management of congential pseudarthrosis of the tibia

elsayed ahmed elsayed

Congenital pseudarthrosis of the tibia is still remains one of themost difficult conditions to treat and nonunion often persists despiteprolonged immobilization and bone grafting operations. Pseudarthrosismay be represented clinically be three forms:1- Either associated with neurofibromatosis. The tibia may be intact atbirth but show anterior angulation with segmental sclerosis inaddition it may show an hourglass constriction and a small cyst.External evidence of neurofibromatosis, café – au – lait patchesmay be present.2- Associated with fibrous dysplasia the tibia is bowed anterior andhas the characteristic cysts of fibrous dysplasia, the cysts expandthe cortex of the tibia and have dens reactive bone formation.3- Associated with anterior bowing of the tibia in these cases, theanterior bowing is smooth with no data suggestingneruofibromatosis or fibrous dyplasia, pseudarthrosis may occurfollowing osteotomy or minor injuries (DeHass, 2003).Psuedarthrosis may be: Mobile. Stiff without deformity hypertrophic pseudarthrosis: there isstrongly resembling fibrous zone. Stiff with deformity like anterior angulation or limb lengthdiscrepancy.It is unusual to see these cases before the fracture has occurred butif the child presents with anterior bowing of the tibia with an intact fibulacongenital pseudarthrosis must be suspected. A corrective osteotomy atthis stage will precipitate the onset of a pseudarthrosis. During seventiesthe parents and the child must be prepared for a series of bone graftingSummary & Conclusion 87 operations, the age at which operative treatment should be started wasdictated by circumstances, but maximum not less than eight or nine yearsold (Martinz et al, 1996).Boyd (1982) described his dual-only graft after excision of thehamartomatous tissue. MacFarland (1951) described a posterior by passautogenous bone-graft operation. Paterson (1989) reported solid unionafter fragmentation of the shaft and intramedullary fixation. Othermethods of treatment have been widely used during the last 15 years,with variable results: pulsed electromagnetic fields, vascularized fibulargraft, and intramedullary fixation with autogeneous bone graft. Ilizarovwas the first to use his apparatus in the treatment of CPT. Many otherauthors started using his method since the mid 1980s (Andreson, 2002).The advantages to the Ilizarove system are numerous. The device canbe used to compress the pseudarthrosis while distracting the corticotomysite. The pseudarthrosis site may be respected or left in place whilecompressed. Distraction through a corticotomy at another level transportsthe bone segments, thus lengthening the shortened extremity. The method offrame application with thin

wires and a corticotomy minimally disrupts theavailable blood supply. In addition, the versatility of the device allowscorrection of the deformity in several planes, which is advantageous withassociated bowing or angular deformities. Minor adjustments of the frameare feasible without returning the patient to the operating room. Functionaluse, weight bearing, and range of motion exercises are facilitated with thissystem. In contrast to other modalities, the Ilizarov device can be reappliedin the event of refracture, and use f the Ilizarov technique is not precludedby previous surgery (Rozbruch et al., 2005).Summary & Conclusion 78 The disadvantages of Ilizarov's method are (a) the length oftreatment, (b) its relative complexity, and (c) the possibility of wire-tractinfections.The problems of nonconolidation, secondary fractures, and axialdeviations are common in all of the methods. They think however, thatIlizarov's method allows the treatment of the deformity associated withCPT, whereas the other techniques are not able to produce the sameresults without the risk of having to perform additional operations.Furthermore, good results can be stable over time only if the size of thetibia affected is equal, or almost equal, to a normal tibia and the axis iswell maintained. This is possible only after a resection of all the affectedparts. The relative iatrogenic shortening should not be a concern. In fact,an internal transport or a proximal metaphyseal lengthening are easilyobtained by using a circular fixator that allows, among other things, thecorrection of any eventual axial deviations (Hamdy et al., 1999).The principal criticisms of the intramedullary nailing are (a) thepossible stiffness of the ankle caused by the insertion of theintramedullary nail through the ankle joint to reach the tibia (five of 10 ofanderson's case studies); (b) the possibility of fracturing at the apex of thenail during its distal migration connected to the growth or fracture causedby removal of the nail (two of five of the cases studies by Anderson); and(c) the potential risk of lesions of the growth plate of the distal tibiacaused by the penetration of the nail (Anderson et al., 2002).On the other hand, the points generally reported regarding thetechnique of microvascularized grafting of the fibula are (a) the lack ofconsolidation of one of the two ends of the graft. (b) stress fractures twoof five in the CPT group treated by Uchida and Coll that required thelong-term use of a brace 9c) ankle valgus of the donor site (one of five ofSummary & Conclusion 78 Uchida and three of 15 of Ghanem); (d) the non correction of thedifferences in length between the limbs, lessened with the Browntechnique (CPT distraction with an external fixator and successive stumpresection and microvascularized grafting); (e) the involvement of thehealthy limb; and (f) the complexity of a treatment requiring particularlyspecialized surgeons (Sato et al,. 2000).So Ilizarov method after failure of any graft operation forcongenital pseudarthrosis of the tibia is the only remaining trial toachieve union, and as first method of treatment the surgeon have tochoose regarding deformities associated with the disease as Ilizarovmethod is the best method to manage deformitiesDuring the past 10 years Connolly and coworkers have evaluatedvarious methods and techniques of preparing bone marrow to serve as aninjectable osteogenic graft the objective was to develop a minimallyinvasive substitute for open atologous bone grafting of common problemsincluding delayed unions, nonunions and bone defects (Connolly, 2002).In congenital pseudarthrosis of the tibia the reported trial made byGarg and Gaur, (1995) had obtain successful

result in obtaining union in12 years old boy diagnosed to have congenital psuedarthrosis of the tibia.This result was encouraging but the type of suitable patient and the timingvolume and frequency of bone marrow injections required will needfurther studies.In congenital pseudarthrosis tibia treatment by using ofelectromagnetic stimulation has only one advantage is that it is notinvasive. The disadvantage are the low consolidation rate, the high rate ofrefracture, the need for prolonged treatment until skeletal maturity.