

Residents' Papers 2

Chairperson: T Seepaul

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Management of the mangled or partially severed extremity

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Objective: To evaluate the results of prompt and decisive single stage management of the mangled or partially severed extremity.

Methods: Ten patients who presented between March 2012 and July 2013 with mangled, partially or totally severed extremities were studied. The Mangled Extremity Severity Scale was used to determine whether an amputation of the limb or a salvage procedure was required. The assessment and definitive surgical management were undertaken by the senior orthopaedic, general, vascular and plastic surgeons.

Results: All ten patients were treated within 12 hours of having sustained injury. One (10%) patient suffered an onsite amputation. Of the remaining nine (90%) patients, two (20%) had primary amputations and seven (70%) had a one-step salvage and reconstructive procedure. Two (29%) patients of the salvage subset subsequently had secondary amputations due to vascular graft failures and infection, while one (14%) patient had a secondary procedure to increase hand functionality.

Conclusion: In the hands of an experienced surgeon, timely single-stage management of a mangled or partially severed extremity is a valid option in a developing country.

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Prospective study of open long bone fractures in a tertiary healthcare institution

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Objective: To determine the epidemiology of open long bone fractures and to compare their management and outcome with international standards.

Methods: This was a prospective case series in which data were collected from all patients with open long bone fractures referred to the Orthopaedic Department at the San Fernando General Hospital during the period July 2012 to July 2013. Information on hospital course, management, complications and follow-up were collected for the period. Data were analysed using Fisher's exact test.

Results: A total of 64 patients with 68 open long bone fractures were treated. Gustillo and Anderson Grade II fractures were the most common (35.3%) with tibial fractures accounting for 44.1% of injuries. Eighty-six per cent of the patients with open fractures underwent primary irrigation and debridement, with 84.4% having surgical correction. Of these patients, 83.3% were surgically fixed with internal devices. An overall infection rate was 5.9%. Two cases required secondary irrigation and debridement and both went on to union. There was no association between the device which was used and infection rates ($p = 0.53$). Similarly, there was no association between timing to operative procedure and infection rates ($p = 0.3$).

Conclusions: Adequate management of long bone open fractures requires prompt initial irrigation and debridement. Low levels of infection have been achieved with primary definitive fixation and when compared to similar studies an acceptable standard of care is currently being provided. Secondary osseous and soft tissue procedures should be considered earlier to decrease infection and non-union rates. Ultimately, this study forms the foundation for an open fracture registry that will influence management protocols and improve patient care.

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An algorithm for the management of vascular-associated orthopaedic injuries

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Objective: To analyse previous cases of vascular-associated orthopaedic injuries, identify adverse risk factors and develop a treatment algorithm to reduce morbidity and mortality in patients with similar injuries in the future.

Methods: A retrospective analysis of patients presenting to our institution between January 2011 and June 2013 with combined ipsilateral vascular and orthopaedic injuries was performed.

Results: Eleven patients were identified with a mean age of 38.8 years and a M:F ratio of 10:1. The average interval to emergency surgery in ten patients presenting acutely was six hours and 45 minutes while one patient presented with a gangrenous limb five days after injury and had primary limb amputation. Skeletal stabilization was performed in seven of eight fractures prior to vascular repair whereas vascular intervention was performed prior to orthopaedic management in two of the three cases involving dislocations. Four patients (36%) had a non-functional insensate limb. In two of these cases, autologous contralateral vein graft was used, whereas polytetrafluoroethylene (PTFE) graft was used in one case. Of these three patients, one patient developed deep tissue infection while the other two developed complications due to graft thrombosis and required amputation. Forty-five per cent of the cases required intensive care and a mortality rate of 18% was noted.

Conclusion: At our institution, delays in surgical intervention increased both ischaemic time and adverse outcomes. Therefore, an algorithm for the efficient treatment of these injuries has been developed to reduce morbidity and mortality rates.

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Nine-year audit of bone histology reports at Port-of-Spain General Hospital

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Objective: To analyse the bone histology reports of a nine-year period, focussing on solid bone tumours.

Methods: A retrospective audit of bone histology reports was undertaken for the period 2003–2011. Patient demographics, the site of biopsy, histology and grading were all

analysed. Bone marrow aspirates and trephine biopsies were excluded. Patient duplication was avoided.

Results: There were 1176 specimens analysed, of which 257 met the inclusion criteria. Approximately 60% of the reports were male and two-thirds were over the age of 40 years. Gender was recorded in all reports. Age was not recorded in 9% of the reports. The number of specimens reported each year was not evenly distributed as the years 2004 and 2007 had a combined 42.8% of the reports. Of the 257 reports, 29 were from external hospitals which correlated with the 27 patients under the age of 18 years. Sixty-two per cent of the report did not specify the site of the specimen. Reports from the skull and spine were 40.8%; femur reports were 34.7% and 6.1% were intramedullary reamings whose sites were not specified. Histological analysis of the reports showed 55% were normal tissue, 14% were benign lesions, 20% were malignant lesions, 7% were inflammatory and in 4%, a diagnosis could not be made. The malignant tumours showed 45% as breast or prostate metastasis, 24% were squamous cell carcinoma, 18% were osteosarcomas and 11% were sarcomas. Out of the 51 malignant tumours, only 16 had some sort of histological grading.

Conclusion: The incidence of bone tumours at our institution is similar to worldwide statistics. However, standardization of documentation of the site of biopsy and grading are needed.

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A retrospective review of patient outcomes following halo-femoral traction before spinal instrumentation in the management of severe scoliosis and kyphoscoliosis

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Objective: To determine the effectiveness of peri-operative halo-femoral traction in the management of severe scoliosis and kyphoscoliosis.

Methods: A retrospective review of 94 patients with severe scoliosis and kyphoscoliosis was undertaken from 1973 to 2012. The following information was obtained: patient demographics, standing preoperative antero-posterior (AP) radiographs, post-traction radiographs, immediate postoperative, antero-posterior radiographs and one-year follow-up radiographs. The primary outcome measures were coronal curve correction (Cobb's angle) immediately postoperatively after patients received halo-femoral traction. Other endpoints were duration of surgery, blood loss and coronal curve at one year as well as postoperative complications. All statistical analyses were

conducted using SPSS for Windows version 17.0 (SPSS Inc., Chicago).

Results: Subjects were analysed by age at date of surgery (range 11–37 years, mean 17 years), gender (80.9% females, 19.1% males), major coronal curve magnitude (range 60° – 130°, mean 87°), duration of traction (range 6 days–21 days, mean 12 days), types of instrumentation, intra-operative time (range 1.34 hours–8.75 hours, mean 3.67 hours), intra-operative blood loss (range 263 ml–3259 ml, mean 1190 ml), coronal curve correction postoperatively (range 20°–100°, mean 47°) and at one-

year follow-up (range 25°–80°, mean 52°). The commonest postoperative complication was hardware migration (8.5%).

Conclusion: The management of severe scoliosis continues to be difficult due to its multi-planar presentation. A useful adjunct to the spinal surgeon's arsenal against major curves is halo-femoral traction. When combined with spinal instrumentation and fusion, this treatment protocol has proven to be safe, tolerable and effective in our local setting.