Severe Pelvic Trauma in the UK: the trainees experience, needs and expectations

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Major pelvic fractures are usually the result of high energy motor vehicle accidents. The fracture incidence has been estimated as 3 per 100,000 (population). These injuries are commonly part of a multisystem injury. A mismanaged pelvic injury can lead to early death from haemorrhage or later death and disability from complications or sequelae of multisystem organ failure. Open pelvic fractures account for approximately 3-5% of all pelvic injuries and are at the more severe end of the spectrum. They are associated with a mortality rate of between 30-50% and high levels of morbidity.

Mehool Acharya orthopaedic trainees felt that they had adequate training in the management of a haemodynamically unstable patient with a pelvic fracture and to identify any possible deficiencies in training.

Study design and methods
All BOTA trainees were sent an online questionnaire to complete. There were 21 key questions all relating to the management of a haemodynamically unstable patient with a pelvic fracture (Appendix 1*). Responses were either Yes, No or unsure. All trainees were sent a reminder email a few weeks after the initial questionnaire to increase the response rate. The results were collated and analysed.

Results
154 members of BOTA (approximately 18% of all members) responded to the questionnaire. This ranged from foundation year 2 doctors to individuals in a substantive orthopaedic consultant post. Nearly 90% of respondents were in specialist training years with 16% ST3, 16% ST4, 15% ST5, 10% ST6, 13% ST7 and 29% ST8. 56% of trainees

orthopaedic trainees felt that they had adequate training in the management of a haemodynamically unstable patient with a pelvic fracture and to identify any possible deficiencies in training.

Reconfiguring of major trauma to establish major trauma centres (MTC’s) in the UK has seen a 20% increase in patients surviving major trauma. Pelvic binders are the first line management for any patient presenting with hypotension and a suspected pelvic ring injury. Rapid resuscitation and damage control surgery are strategies to prevent the lethal triad of hypothermia, acidosis and coagulopathy.

All MTC’s should have a protocol in place for dealing with patients that continue to remain haemodynamically unstable even after the initial period of aggressive resuscitation.

The establishment of MTC’s is considered by some to have also had an effect on general and complex trauma training for orthopaedic trainees. It is currently not compulsory to rotate through the MTC as part of orthopaedic surgical training (ST) and thus trainees may never be exposed to managing patients with severe pelvic fractures and multiple injuries.

The aim of this study was to determine whether

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were working in a hospital that managed patients with pelvic trauma. 45% of trainees reported that their hospital had a management protocol for dealing with the haemodynamically unstable patient with a pelvic fracture. 20% of respondents reported that there was no such protocol available for dealing with these injuries and the remaining 35% reported that they were unsure whether there was a protocol available in their hospital.

90% of trainees reported that there was a massive transfusion protocol in their hospital, 9% were unsure and the remaining 1% reported that there was no such protocol available in their unit.

When asked whether trainees were comfortable dealing with a haemodynamically unstable patient with a pelvic fracture, 60% reported yes, 19% reported no and the remaining 21% were unsure.

Pelvic binder - 97% of respondents were comfortable applying a pelvic binder. However, only 88% of respondents had actually applied a pelvic binder.

Pelvic External Fixator - Almost 50% of trainees were comfortable applying a pelvic external fixator and had actually applied an external fixator to the pelvis (Figures 1 & 2).

C Clamp - 13% of trainees reported that their hospital had a C Clamp. 32% reported that there was no C clamp in their hospital and the remaining 55% were unsure. Only five of the respondents were comfortable applying a C Clamp and only four had actually ever applied one.

Pelvic Packing - 23% percent of trainees have been involved in the management of a patient that required emergency pelvic packing. However, only 10% of trainees would be happy to perform emergency pelvic packing for a patient with a pelvic fracture and haemodynamic instability (Figure 3).

Pelvic fracture and urethral injury - 60% of trainees had managed a patient with a suspected urethral injury. Nearly 36% of respondents were happy to perform a cystourethrogram in patients with a pelvic fracture and a suspected urethral injury. However, only 18% of respondents had actually performed a cystourethrogram.

