

## Introduction

The emergent management of severely injured polytrauma patients can pose a considerable challenge. The principle of ‘damage control surgery’ a term first coined by Rotondo et al refers to the operative strategy to ameliorate the most life threatening and immediate injuries in trauma patients, opting to delay definitive management of these injuries until the patient is vitally stable. This treatment strategy can, however, be undermined in situations where multiple competing or antagonising traumas are present.

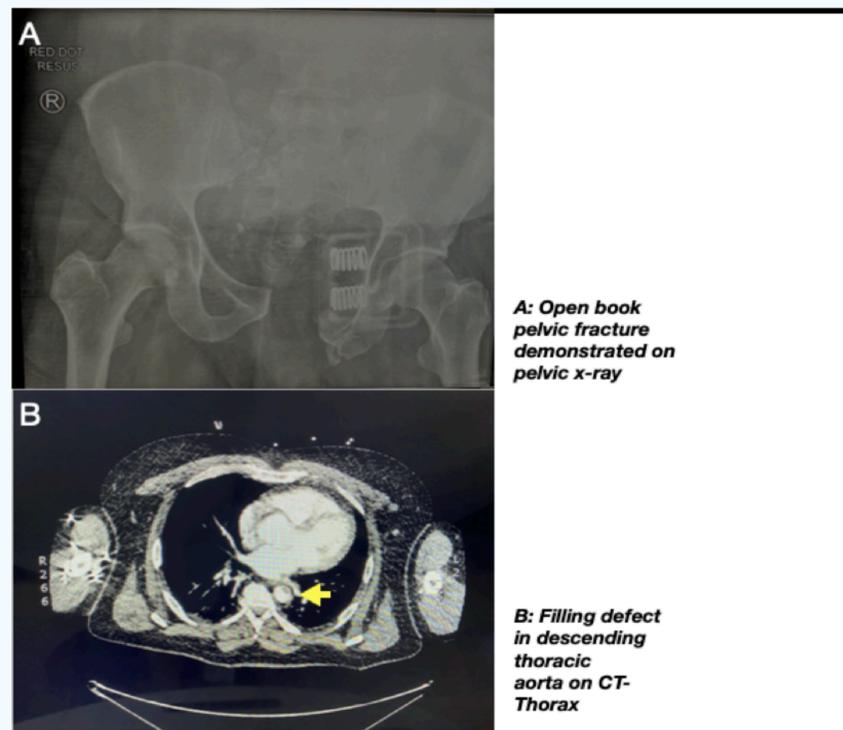
## Case Description

- 39 year old male with no significant history airlifted to CUH post motorcycle vs car RTA
- Admitted to CUH with pelvic binder and Miami-J collar in place. Noted to have multiple fractures:
  - Teardrop C2 fractures
  - Open book pelvic fracture ( Figure A)
  - Bilateral wrist fractures
  - L3,4,5 fractures
  - Ribs T10, 11,12 fractures
  - Left tibia and fibula fractures
- CT imaging was also concerning for a filling defect within in the descending thoracic aorta consistent with multiple non-occlusive thrombi indicative of a possible intimal tear (Figure B)
- Admitted to ICU for further management

## Challenges associated with this case

The emergent management of this patient was complicated by a number of factors:

- Covid Status: As the patient was an emergency admission to ICU he required covid isolation precautions pending his swab result. This required admission to a satellite ICU unit posing nursing difficulties
- Imaging issues: CT-Thorax was concerning for a filling defect in the descending thoracic aorta indicating a possible intimal tear or aortic dissection. Further elucidation of this required gated CT imaging which was not available on the night of admission



**Competing Surgical Needs:** The coexisting pelvic fracture and descending aortic injury presented a unique difficulty in care of this patient. The decision to prioritize which issue warranted intervention first. Additionally the required interventions for the pelvic and aortic trauma in this patient presented with marked incompatibilities, such as the requirement to anticoagulate post-endovascular repair and the implications for the pelvic trauma. Similarly access to conduct any endovascular repair was hampered by the requirement to keep the patient in a pelvic binder.

## Role of the Intensivist

The role of the intensivist was paramount in the management of this patient. Intensivists are uniquely placed in the multi-disciplinary team when managing complex cases such as this in both the management and the coordination of care. Intensivist input was a driving factor in the discussion between the various surgical teams in terms of determining the most pressing issue requiring initial intervention and in navigating the potentially difficult post-operative period.

## Outcome

Repeat CT imaging using a gated imaging technique was undertaken which demonstrated two intimal tears in the descending aorta at the level of T4/T5 (Figure C) and additionally at the posterior aspect of the aorta at T9/10. The decision was made to proceed with an thoracic endovascular aneurysm repair (TEVAR) by the vascular surgery team. This involved removing the pelvic binder in addition to judicious anticoagulation and continued care in ICU. Patient was subsequently transferred to Tallaght Hospital for definitive management of the pelvic fracture.

## Conclusion

Polytrauma patients have the potential to present with complex and competing needs in the immediate post-trauma period. In cases of polytrauma, specialists may prioritise specific injuries differently depending on their previous experience and training. What's more, intervention for one injury may have a deleterious effect on another. This necessitates a careful balancing of risk in the setting of polytrauma, with an appreciation of the global picture and an awareness of the patient's critical care needs. Intensivists are uniquely placed to coordinate and appropriately prioritise these interventions, in addition to being able to manage the patient in the perioperative period.

