Epiphysiodesis: A Review Article

Epiphysiodesis, since its discovery and initial use by Dr. Phemister in 1933, has become a primary treatment option for various deformities in both the podiatric and orthopedic communities. An analysis of the evolution and role of this surgical procedure in the scope of the foot and ankle was most recently conducted in 1990. Since this time, there has been a greater interest in the technique. We have conducted a review of the role of epiphysiodesis in the treatment of lower extremity deformities as they have progressed since the previously mentioned evaluation and brought together the current knowledge and understanding of the procedure.

In essence, an epiphysiodesis can be described as a retardation and arrest of an entire growth plate or just on one side. Growth in the remainder of the plate is unaffected, and as it progresses naturally, can compensate for various pathologies such as limb length discrepancies (LLD), juvenile hallux abducto valgus (HAV), ankle valgus, and macrodactyly. This is accomplished through one of a variety of surgical techniques including screws, staples, bonebridges or by ablating the physis. The age of surgery and extent of correction is determined preoperatively using four basic statistical methods: the multiplier, the growth remaining, the straight line graph, and the arithmetic method. Each of these methods have their own advantages yet none of them can predict the exact outcome of the procedure with 100% accuracy.

The major advantage of the epiphysiodesis is that it allows for immediate postoperative weight bearing and a quicker recovery primarily due to the fact that it is less invasive, is associated with fewer postoperative complications than an osteotomy. Performing this procedure at a young age is further advantageous because it allows the surgeon to use the patient's natural bone growth to correct the deformity before it progresses. Research has shown that there is less risk involved and fewer long-term complications when choosing an epiphysiodesis over another surgical procedure.