Open pelvic fracture - Less than half of all respondents reported that they had been involved in...
the management of a patient with an open pelvic fracture (Figure 4).

General Pelvic trauma training - 27% of respondents reported that they had completed a specific pelvic and acetabular trauma post in their training to date. However, nearly 70% had had some structured training in the management of pelvic fractures. 95% of respondents reported that they would be very keen on standardised pelvic and acetabular trauma training during the ST years.

Discussion

This is the first study of its kind in the UK where a survey of orthopaedic trainees’ experience, ability and technical skill in managing patients with severe pelvic trauma has been conducted. There has been no attempt to demonstrate the knowledge associated with these technical tasks and skills. However, it is appreciated that there exists a complex relationship between acquiring knowledge, performing a skill and developing experience.

The trauma and orthopaedic curriculum suggests that a level 4 competency (knows specifically and broadly) should be attained for ST3-8 in applied clinical knowledge for pelvic fracture stabilisation. It also suggests that ST3-8 should have the applied clinical skills to apply an external fixator to the pelvis5.

The results of this study show that just over 50% of trainees have been involved in the management of a patient with a pelvic fracture and haemodynamic instability and that just under 50% of trainees were aware of the existence of a departmental protocol for the management of these patients. Only 50% of trainees felt they had the skill and experience to perform specific tasks essential in the management of a patient with severe pelvic trauma. This may be in part related to the training that trainees are exposed to and whether or not they rotate through the MTC during their training. One of the ways of potentially increasing exposure in dealing with these patients would be for all orthopaedic trainees to rotate through the MTC during their surgical training. However, it may prove to be impossible for all trainees to rotate through an MTC as part of their orthopaedic surgical training and thus it may be more appropriate to ensure that all orthopaedic trainees whether they work in an MTC or not are provided with the opportunity to access standardised training.

Conclusion

The results of this survey show that amongst orthopaedic trainees in the UK there is a variation in skill, ability and experience in the management of patients with severe pelvic trauma. Over 95% of trainees would like standardised pelvic and acetabular training during the ST years. Standardised training related to the emergency management of patients with severe pelvic trauma should be available to all orthopaedic trainees. This is probably most beneficial for both trainees and patients if it is in the early years of orthopaedic surgical training (ST3-5). Formal assessment should be undertaken to ensure that appropriate levels of competencies are achieved.

Acknowledgements

I would like to thank Mr Jeya Palan (a former President of BOTA) for help with sending out the questionnaire.
Appendix 1

Questionnaire

Management of haemodynamically unstable patient with a pelvic fracture

1. Which year of training are you in?
2. Does your hospital manage patients with pelvic and acetabular fractures?
3. Are you comfortable dealing with a haemodynamically unstable patient with a pelvic fracture?
4. Does your hospital have a protocol for the management of a haemodynamically unstable patient with a pelvic fracture?
5. Does your hospital have a massive transfusion protocol?
6. Have you ever applied a pelvic binder?
7. Do you feel able to apply a pelvic binder?
8. Have you ever applied and external fixator to the pelvis?
9. Do you feel able to apply an external fixator to the pelvis?
10. Have you ever been involved in a patient that required pelvic packing?
11. Do you feel able to perform pelvic packing in a haemodynamically unstable patient?
12. Does your hospital have a C Clamp?
13. Have you ever applied a C Clamp?
14. Do you feel able to apply a C Clamp?
15. Have you ever managed a patient with a pelvic fracture and a suspected urethral injury?
16. Have you ever performed a retrograde cystourethrogram?
17. Do you feel able to perform a retrograde cystourethrogram?
18. Have you ever been involved in the management of a patient with open pelvic fracture?
19. Have you completed a pelvic trauma post in your training to date?
20. Have you had any structured training in the emergency management of pelvic and acetabular fractures?
21. Do you think that having a standardised pelvic and acetabular teaching/training would be helpful during your specialist training years?

References