



Under Pressure: The AAJT-S For Non-Compressible Truncal Hemorrhage



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Background

Non-compressible torso hemorrhage (NCTH) remains the leading cause of combat related fatality. Large-scale combat operations (LSCO) (i.e. the Russo-Ukrainian War) have demonstrated prolonged extraction times to higher echelons of care, thus compounding the need for prolonged casualty care solutions for NCTH. Currently, there are zero fielded devices that reliably address NCTH able to be placed by a medic. The Abdominal Aortic and Junctional Tourniquet-Stabilized (AAJT-S) marketed by Compression Works, Inc., is a device that may fill this gap (Figure 1).

What is the AAJT-S?



Figure 1. The Abdominal Aortic & Junctional Tourniquet-Stabilized

The displacement created by the bladder increases intraabdominal compartment pressure (IAP) sufficient to slow or stop NCTH. The device is highly portable and can be easily applied by medics within minutes, two strengths not shared by other NCTH interventions.

The opinions and assertions contained herein are the views of the author(s) and are not the official position of the Department of War, the Department of the Army, or the United States Government.

The AAJT-S is an FDA-approved device for controlling junctional and pelvic hemorrhage for more than a decade. Preliminary live animal studies within our own lab, the U.S. Army Institute for Surgical Research, and the U.S. Air Force 59th Medical Wing, have shown it has the capacity to slow or stop NCTH via the production of an intraabdominal pressure (IAP) of 30-40 mmHg. Briefly, the AAJT-S is secured around the torso, with the compression bladder positioned over the umbilicus, then tightened and inflated until adequate vascular

compression is achieved. The displacement created by the bladder increases intraabdominal compartment pressure (IAP) sufficient to slow or stop NCTH. The device is highly portable and can be easily applied by medics within minutes, two strengths not shared by other NCTH interventions.

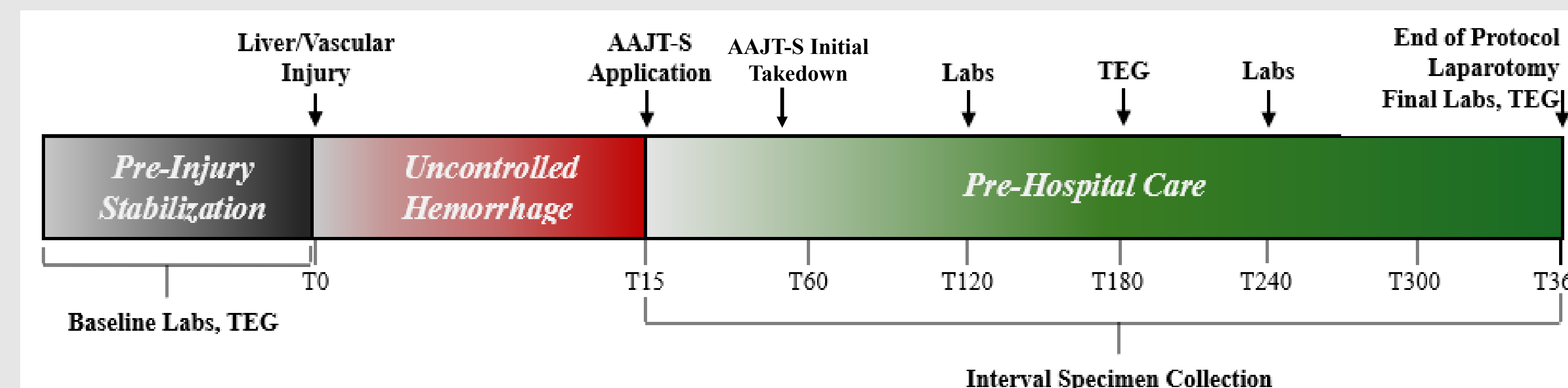


Figure 2. Porcine trauma model protocol timeline; T = minutes post-injury.

Study Objective & Methods

In 2026, a single-site study utilizing cadaveric and *in vivo* porcine trauma models at Madigan Army Medical Center will be performed to identify AAJT-S positioning, characterize optimal pressures and assess the device's effectiveness at slowing hemorrhage with inflation/deflation cycles.

