Whats new in Paediatric Orthopaedics in 2020?

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1.Paper [1]: External fixation and Kirschner wires in the treatment of paediatric displaced supracondylar femur fractures.

A retrospective analysis of outcome of management of supracondylar fracture with K wire fixation and external fixator

Conclusions - Both K wire fixation and External fixation can achieve excellent outcomes for paediatric Supracondylar Femur Fractures. K wire fixation has many advantages in younger children.

Editorial comments- This paper demonstrates equal efficacy in long term outcomes at follow-up by using both modalities. However, the groups for k wire fixation and external fixation are different in age groups. More younger children are amenable to k wire fixation with low BMI as compared to external fixation which gives better stability in preadolescent and adolescent age groups. Operative blood loss and early return of range of motion are better with group treated with k wire.

2.Paper [2] : Is the modified Gartland classification system important in deciding the need for operative management of supracondylar humerus fractures?

The study examined levels of agreement between paediatric orthopaedic surgeons in the need for operative management of extension-type supracondylar humerus fractures

Conclusions - Our findings suggest moderate interobserver, and substantial intraobserver agreement in treatment decision making. The largest disagreements between surgeons were observed for type IIA and IIB fractures and treatment decisions did not follow expected trends based on surgeons' preferred treatment methods for each fracture type. This suggests differences in treatment approaches between surgeons in the management of type IIA fractures and highlights the role of other variables that underlie differences between surgeons' treatment preferences.

Editorial comments-A well conducted study with 11 Paediatric Orthopaedic surgeons who completed a survey based on evaluation of x-ray by Modified Gartland Classification and associated decision making regarding management. Uniform agreement was seen for type 1 and type3 regarding management. However, management of type 2a and type 2b did not follow standard recommendations as per modified Gartland classification. Surgeon bias, neurovascular injury ,soft tissue swelling, mechanism of injury and patient age play an important role in choosing treatment option for these fractures.

3. Paper [3]: Brace Yourselves: Outcomes of Ponseti Casting and Foot Abduction Orthosis Bracing in Idiopathic Congenital Talipes Equinovarus

The study was to examine the outcomes of FAO bracing following treatment by the Ponseti method in a cohort of idiopathic CTEV patients.

Conclusions - The study showed a statistically significant relationship between the difficulty of CTEV correction and the risk of recurrent deformity requiring treatment. This relationship could be used to provide prognostic information for patients' families. Caregiver-reported compliance was not significantly related to recurrence.

Editorial comments- It has been thought that recurrence in outcomes after Ponseti casting and foot abduction brace is directly related to prescribed protocol of post correction bracing. This study demonstrated that recurrence was more correlated to time required for correction and number of casts suggesting severity of primary pathology rather than age at start of treatment, Dimeglio score or compliance with bracing protocol.

4.Paper [4]: Pediatric acute compartment syndrome: a systematic review and meta-analysis.

This study was to determine the average time from injury to diagnosis, most common presentations, the degree to which providers obtained pressure measurements, and outcomes of ACS in the Pediatric population through a systematic review and meta-analysis.

Conclusions- Pediatric ACS differs from adult ACS, as pediatric patients generally achieve good outcomes even when presenting in delayed fashion and undergoing fasciotomies for at least 24 h. We recommend considering decompressive fasciotomy in children even if there is prolonged time from injury to diagnosis.

Editorial comments- This meta-analysis of 12 well conducted studies highlights common causes of acute compartment syndrome and its clinical features and concludes that Paediatric ACS differs from adult ACS with good outcome being reported even with delay of 24 hours from trauma to fasciotomy. 85 % of the children in the study achieved full functional recovery inspite of delay.

5. Paper [5]: Collection of Common Knee Patient-reported Outcome Instruments

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by Automated Mobile Phone Text Messaging in Pediatric Sports Medicine.

The purpose of this study was to validate the collection of common knee PROs in sports medicine with text messaging by correlating text-messaging responses with paper delivery in adolescents.

Conclusions - Text message delivery using mobile phones permits valid assessment of Pedi-IKDC and Pedi-Fab scores in adolescents. Questionnaire delivery by automated text messaging allows asynchronous response and may increase compliance and reduce the labor cost of collecting PROs.

Editorial comments- Collecting PRO using mobile phones which delivered Paediatric International Knee Documentation Committee (Pedi-IKDC) Subjective Knee Evaluation Form and Paediatric Functional Activity Brief Scale (Pedi-Fab Scale) Forms were valid, effective and increased compliance as well as reduced the labour cost of collecting the PRO by paper delivery.

