Distal Femoral Physeal Bar Resection Combined With Guided Growth for the Treatment of Angular Limb Deformity Associated With Growth Arrest

Abstract
Purpose:
Distal femoral growth arrest can result in progressive deformities and functional disability. The treatment is challenging given the significant growth potential of the distal femoral physis. This study addresses the short-term outcomes after distal femoral physeal bar resection combined with guided growth for the treatment of angular limb deformity.

Methods:
We conducted a retrospective analysis of patients treated with distal femoral physeal bar resection, fat graft interposition, and growth modulation with a tension-band plate. Data recorded included patient demographics, growth arrest cause, physeal bar size, time-to-surgery, details of the operative procedure, and complications. The mechanical axis zones, tibiofemoral angle, and the anatomic lateral distal femoral angle were assessed on 51-inch anteroposterior standing radiographs.

Results:
Five patients (3 male individuals) with valgus (n=4) and varus deformities (n=1) due to physeal arrests of the distal femur were analyzed. The cause of the physeal arrest was trauma (n=3) and infection (n=2). The average age at the time of surgery was 6.6 years (range: 2 to 11 y). Average size of the physeal bar was 413.4 mm2, which represented 16.8% of the total distal femoral physis (range: 12% to 26%). Four of the 5 patients had a total correction of the deformity in 14.3 months (range: 9 to 22 mo). One patient required correction by osteotomy and external fixation. Postoperatively, 1 patient presented no improvement, and 4 had restoration of the longitudinal bone growth and alignment. Two patients had rebound valgus: one is being observed and another has undergone a repeat guided growth procedure.

Conclusions:
Distal femoral physeal bar resection combined with tension-band hemiepiphysiodesis provides a viable option for the correction of angular deformities associated with physeal arrest. Longer follow-up is required to evaluate future growth of the distal femoral physis after this combined procedure.

Level of Evidence:
Level IV—therapeutic study.

Link para comprar el artículo:
https://journals.lww.com/pedorthopaedics/Abstract/9000/Distal_Femoral_Physeal_Bar_Resection_Combined_With.98282.aspx