

An update on Pediatric Orthopaedics: 2017

Chasanal Rathod¹

The year 2017 has come up with various studies in Pediatric Orthopaedics. Over the years, there have been established guidelines and protocols to treat the younger population for various disorders; however researchers, surgeons continue to correlate these guidelines in their set-up/population and report various results and findings, which can be helpful in treating the orthopaedic problems in children. Here is a quick update on some of the articles from various journals focusing on pediatric orthopaedics.

Pediatric Hip: Developmental Dysplasia of Hip:

Screening for Developmental dysplasia of Hip (DDH) during the neonatal period and infancy has always been emphasized and has been a part of various nations in their health reforms. The debate of selective vs universal screening and its efficacy still continues, So is a “clicking hip” always a DDH? Paton et al [1] screened 362 hips over two decades and 97% of this clicky hips required no treatment and these are a normal variant and do not pose as a risk factor for DDH, However those with positive findings do need further investigations and treatment. The treatment of neonatal and infant DDH with pavlik harness is widely accepted treatment of choice with a success rate as high as 96.8% [2]. In spite of early

screening and detection and treatment, cases with residual acetabular dysplasia (RAD) remain as one of the most common cause of secondary osteoarthritis of hip, a decision making algorithm for the management of RAD is established from the senior authors’ personal experience and the data collected from the literature [3]

Pediatric Hip: Perthes’ disease

A long term retrospective study by Shohat et al studied 24 hips of Perthes’ disease for effect of distal trochanteric transfer (DTT) following Varus derotational osteotomy (VDRO). Ten hips with Articular trochanteric distance > 5mm underwent DTT. These patients were subsequently compared with 14 hips who did not undergo DTT. The radiographic results in the long-term follow-up of patients with GTO following VDRO were significantly better, there was no clinical benefit seen or incidence of osteoarthritis compared with patients who had not undergone DTT. Song et al [5] have wonderfully described an alternative minimal invasive technique of proximal femur osteotomy for the Perthes’ disease which helps attain precise correction for varus /valgus derotation osteotomy with stable fixation. The review for Perthes would not be complete without discussing the outcome of combined pelvic osteotomies and Femoral osteotomies and Rupperecht et al [6] have published their results of 52 children treated over a period of 10 years. The hips were analysed at skeletal maturity for Stulberg classification and

sphericity deviation score. These findings were compared with the literature and did not show any significant change in the clinical and radiographic outcome and hence it is not recommended that combined osteotomies be performed.

Pediatric Trauma

One of the most common fracture seen in day to day practice is a supracondylar fracture of humerus. The treatment protocol is largely based on the fracture and displacement. The AAOS has published the Appropriate Use Criteria (AUC) for the management of these fractures based on recommendations from an expert panel. Study by Cemal et al [7] is a retrospective analysis of 991 patient records was reviewed for appropriateness of AUC and these criteria are useful for orthopedic surgeons to be used in clinical practice. However a comparison of the daytime and after after-hours surgical treatment of Gartland type 3, supracondylar humeral fractures in children shows a higher poor fixation rate in after-hours treatment as compared in daytime procedures. Although the other factors like operative time, quality of reduction, rate of open reduction, extent of poor functional outcome were not affected. Ideally this surgery can be performed during the daytime [8]. Persiani et al [9] in their study of management of cubitus varus with a lateral wedge osteotomy: K-wires or Locking angular plates recommend the use of the plate as it can rigidly stabilize the osteotomy. Often the forearm fractures in children are treated non-operatively. Paediatric

¹Consultant Pediatric Orthopaedic Surgeon, SRCC Childrens Hospital, Cloud Nine Hospital. Mumbai.

