospital both to the hospital and to the family.

We submit that early hip spica casting should be considered as a method of choice when treating these fractures in Mulago hospital.