6. Paper [6]: Improving Health-related Quality of Life for Patients With Non-ambulatory Cerebral Palsy: Who Stands to Gain From Scoliosis Surgery?

The aim of this study was to evaluate which factors are associated with an improvement in an health related quality of life (HRQOL) after spinal fusion surgery for non-ambulatory patients with cerebral palsy.

Conclusions - Analysis of 157 CP patients revealed a meaningful improvement in an HRQOL in 36.3% of the patients. These patients tended to have lower preoperative HRQOL, suggesting more "room for improvement" from surgery. A lower score within the comfort, emotions, and behavior domain of the CPCHILD was predictive of meaningful improvement after surgery. Radiographic parameters of deformity or curve correction were not associated with meaningful improvement after surgery.

Editorial comments – This paper demonstrates meaningful improvement of HRQOL in 36 % of patients after scoliosis surgery in non-ambulatory CP patients (GMFCS 4 and 5). Conventional radiographic parameters of deformity correction or curve correction were not associated with meaningful improvement following surgery.

7. Paper [7]: Surgical treatment of pediatric forearm fractures with intramedullary nails: is it a disadvantage to leave the tip exposed?

The project was aimed to present the clinical outcomes of intramedullary nailing and determine the advantages and disadvantages of leaving the tips of the nails exposed.

Conclusions- On comparing the rate of complications and clinical outcomes, leaving the TEN exposed seems to be safe.

Editorial comments- This paper discusses differences in patients undergoing TENS for forearm fractures leaving the tip of the nail buried or exposed. Both groups yielded comparable results in terms of time to union ,wrist and elbow function as well as refracture rates. The group in which nail tip was exposed shows higher superficial infection, skin irritation rates. However, removal of nail done at 8 weeks was easier and did not require anaesthesia. Contrary to common belief leaving nail tip exposed is a safe option.

8. Paper [8]: Vascular examination predicts functional outcomes in supracondylar humerus fractures: a prospective study.

This article prospectively examines the functional outcome measures following management of vascular insult secondary to paediatric supracondylar humerus fractures (SCHFX) using validated outcome measures.

Conclusions- In children with operative SCHFX, an abnormal vascular examination at presentation is predictive of poorer outcomes in pain and upper extremity function. A palpable pulse, versus NP, is predictive of better pain and comfort at final follow-up.

Editorial comments- This paper uses clinical data which is presence and symmetry of radial pulse, Doppler examination, perfusion status of hand as well as Pediatric Outcomes Data Collection Instruments (PODCI) and the Quick Disabilities of the Arm, Shoulder, and Hand (QuickDASH) Measures at 3 years follow-up post management of supracondylar fracture with vascular insult. Study concludes that abnormal vascular examination at presentation is predictive of poor outcome.

9. Paper [9]: An Alternative to the Traditional Radiocapitellar Line for Pediatric Forearm Radiograph Assessment in Monteggia Fracture

The objective of the study is to find a new reference for assessment of pediatric forearm radiographs besides the traditional RCL.

Conclusions - Our proposed radiocapitellar P-line was found to be much more reliable in younger children than traditional RCLs.

Editorial comments- The authors have proposed an alternative 'P line' to the traditional RC line to assess radiocapitellar subluxation in Monteggia injury. This involves complex marking of various points on AP and lateral xrays of elbow. Though the authors claim that 'P line' is more reliable but editor feels the method as cumbersome.

10. Paper [10]: Physeal fractures of the distal femur: does a lower threshold for surgery lead to better outcomes?

This was a retrospective study of children with distal femur physeal fractures treated at a level1 pediatric trauma center between 2007 and 2016.

Conclusions - Despite a lower threshold for surgery for distal femur physeal fractures in the past decade, the complication rate is still high and unchanged at 40%, and presenting patients are older. Patients with high-energy injury mechanisms and greater fracture displacements did have higher complication rates. These results demonstrate the inherent high complication risk for these injuries.

Editorial comments- Having a low threshold for surgery in treating physeal injuries of distal femur as has resulted in higher number of surgeries as reported in this paper compared to pre2007 cohort studies which was essentially treated conservatively. However, the complication rates in both series remains as high as 36-40% implying complications especially growth arrest are inherent to the nature of injury rather than intervention.

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