Address of Correspondence

Dr. Chasanal Rathod,
Consultant Pediatric Orthopaedic Surgeon,
SRCC Childrens Hospital, Cloud Nine Hospital. Mumbai
Email: chasanal@gmail.com

forearm fractures, in particular, have seen an increased rate of surgical treatment despite the lack of comparative studies showing a clear benefit over non-operative treatment. Cruz et al [10] have reviewed the HCUP-KID database of 30,936 forearm fractures to evaluate the rate of surgical treatment over time. They concluded that increase in surgical rates were associated with older age, males and treatment at a Children's hospital and having a non-Medicaid insurance status. Nandra et al [11] performed a retrospective analysis of 61 children with open tibia fractures. Various treatment modalities were opted, casting, elastic nailing, K wiring, intramedullary nailing, external fixator application and open reduction and plate fixation. All fractures united irrespective of the grade of compound injury and fixation. Aggressive initial wound management and early definitive treatment is recommended. Deformity correction and Growth modulation has been extremely effective in treating angular deformities in children without causing any permanent growth arrest. A retrospective multicentric study including 126 patients has studied correction outcomes and adverse events of Eight plate for lower limb deformity. The adverse events were noted in 18% patients were mainly screw related and hence a close monitoring is recommended [12]. Corradin et al [13] studied 7 cases of Renal osteodystrophy (ROD) for efficacy of temporary epiphysiodesis to correct angular deformities of lower limbs. They conclude that its safe and effective in cases with ROD, important is to have regular follow up as the deformities tend to progress or relapse around skeletal maturity Ceroni et al [14] puts forward a hypothesis that hemiepiphyodesis at femoral or tibial is likely to cause modification of Tibial tuberosity (TT) – Trochlear groove (TG) distance by

applying a trigonometric formula therefore predict that for every degree of angular correction during femoral distal hemiepiphyodesis, there is a 1-mm simultaneous lateral or medial transfer of the TT. We also predict that, during proximal tibial hemiepiphyodesis, 8° of angular correction will roughly translate the TT by 1 mm. However, these findings are based on retrospective MRI scans and the establishment of a relationship between femoral or tibial hemiepiphyodesis and the modification of the TT–TG distance requires a prospective study.

Bone and Joint infection

Schmale et al [15] have retrospectively studied 16 patients with bone and joint syndrome and compared the frequency of severe systemic effects and Toxic shock syndrome (TSS) in Staphylococcal aureus with Group A β -haemolytic Streptococcus pyogenes (GABS) bone and joint infections. They concluded that GABS septic arthritis and/or osteomyelitis increase the likelihood of TSS when compared with bone and joint infections with SA. Also the GBS and Methicillin resistant Staphylococcus aureus (MRSA) they had an additional need of surgeries and hospital stay as compared to Methicillin sensitive Staphylococcus aureus (MSSA). Patients with rapidly positive blood cultures, particularly those with gram-positive cocci in chains, and a presenting CRP > 15 mg/dL are at an increased risk of developing septic shock and should be carefully monitored.

Dehority et al [16] recommend MRI at presentation so as to identify the suppurative complications of Acute hematogenous osteomyelitis and also any delay at presentation was associated with abscess formation. Should the subperiosteal abscess always be drained? Or can they be treated with just antibiotics alone? Montgomery et al

[17] postulated a hypothesis that a corticotomy or intramedullary drainage (ID) reduces the rate of reoperation by clearing the infection. This hypothesis was statistically significant and hence a small drilling in the cortical bone /corticotomy is recommended.

Clubfoot

Ponseti method, is internationally recognized as the gold standard of treatment for management of Clubfoot [18]. How early should the intervention begin? Lebel et al have treated neonates in the NICU at 27 weeks to term and they conclude that clubfoot treatment is feasible and effective in the first week of life and efforts should be made to initiate the treatment with minimal delay, however clubfoot cannot be considered as a priority over life threatening medical problems. In cases of relapsed clubfoot [19], Gary et al [20] have emphasized the importance of recasting or repeating the modified Ponseti treatment to correct or improve the passive ankle dorsiflexion. The complex idiopathic clubfoot have been studied by Hosam et al [21] and they concluded that complex variety requires more casts than usual i.e average 7 (range 5-10) and also a higher rate of tendoachillis tenotomy and a higher risk of relapse is expected. Maranhão et al have reported repair of Achilles tendon after the TA tenotomy, ultrasonographic findings revealed mild thickening in 80% and thinning was noted on 15% although there was no effect on its function.

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