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Virtual Case Conference Series

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Damage Control Across Borders

June 16, 2026

Case Series: Expert Q&A Review

Presented by the EAST Military Committee

Case Presenters

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Expert Panelists

Expert Panelist	**Andrew Kung, MD** Captain, USN; Trauma and Critical Care Surgeon Active Duty, USN
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The views expressed here are solely those of the speakers and do not necessarily represent those of the United States military, the Department of War, or the federal government.

This document summarizes clinical Q&A discussion from the presented cases. Artificial intelligence was utilized to assist with summation and formatting with subsequent human review prior to publication. Patient identifiers have been removed. Intended for educational use only.

Case 1 — Penetrating Abdominal Trauma: Zone 1 Hematoma and IVC Injury

A young male sustained multiple GSWs tracking from the left upper quadrant to the right lower back, presenting with peritonitis and free fluid on FAST. Index laparotomy addressed gastric and jejunal injuries; a non-expanding Zone 1 hematoma was left unexplored. Return to OR revealed a 5 cm IVC laceration with nonviable vessel wall, an additional jejunal injury, and a D3 duodenal perforation — requiring IVC ligation, duodenal oversew/drainage, and ultimately pyloric exclusion with Stamm gastrostomy and jejunostomy at definitive repair. Discharge occurred approximately 10 weeks after injury.

Q: Should CT be obtained before OR in a hemodynamically borderline patient with penetrating abdominal trauma?

- No CT if OR is immediately available — proceed directly to operative intervention. If OR is delayed, CT is reasonable while the room is prepared provided the patient is clearly stable; a chest X-ray is mandatory regardless to rule out intrathoracic injury in any thoracoabdominal trajectory.
- In this case a concurrent semi-mass casualty situation made OR availability uncertain; chest X-ray was obtained and the patient went directly to OR.

Q: Should a penetrating Zone 1 retroperitoneal hematoma be explored at the index operation?

- Yes in a civilian setting — this case confirmed a 5 cm IVC laceration and D3 duodenal perforation found only on second-look laparotomy after initial non-exploration. Secure supradiaphragmatic vascular access before entering Zone 1.
- In austere/deployed environments, selective deferral is acceptable if resources (blood, personnel) will meaningfully improve within 12–24 hours, return to OR is rapid, and the patient has remained hemodynamically stable throughout.

Q: How should concurrent IVC injury and duodenal injury be managed in a damage control setting?

- IVC: attempt lateral venorrhaphy or patch angioplasty (bovine pericardium); ligate as bailout when repair is not feasible. IVC ligation outcomes may be better than anticipated — this patient had no significant lower extremity edema postoperatively.
- Duodenal injury at index operation: oversew and drain widely; defer pyloric exclusion and enteral access (Stamm gastrostomy + distal jejunostomy) to a planned reoperation once physiologically normal. Performing definitive duodenal reconstruction during MTP and ongoing contamination substantially increases anastomotic failure risk.

KEY TAKEAWAYS

- In penetrating abdominal trauma, proceed directly to OR when available; a chest X-ray is mandatory regardless. Penetrating Zone 1 hematomas must be explored in civilian settings.
- IVC ligation is an acceptable damage control bailout with potentially favorable outcomes. Duodenal injuries should be oversewed and drained at the index operation; pyloric exclusion and enteral access are deferred to definitive reoperation.
- In austere environments, selective Zone 1 deferral is reasonable when resources will clearly improve.

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Case 2 — CCAT and Host Nation Trauma Care: Damage Control Principles Across Borders

A young active-duty female soldier sustained blunt abdominal trauma in a high-speed MVC in a foreign country, undergoing laparotomy at a host nation level 3–4 equivalent facility where primary anastomosis and ostomy maturation were performed while she remained acidotic and vasopressor-dependent. A CCAT team transferred her to a regional forward-stationed hospital, where re-exploration revealed an anastomotic leak, traumatic hernia with incarcerated bowel, and a non-midline fascial incision; revision anastomosis, intestinal continuity restoration, and biologic mesh hernia repair were performed. Transfer to a stateside facility identified a partial fascial dehiscence and a missed lumbar spinal column injury.

Q: If this patient arrived at a US level 3 or 4 trauma center, would she have been operated on or transferred?

- Variable by facility, but transfer was the more likely outcome. More importantly, even at centers that would have operated, damage control principles would have been applied — abbreviated operation, temporary abdominal closure, and deferral of anastomosis until physiologically normal.
- Core principle: transfer when injuries exceed the facility's resources in operative expertise, ICU capacity, and subspecialty coverage.

Q: How should the index operation have differed from what was performed at the host nation facility?

- Damage control was not applied: primary anastomosis and ostomy maturation were performed while the patient was acidotic and vasopressor-dependent, leading to anastomotic failure found on re-exploration. Correct approach: resect nonviable bowel, leave in discontinuity, temporary abdominal closure, and transfer for planned reoperation when physiologically normal.
- Additionally: the non-midline fascial incision complicated all subsequent reoperations and contributed to dehiscence.

Q: Can host nation hospitals be reliably pre-identified as capable trauma facilities, and does a defined triage/evacuation pathway exist?

- Designated facilities exist but capability is highly variable. In this case, the patient was not brought to the pre-designated trauma center; civilian EMS distributed casualties to the nearest facility, which lacked damage control surgical and ICU capability. "Trust but verify" — in-person assessments are essential; paper designation does not guarantee real-world competence.
- Working as a guest in host nation hospitals creates inherent constraints — protocols cannot be mandated. Closing the gap requires sustained ATLS training, damage control education, and relationship-building. A recognized gap between planned evacuation pathways and real-world execution persists.

KEY TAKEAWAYS

- Damage control principles must be applied when the patient is acidotic, coagulopathic, or vasopressor-dependent: abbreviated operation, temporary abdominal closure, ICU resuscitation, planned reoperation when physiologically normal. Anastomosis in this state reliably fails. CCAT transport of critically ill postoperative patients over long distances is feasible; transport teams must be prepared to correct critical care errors on patient contact.
- Host nation designated trauma hospitals may not be capable of damage control surgery despite pre-deployment designation — in-person capability verification is essential. Systematic reassessment and repeat imaging at each facility are mandatory to ensure no missed injuries

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