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CASEBOOK – GENERAL SURGERY

COMPARTMENT SYNDROME OF THE HAND

Compartment syndrome [CS] of the hand is a well-described entity. Spinner and Aiache credit Finochietto with the first description in 1920. The pathophysiology is still somewhat elusive, despite all our knowledge. Much of the work is not actually on hand compartment syndrome, but rather is extrapolated from the far more common occurring forearm and leg compartment syndromes. A compartment syndrome by definition is a condition in which the circulation and function of the contents of a space [usually a closed osseousfascial space] is compromised by increased pressure within that space [Matsen, 1975, and Matsen et al. 1979]. Since the initial description of CS, it has been recognized as a cause of morbidity in many different areas of the body. Thigh, gluteal and even abdominal CS has been described. The aim of management is early recognition, appropriate monitoring and surgical intervention when indicated. Treatment should begin at the stage of an impending compartment syndrome, to prevent the development of a full blown compartment syndrome and the end result, tissue necrosis.

THE DISCOID MENISCUS

A discoid meniscus is a differential diagnosis for locking and clicking in the knee joint of the paediatric patient. This is a known entity, congenital or developmental in etiology. In Jamaica arthrography, single or double contrast has fallen out of favour with the contemporary radiologists, so there are no incidental findings of discoid menisci in our patient population. The investigative tool of choice is the arthroscope as this represents the most affordable, available and accessible modality. MR imaging is prohibitive in cost to the majority of the population.

LIMB LENGTH DISCREPANCY: ANISOMELIA

Is there a role for limb shortening.

Lower limb discrepancy [Anisomelia] presents different challenges for each patient and orthopaedist and there are many factors that influence prognosis and choice of treatment [Siffert, 1987]. Limb shortening is 'Nell described in the modern literature, and although it remains in the armamentarium of contemporary orthopaedists, it has fallen out of favor because of the preference for limb lengthening. The use of the Ilizarov or ring fixator methodology has many advantages, among which is the ability to restore or equalize limb lengths as well as angular deformities especially in the individual who has a problem with longitudinal growth and is of short stature. Limb shortening is relatively permanent and continues to be challenging for the treating orthopaedist. Patients of short stature are unwilling to accept shortening of their limbs, as this further limits their ultimate height. The procedure is also attended by the

cosmetic problem of bulky looking calves and thighs. There has been much concern in the literature of long-term function of the muscles after shortening. The amount that can be shortened in the femur and the tibia without dysfunction is also debatable. There has been concern about the ideal location for shortening and how this relates to post-operative recovery times and muscle function as well as on the best methods of fixation to avoid known complications. There is a definite role for limb shortening, in the individual who has reached skeletal maturity and has a limb length discrepancy between 2.5 cm and 5 cm and whose life style and occupation would not readily allow for the Ilizarov technique. The other indications for limb shortening are discussed further in the paper.

PEDIATRIC TUBERCULOUS OSTEOMYELITIS

Tuberculous osteomyelitis is uncommon in developed countries. Tuberculosis was considered a disease of the first part of the twentieth century. It has made a resurgence with the wide spread use of immuno suppressive therapy and the prevalence of the human immuno deficiency virus. The main objective is in making the diagnosis and instituting appropriate therapy. The patients with mycobacterial infection of bone [MTB] represent a diagnostic challenge that may mimic a neoplastic disease processes. Vohra and Kang, 1997, suggest that bone pain that does not promptly respond to analgesic medication is often due to infection or neoplasia. The index case presented attempts to highlight some of the diagnostic challenges in arriving at a definitive diagnosis.

POSTERIOR DISLOCATION OF THE HIP [THOMPSON AND EPSTEIN TYPE II]

Posterior dislocation of the hip is not an uncommon diagnosis. Its management should be prompt reduction. Associated fractures of the acetabulum may lead to failed closed reduction or retention of debris within the joint. The recognition of the associated posterior wall injury has been addressed by several authors notably Stewart and Milford and Thompson and Epstein. These classifications attempt to correlate the injury with management. However there is some ambiguity in the literature on the need and benefit for operative stabilization. The complication of avascular necrosis of the femoral head is quite devastating and raises the question of the protocol for screening patient and if this may be beneficial. This index case was diagnosed as having a Thompson and Epstein type II fracture dislocation of her R hip for which she had prompt reduction within 2 hours of her RTA. Her management was non-operative. The questions about her management and long-term complications were raised as an issue and are discussed below.

PROTRUSIO ACETABULI

Protrusion of the acetabulum medially has long been recognized as one of the many difficulties that may be encountered in total hip arthroplasty [THA]. Sir John Charnley looked at this challenging problem and devised some guide lines that he thought may help with the success of THA in this cohort of patients. It is important to recognize this cohort of patients who present with protrusio acetabuli in association with

osteoarthritis as they require special preoperative planning and a modification of the THA procedure. This modification on the acetabular side is important as many technical errors and pitfalls highlighted in the literature are avoidable. Care with the acetabular preparation can ensure a favourable outcome.

