Overview

Prior to the work presented in this thesis, there was little work on the effect of blast on the skeletal system, and what work there was usually related to free field blast, an explosion in air with little consideration of the effects of the environment on the injury pattern. In particular, the effect of buried devices on both foot soldiers, and those in vehicles had not been considered or differentiated in detail. This is not only of relevance to survivors, but also those killed in the incident, as injury or prevention, or mitigation may offer more potential for improved outcomes rather than further improvements in treatment, given the already significant advances made during recent conflicts.

The majority of the work spans the period from 2003, the 2\textsuperscript{nd} Gulf War, a predominately ballistic conflict, to 2014 with the withdrawal of combat troops from Afghanistan, a conflict associated with the widespread use of the Improved Explosive Device (IED). My contribution to the literature will be considered under the following headings:

- Injury Analysis (6 papers)
- Injury Prevention/Mitigation (5 papers)
- Management (8 papers)
- Outcome (13 papers)
- Education (9 papers)

This thesis contains the following published articles:

**Injury Analysis**

- Singleton JA, Gibb IE, Bull AM, Mahoney PF, Clasper JC, Primary blast lung injury prevalence and fatal injuries from explosions: Insights from post-mortem computed tomographic analysis of 121 improvised explosive device fatalities. *J Trauma Acute Care Surg* 2013;75(2 Suppl 2):S269-74
- Pearce AP, Bull AMJ, Clasper JC. Mediastinal injury is the strongest predictor of mortality in mounted blast amongst UK deployed forces. *Injury* 2017 48(9):1900-1905

**Injury Prevention/Mitigation**


Spurrier E, Singleton JA, Masouros S, Gibb I, Clasper J. Blast injury in the spine: Dynamic Response Index is not an appropriate model for predicting injury. *Clin Orthop Relat Res* 2015 473(9):2929-2935


Management


Clasper J. The interaction of projectiles with tissues and the management of ballistic fractures. *J R Army Med Corps* 2001;147:52-61


Outcome


