Current practice in the use of femoral nerve blocks when splinting femoral fractures

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Introduction: Missed compartment syndrome can have potentially devastating long-term impacts on individuals. In the reported literature ipsilateral femoral fracture has been present in 52–58% of acute thigh compartment syndromes. Time to diagnosis of acute thigh compartment syndrome has been cited as a key determinant of subsequent functional outcome. The role of femoral nerve blocks in splinting of femoral fractures is somewhat controversial as it can be argued it may mask early compartment syndrome. We present the attitudes of emergency department (ED) and orthopaedic staff at acute NHS trusts in England with regard to this issue.

Methods and materials: Survey of all 171 acute hospitals in the United Kingdom accepting trauma admissions. On-call middle grade doctors in both the emergency and orthopaedic departments were contacted to complete a telephone survey into departmental protocol and their own experience of femoral nerve blocks for lower limb fractures.

Results: Middle grades from all 171 acute trusts completed the survey (100% response rate). 54 emergency departments (30.8%) reported having a protocol for the use of femoral nerve blocks. Middle grades in the ED reported using a nerve block routinely in 95 hospitals (54%) with 63 opting for a long-acting agent and 32 for short-acting. Of those that did not 70% (n = 53) felt they were unnecessary, 21% (n = 16) were not confident in using the technique and 9% (n = 7) had worries over compartment syndrome. 116 out of 171 (68%) said they would be worried about compartment syndrome in high-energy injuries. Orthopaedic departmental protocols for nerve block use were reported in 16 trusts (9%). 45 orthopaedic middle grades (26%) indicated that they would use them routinely with 17 using long-acting and 28 using short-acting agents. 59.5% (n = 75) of orthopaedic middle grades that did not use nerve blocks felt they were unnecessary, while 22% (n = 28) had worries about compartment syndrome and 18% (n = 23) were not confident with the technique. 131 out of 171 (77%) orthopaedic middle grades would be more worried about compartment syndrome in high energy injuries.

Conclusion: Most units appear to have no protocol guiding the use of femoral nerve blocks. ED middle-grade staff were more likely to use a block than orthopaedic staff, and the most common reason for not doing so was feeling that a block was unnecessary. Our results suggest that there is future scope for developing a universal protocol for analgesia when splinting femoral fractures.


Motion artefact in CT scan of the cervical spine simulating a fracture dislocation injury

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Aim: Care is required when using computed tomography (CT) reconstruction of the cervical spine as the primary diagnostic investigation for trauma, as it may be misleading. We present an illustrated case highlighting the danger of motion artefact in cervical spine CT leading to the misdiagnosis of a fracture dislocation.

Methods: We describe the course of a 23-year-old unrestrained driver involved in a high-speed road traffic accident presenting with moderate lower cervical spine pain and tenderness without neurological deficit. CT scan was performed as part of the secondary survey and was the initial radiological investigation. Sagittal reconstruction images suggested an unstable retrolisthesis of C7 on T1. This radiological diagnosis of significant cervical spine injury was in contrast to the patient’s clinical picture.

After the patient was referred as a candidate for spinal surgery, plain radiographs and MRI performed to further evaluate the injury revealed no abnormality. Review of axial CT scan images revealed artefact in both the vertebra and surrounding tissue at C7 level related to movement of the patient during image acquisition.

Conclusion: This case illustrates a limitation of using CT as the sole modality for cervical spine imaging in trauma. Clinicians rely significantly on CT reconstructions for initial diagnosis of spinal injury. Motion artefact can create errors in integration of axial image data into sagittal reconstruction. Clinicians must conduct thorough review of axial imaging, and in cases of uncertainty request duplicate or complementary imaging.


Dynamic hip screw fixation of fractures of the femoral neck—a useful technique for accurate positioning

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It is estimated that every year in the United Kingdom, 70,000 patients are admitted to hospital with fractures of the femoral neck. A significant proportion of these patients’ are managed with internal fixation using the dynamic hip screw. Successful treatment of this injury in this way requires the lag screw to be correctly positioned within the centre of the long axis of the femoral neck, so as to prevent the complications of screw cut-out and fracture fixation failure.

To achieve correct screw orientation, a guide-wire is initially passed under X-ray surveillance with both antero-posterior and lateral C-arm imaging. Owing to the anatomical anteverision of the femoral neck, a lateral view obtained with the C-arm in a horizontal position provides a slightly oblique view to the approach of the guide-wire. We propose therefore that by tilting the C-arm 15–20° from the horizontal, we adjust for femoral neck anteverision, and achieve an image with the head, neck, greater tuberosity and femoral shaft in a straight line. We provide examples of these views in contrast with those obtained from the purely horizontal approach.

In our experience, accurate placement of the guide-wire is more easily obtained with this technique and as a result may be a valuable tool for orthopaedic surgeons in training.


Erect chest radiograph in the setting of the acute abdomen: essential tool or waste of resources and unnecessary?

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The aim of this study was to address this issue by examining both the quantity and quality of requests made for emergency chest radiographs in patient presenting with abdominal symptoms. The Royal College of Radiology recommends a chest radiograph be
done with suspected viscous perforation to exclude air under the diaphragm but this does not supersede a thorough clinical examination and should not be done routinely.