INSUFFICIENCY FRACTURES OF THE FEMORAL NECK

Insufficiency [stress] fractures were originally described at the turn of the century by Bleecher in 1905 [Blickenstaff and Morris, 1965] but the first presentation occurred in 1936 by Asal, [Tountas and Waddell, 1985]. These are common injuries and as such, they may not have received the attention they deserved [Tountas, 1993] until the disastrous consequences with the training of military recruits. They are also increasingly being recognized as a possible cause for displaced fractures of the neck of the femur in the elderly, [Freeman and Todd, 1974]. Although they share the same name and outcome, their etiologies are somewhat different in the two different populations that they afflict. The aim of this discussion is to highlight the problem in the elderly and review the current management protocols.

SLIPPED FEMORAL UPPER EPIPHYSIS [SUFE] I

The complications of routine preoperative skeletal traction

Slipped upper femoral epiphysis is not an uncommon condition, seen in the Jamaican population, which is predominantly African in origin. There are, however, no local figures regarding the incidence. The management still remains controversial and diverse, both in the literature and in the practice at the various local health care facilities. SUFE is a common cause of adolescent hip pain, requires early diagnosis and appropriate management, to prevent the possible catastrophic outcome of improperly managed cases. The standard practice at the University Hospital of the West Indies, UHWI, is to start all patients who presented to the orthopaedic service on longitudinal skeletal traction, with internal rotation for two weeks followed by roentgenograms to assess reduction before definitive pinning. This is the focus of this presentation, as the policy does not address the issues in the literature, or categorize the patients and hence influence the individual's management.

SYNOSTOSIS

A synostosis is a cross union of the radius and ulna. This condition results in the inability to pronate and supinate. It often results from the fracture to both forearm bones. The management of a 38-year-old woman who sustained an open fracture to her right radius and ulna managed by open reduction and plating of both forearm bones and complicated by the development of a synostosis of her proximal radius and ulna is discussed.

TENDO -CALCANEAL RUPTURES

There has been much written and published on the management of spontaneous tendo calcaneal injuries. The terms "Achilles tendon" and "tendocalcaneal ligament" will be used interchangeably as synonyms in this document. The management solutions

continue to evolve. In the medical field, this usually denotes a problem which is still not completely resolved and no one treatment modality which is universally accepted or applicable to all situations. Presented is a case that was managed surgically utilizing a suture repair technique developed by Krackow it is a recognized method not well popularized in our institution where modifications of Kessler and Bunnell suture techniques are done. This case is presented partly in an attempt to review the etiology of Tendo-Achilles [TA] ruptures and also to discern or rationalize which patients would benefit from TA surgical repair as opposed to non operative management.

GALEAZZI FRACTURE OF THE DISTAL RADIUS

Galeazzi fractures are fractures of the junction of middle and distal thirds of the radius, resulting in shortening of the radius and subluxation of the distal radio ulnar joint. They are however said to be uncommon in the literature historically, though they are commonly encountered in contemporary practice and are still frequently missed by primary physicians, and resident orthopaedists. These injuries are associated with much disability if undiagnosed, and require early operative rigid fixation as the optimal treatment. The case presented typifies the problems of delayed diagnosis. If the length of the radius is uncorrected or the radial bow not restored there is much morbidity of the affected forearm, especially with respect to pronation and supination.

FRACTURES OF THE PROXIMAL HUMERUS

Fractures of the proximal humerus are among the more challenging injuries that the orthopaedist will encounter. The anatomy is difficult with the possibility of iatrogenic nerve injury ever present. These fractures tend to occur in the elderly population, and it is tempting to adopt a more conservative role. The teachings of Neer revolutionized the management of these injuries and the pendulum swung, there was a new standard of care that suggested that surgical options had a clearly defined role. There is room for management of difficult three and four part injuries without doing a primary Neers' hemi arthroplasty. The contemporary surgeon now has the ability to attempt a reconstruction, knowing that if it fails a shoulder arthroplasty is a viable option.

MANAGEMENT OF THE LIGAMENTOUS CHANGE I

Acute spinal cord Injury is a challenge for both the patient and orthopaedic surgeon. In the management of these cases there is urgency to attempt to preserve neural elements and stabilize the spine if instability is present. However reversal of injured neural elements occur over a very long period of time and often with dubious functional outcome. These injuries tend to afflict the young and active amongst our population. There is a great socio-economic impact on the resources of a community with each index case of acute spinal cord injury Flexion injuries and flexion distraction injuries are a common mode of failure of the spinal column. In the thoraco-lumbar spine, when the spinal column fails through non bony elements there may be doubt about the ability to achieve stability non-operatively. Ligamentous failure of the posterior and middle

elements [the ligamentous Chance] suggests an inherent instability which necessitates operative stabilization.

