# Imperial College School of Medicine Surgical Society Annual International Trauma Conference

The *British Journal of Hospital Medicine* is pleased to publish the following winning (Field et al) and second place (Webb and Salciccioli) abstracts which were presented at the Trauma '14 conference, Imperial College London, held on 22 and 23 November 2014.

Trauma '14 was developed by the Imperial College School of Medicine Surgical Society committee, covering all major aspects of trauma management via both lecture and practical-based teaching. The conference provided training for the immediate management of the injured trauma patient.

## Pelvic binder position in major trauma patients with pelvic fractures

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### Introduction

St. Mary's Hospital is one of four major trauma centres in London, trauma calling 2500 patients each year. Attending trauma calls and reviewing imaging, the authors observed trauma call patients with pelvic fractures and incorrectly placed pelvic binders and decided to investigate.

### Methods

The position of application of a pelvic binder was audited in 41 trauma-called orthopaedic inpatients at St. Mary's Hospital in 2014 with a diagnosis of pelvic fracture. Pelvic binder position was independently assessed by two junior doctors and a clinical medical student and classed as high, trochanteric or low, based on the buckle position relative to the trochanteric zone.

### Results

The audit included 27 male and 14 female patients, with an average age of 40.2 years, (range 12–83 years). Mechanism of injury included road traffic accidents (61%; comprising pedestrian *vs* vehicle (31.7%), motorcycle *vs* vehicle (19.5%), cyclist *vs* vehicle (4.9%), car *vs* car (2.4%) and motorcycle *vs* kerb (2.4%)) and falls from height (39%). Almost all pelvic binders were applied in the prehospital environment. Only 41% of binders were placed in the trochanteric zone; 32% were too high and 27% too low. Inter-observer agreement over binder position was 83%.

### Discussion

Correct application of a pelvic binder (at the level of the greater trochanters of the hips) may be life saving in the trauma patient with an unstable pelvis and internal haemorrhage. This audit found optimal pelvic binder placement in only 41% of patients with pelvic fractures who were admitted to a London major trauma centre.

## Monitoring return of spontaneous circulation in cardiopulmonary resuscitation may improve outcomes

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### Introduction

Cardiopulmonary resuscitation is vitally important in stabilizing a patient in a trauma setting. The ability of the medic to perform cardiopulmonary resuscitation is one of the biggest determinants of its success, particularly the ability to execute uninterrupted chest compressions. However, interruption of cardiopulmonary resuscitation is necessary to check for the return of spontaneous circulation because the pulse generated by chest compressions cannot be easily differentiated from a physiological pulse and electrical activity from the heart cannot be measured accurately during compressions.

The authors believe that a device that could detect a spontaneous heartbeat during chest compressions would allow cardiopulmonary resuscitation to be performed without the need to pause to check for return of spontaneous circulation, therefore leading to more successful resuscitation.

### Methods

The device the authors have designed consists of a balloon catheter that is positioned posterior to the patient's heart via the oesophagus with a small, battery-operated module that remains externally. The module senses the pressure inside the balloon which increases under the positive pressure of a chest compression or decreases as the heart contracts during systole. If a spontaneous beat was detected, the module would alert the medic(s) performing cardiopulmonary resuscitation and return of spontaneous circulation could be assessed fully. This would mean that chest compressions would only be interrupted when there was a good chance that return of spontaneous circulation had been achieved, rather than after every 30+2 cycle as the current Resuscitation Council (UK) guidelines recommend.

### Discussion

This simple device could lead to higher quality cardiopulmonary resuscitation and an increase in the number of lives saved.