Regarding the porcine trauma model, swine will undergo either a liver injury or truncal vascular injury to cause life-threatening NCTH, with or without

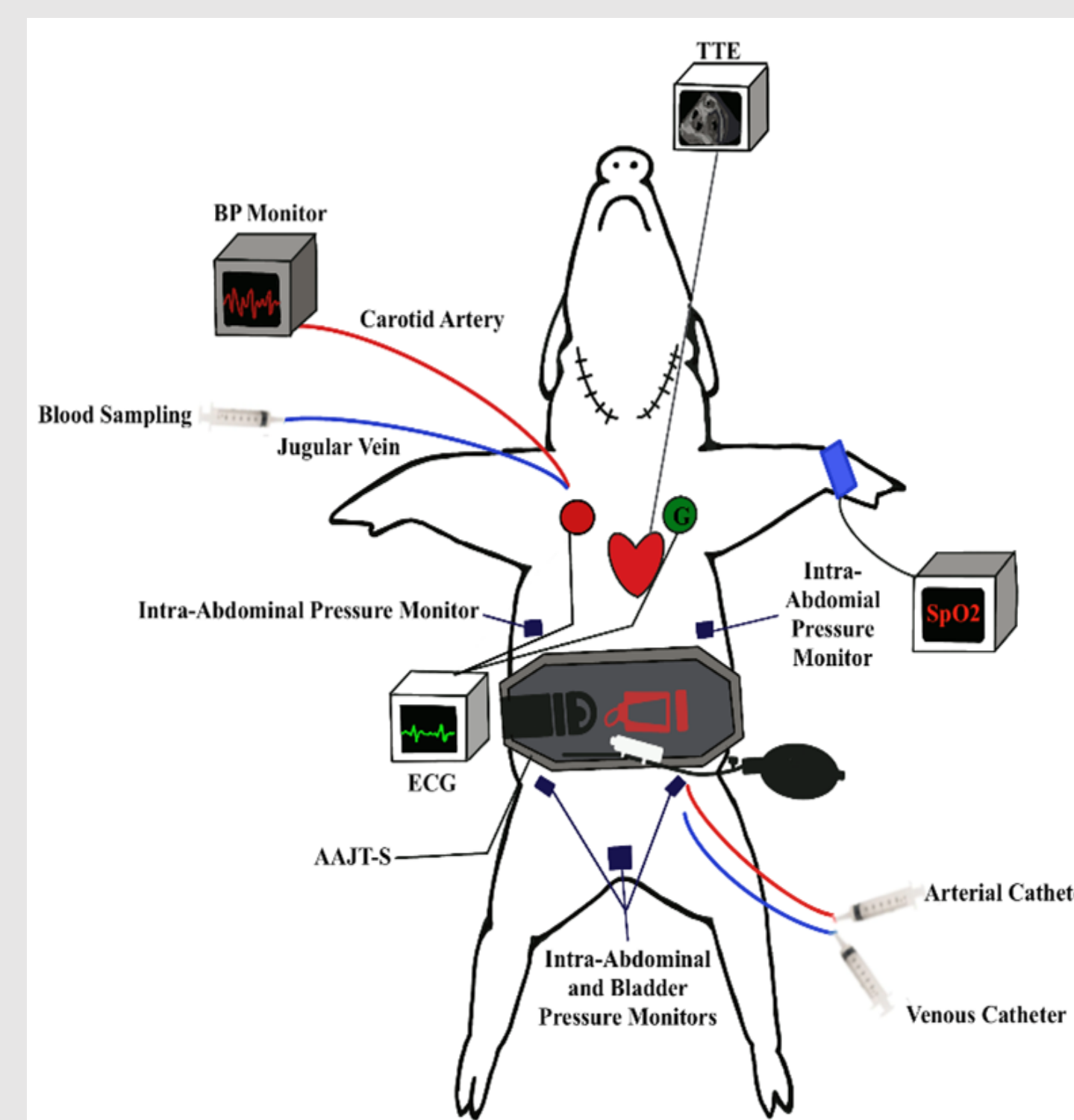


Figure 3. Animal instrumentation, AAJT-S device, and monitoring placement.

intervention (AAJT-S placement). Primary endpoint is survival six hours post-injury and total blood loss (TBL). Continuous monitoring and interval assessments, to include thromboelastogram, complete blood counts and coagulation markers, will be performed. At the end of six hours, or after animal death, an exploratory laparotomy will be completed to assess TBL. Humane euthanasia will occur and tissues samples (liver, small bowel, etc.) will be obtained during necropsy for future molecular analysis.

Anticipated Impact & Long-Term Goals

Should the study provide sufficient preclinical validation, the ultimate goal is operational adoption. To achieve this, we plan to:

- Obtain FDA-clearance to expand the AAJT-S indication to include adjunctive management of NCTH
- Develop NCTH-specific training resources that are modular and tailored to medic, corpsman, and provider-level users, ensuring interoperability across Special Operations Forces (SOF) and conventional military units, to include:
 - Training videos on DeployedMedicine.com
 - Updated training mannequins supporting NCTH simulation
- Complete formal demonstration efforts to U.S. Military Stakeholders



Figure 4. The AAJT-S in use on casualties during the ongoing Russo-Ukrainian War.

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