OSTEOGENESIS IMPERFECTA: THE PROBLEM OF STABILIZATION

Osteogenesis Imperfecta [OI] been recognized in its manifestations from as far back as the sixteen hundreds by Wormian who described the classic changes seen at the base of the skull. OI has an incidence of between 1-4:100,000. Despite this relative frequency, many isoforms are prevalent with varying phenotypic manifestations and consequently severity of disease. The issue of stabilization of their multiple long bones fractures and prevention of subsequent fractures is still is not completely resolved. This case presents one option which was available without specialized instrumentation recognizing the in management. The literature is reviewed to identify other options.

INTRAMUSCULAR MYXOMA

Musculoskeletal tumours are always very difficult lesions to deal with. Intramuscular myxomas highlight this viewpoint as they are not a common lesions. Their diagnosis is made by specific imaging [Magnetic Resonance [MR]] sequences and cyto-histopathological evaluation. Clinical findings are non-specific. The management is fairly rewarding to both patient and physician. One case of this rare lesion managed by the orthopaedic service at the UHWI is presented.

INFANTILE COXA VARA: MANAGEMENT OF THE DELAYED COPMLICATIONS

Infantile Coxa Vara [CV] is age old, described in medical literature since the 1700's. It has been ascribed several different names, including congenital, developmental, dysgenesis, cervical, and infantile [Amstutz and Wilson, 1962]. It is probably best thought of as developmental. Although the pathology, may have been present at birth, it only manifests once the child begins to weight bear. The child then usually develops a limp or an abnormal gait. Despite attempts at correction some patients will continue to progress and the follow up for CV has to be continued afterl skeletal maturity to detect those individuals who progress to sequa1ae.

MANAGEMENT OF TIBIAL PLATEAU INJURIES

Interest in the moderm literature on the management of tibial plateau [TP] fractures, also known as 'bumper fender fractures', seem to have arisen in the 1950's with the article by Apley. The method of skeletal traction and early joint movement as proposed by Apley, is countered by the method of open reduction and internal fixation supported, by the AOI ASIF group. Despite many new classifications to this old problem, the Schatzker classification is used in our department. The majority of our patients have open reduction and internal fixation. More recently, arthroscopically assisted reduction with percutaneous fixation has been utilized. Presented are three cases treated by a combination of Apley's early range of motion and the AOI ASIF ORIF techniques as advocated by the principles of Schatzker.

COMBINATION INJURIES INVOLVING THI:: ATLANTO-AXIAL VERTEBRAE

The combination of injuries to the vertebral ring of the atlas and to the odontoid peg of the axis is a rare. This combination of injuries present special management challenges. These injuries, the combination of a Jefferson fracture and particularly a type 2 Anderson and D'Alonzo odontoid fracture, account for a small percentage of most cervical trauma series. The original paper by Jefferson in 1920, reported on 46 cases, 19 of which were combination fractures of C1-2. Many of the recommendations are made from experience gained from treating Jefferson injuries and odontoid injuries, and making recommendations extrapolated from these protocols, [Dickman and Hadley, 1989]. The management options and difficulty with imaging in these patients is highlighted in the case presented

TIBIA VARA: EARLACHER-BLOUNTS DISEASE

Infantile-Juvenile-Adolescent Tibia Vara: The same process along a continuum of time of onset [Wenger and Mickelson, 1984].

One of my consultants at the paediatric orthopaedic hospital once said to me, 'that no matter what you do with patients with severe Blounts they will recur', this was confirmed by the other two attendings in the room and they gave a synopsis of their collective experience. I was unaware at that time that our orthopaedic unit at the UHWI had done pioneering work in this field and that the opinions expressed were vastly different from that of the former workers. These statements heavily influenced my approach and understanding of this disease process. This disease needs to be understood, it is more than just an osteotomy as I had been advised, it required an understanding of the patho-anatomy and the biomechanics of the lower limbs and pelvis, this was not being addressed and hence possibly explained the reason for the recurrences.

SUPRA CONDYLAR FRACTURES OF THE FEMUR

The supracondylar fracture of the femur is a relatively uncommon injury. The heterogeneous group of injuries called supracondylar fractures comprise various subtypes, each of with varying personalities and demanding some modification of approach within the principles of their management. As quoted by Sir Reginald Watson-Jones, "few injuries present more difficult problems than supracondylar fractures of the femur" [Zimmerman 1979], This remains true for the most part. Three cases are presented to highlight the various difficulties in the management and fixation of these injuries.