A retrospective analysis for all patients admitted to the Royal Glamorgan Hospital (RGH) with acute abdominal pain was done over a period of 12 months in 2004. All adult patients undergoing chest radiography (CXR) following admission as emergencies via the general surgery department with abdominal signs, were identified retrospectively. The quantity and the quality (value of this investigations) was evaluated.

In this study we showed that of 515 patients presenting with abdominal pain in an acute setting 65% (334) had an erect CXR on admission. Of these 5% were clinically significant showing possible medical causes for the pain and altering management. Only 1% were surgically significant showing free gas under the diaphragm. It is arguable that 314 (94% of 334) had unnecessary CXRs which contributed no new information towards treating the patient. In fact if no old radiology records were available this could have been misleading as 53 (16% of 334) had abnormal findings of which none were new.

When the Royal College of Radiologists (RCR) first published guidelines for requesting radiographs it was predicted the NHS could save £50–60 million pounds per year. Now more than ever this would be vital to sustaining our health system in these trying financial times.

By implementing this simple set of guidelines and relying on our clinical findings and a simple surgical opinion we might very well be able to massively reduce the financial, radiation and time resources currently being wasted.


Fasciotomy wound closure-clinical audit and review of current practice

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Delay in wound closure after fasciotomy has been a matter of concern. We aimed to knnkaudit the number of days to closure, technique of closure, number of theatre visits and any influencing factors that can affect delay in wound closure.

Patients and methods: We have included 30 random patients of leg fasciotomies (prophylactic and therapeutic) within 3-year period (03/05 to 03/08) following acute compartment syndrome. We have excluded patients (n=17) with chronic compartment syndrome, dead compartment and upper limb compartment syndromes. 19 male, 11 female, age 7–85 (average 37). Only one patient was in ITU. There were open (n=7) and closed (21) injuries.

Results: Average time taken to close the wound since fasciotomy was 5.1 days in Tibial fractures (n=15), 8.5 days in Tibial plateau fractures (n=2), 3.8 days in ankle fractures (n=4), 2.4 days in upper limb fractures (n=7) and 6 days in two cases with no fracture. Patients (n=2) who had RFA needed maximum time till closure of wound. Number of theatre visits ranged from 3 to 7 days. Wounds were closed with or without shoevelace. No correlation with days to wound closure note with age, co-morbidities, mechanism, open injuries, compartment pressures (20–100 mm) and tissue necrosis. All seven patients with shoevelace applied at the first visit were closed at the second visit. Average time for wound closure was 3 days with shoevelace and 5.5 days without shoevelace.

Conclusion: Shoevelace technique for fasciotomies is safe for delayed primary closure and effective in avoiding skin graft. It also reduces theatre visits and hospital stay. It is recommended that shoevelace is to be applied at the time of fasciotomy and used judiciously till closure of wounds. Recent introduction of skin closing devices may prove to be viable alternative in near future.

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Femoral head lag screw placement: the state of play

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Background: Placement of lag screws in the femoral head zones (FHZ) described by Cleveland et al. has been shown to influence implant failure. More recently, Baugmantert demonstrated increased failure rates with tip apex distance (TAD) beyond 25 mm. Since this landmark paper little evidence exists to show whether lag screw placement has improved in widespread practice.

Aims: To determine the current accuracy of femoral head lag screw placement and whether implant type/surgeon seniority influence lag screw placement.

Patients and methods: 190 consecutive patients sustained proximal femoral fractures, fixed with lag screws at two university teaching hospitals. Fixation involved 110 dynamic hip screws and 80 intramedullary hip screws. Intra-operative images were used to calculate FHZ and TAD retrospectively. Proportion of TAD <25 mm and optimal FHZ placement were compared with Baugmantert’s series using the "Student t" test and Pearson Chi-square test. Likewise, the effect of implant type and lead surgeon seniority was analysed.

Results: TAD was < 25 mm in 87.8%; significantly lower than Baugmantert’s figure of 56.6% (p < 0.0001). 82.2% lag screws were placed within optimal FHZ, significantly higher than 48.5% of Baugmantert’s series (p < 0.0001). Implant type did not influence TAD. 88.6% DHS screws were in optimal FHZ, compared to 73.7% of IMHS screws (p < 0.017). Suboptimal FHZ placement in IMHS screws was more frequently due to inaccuracy in the sagittal plane (p < 0.001). Specialist registrars achieved a mean TAD of 15.98 mm; consultants achieved 18.33 mm (p = 0.0065). This effect did not extend to proportion of TAD <25 mm or FHZ placement.

Conclusions: Femoral head lag screw placement has improved significantly over the last decade, presumably due to dissemination of the above principles. DHS screws are more frequently placed in optimal FHZ than IMHS screws. Specialist registrars place lag screws with a shorter TAD, but surgeon seniority does not influence proportion of TAD <25 mm or FHZ placement.


Fixation of ipsilateral femoral neck and shaft fractures treated with dual implant fixation—case studies

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Ipsilateral femoral neck and shaft fractures are a consequence of a high-energy trauma. The optimal method of treatment of these complex injuries remains uncertain. Single implant fixation with an antegrad nail with screw(s) in to the neck and head are standard. However problems with one or both fractures with such an implant have been reported.

Biochemical and retrospective analysis show lag screw fixation of the femoral neck fracture and reamed intramedullary nailing for shaft fracture stabilization were associated with good outcomes and fewest complications. We present three cases successfully treated with dual implant fixation where the femoral neck fracture