

# Internal fixation of hip osteotomy in children

## Successful healing in 26 children without postoperative casting

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*We assessed the necessity of postoperative casting when a plate was used for fixation of a proximal femoral varus osteotomy. 26 children without postoperative immobilization were compared to 17 children with a cast. No complications were encountered in*

*either group of children and all osteotomies showed similar healing. Our findings indicate that plate fixation provides adequate stability for healing of the osteotomy.*

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Proximal femoral varus osteotomy with plate fixation and postoperative cast immobilization is a common procedure in children with hip problems (Axer 1965, Lloyd-Roberts et al. 1976).

Cast immobilization is unpopular among parents and nursing personnel and also requires rehabilitation for stiffness (Beauchesne et al. 1992). We investigated whether postoperative cast immobilization is necessary for a plate-fixed varus osteotomy in children.

### Patients and methods

Between 1986 and 1992, 26 plain proximal femoral varus osteotomies were performed by the same surgeon. There were 15 boys and 10 girls with a mean age of 7 (2-11) years. One child had a bilateral procedure. In 8 children, the osteotomy was performed for the management of developmental dysplasia of the hip, in 12 for Perthe's disease and in 6 for hip subluxation in cerebral palsy patients. Follow-up averaged 6 (4-10) years.

The preoperative planning included a traced and cutout paper outline of the femur on the radiograph. The amount of derotation was assessed clinically with the hips in extension.

The medial closing wedge resection and the derotation osteotomy was fixed with a 5-hole compression plate bent accordingly with 2 screws proximal to the osteotomy and 3 distal. In children younger than 6 years of age, care was taken to avoid injury to the physis of the greater trochanter.

In 6 children younger than 5 years of age, an oblique intertrochanteric osteotomy according to MacEwen and Shands (1967) was performed. They were fixed with a similar plate and 1 intrafragmental screw.

Postoperatively children were allowed to move freely in bed. 10 days postoperatively, the older children were allowed touchdown weight bearing with crutches and full weight bearing at 6 weeks. Children with cerebral palsy were given valium postoperatively and all of the children were given 3 doses of antibiotic prophylaxis and adequate analgesics.

These 26 children without postoperative cast immobilization were compared with 17 children operated on in the same department with the same technique during the same time period, but by another group of surgeons who used cast immobilization postoperatively.

### Results

There were no postoperative complications in either group. Follow-up radiographs and physical examinations indicated that all osteotomies had healed in a similar manner without failure of fixation. The initial degree of varus remained unchanged until solid union. Elective plate removal was conducted in 11 cases of the first group and 7 of the second.

## Discussion

Many surgical options are available for performing osteotomy and holding it in place until union is achieved. Plate fixation is preferable for several reasons. It is easier to perform and the operative time is comparatively short. In addition, there is no need for fluoroscopy. Also, the material is inexpensive and available in several different sizes. The use of a 90° blade plate is also popular. However, it is difficult to center the blade correctly and it may accidentally penetrate the femoral neck with a risk for avascular necrosis or fracture (Brodetti 1960).

It is not clear whether a blade plate is mechanically superior to a plate for hip osteotomy in a child (Greiss et al. 1993). However, no failure of fixation occurred in either group of our patients.

Our findings indicate that medial closed wedge resection hip osteotomy, in children, fixed with a laterally-placed bent plate does not require postoperative casting.

## References

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