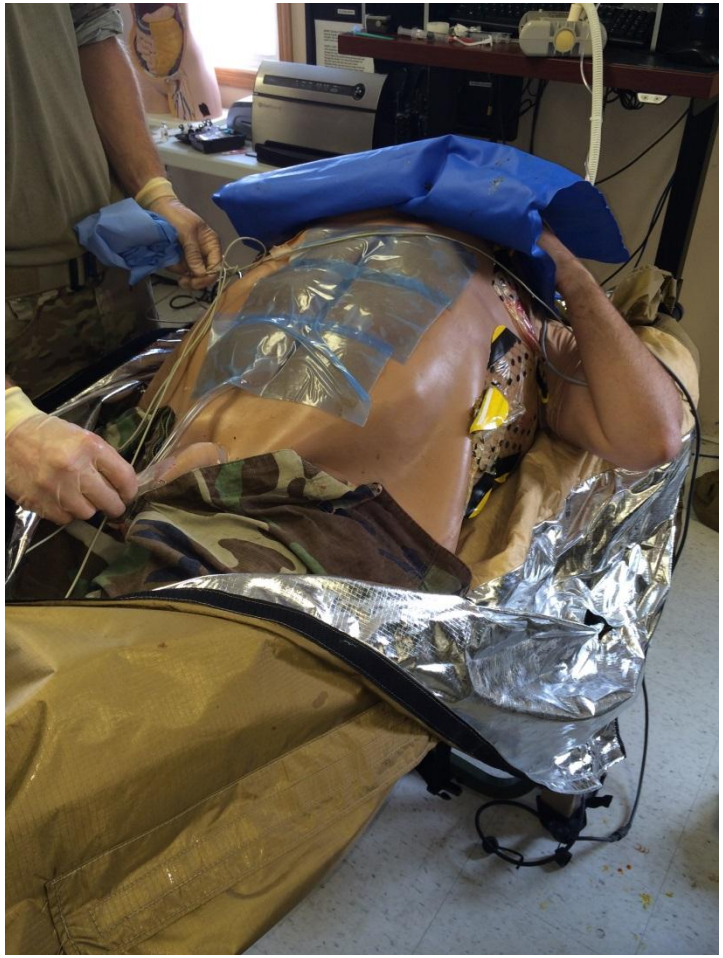
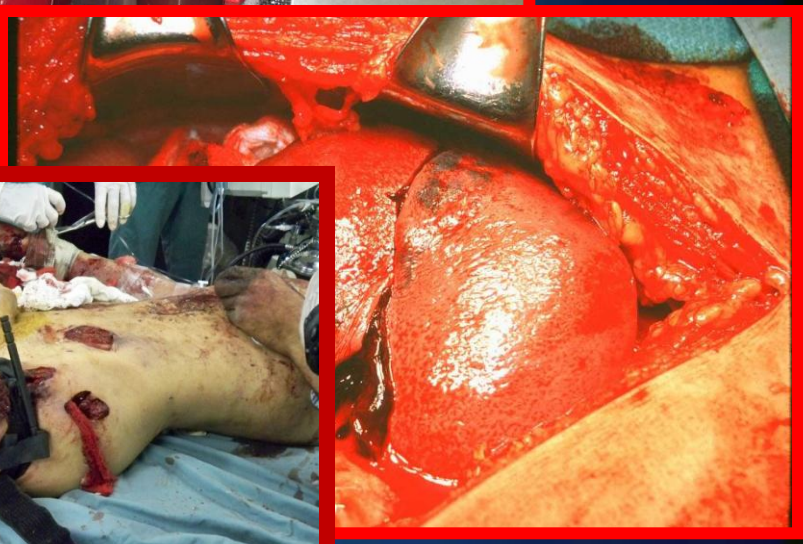
Training for Damage Control Surgery in Austere Environments

- Introduction to the Research Project and the Human Worn Surgical Trainer
- Ottawa, Ontario
- October 17 2014



Rationale: Prevent Bleeding to death

- leading cause of potentially preventable injury-related death[1,4]
- "Bleeding to death" accounts for 80% of early in hospital deaths[2]
- more than 90 % of these hemorrhagic deaths being from truncal hemorhage[3,5]



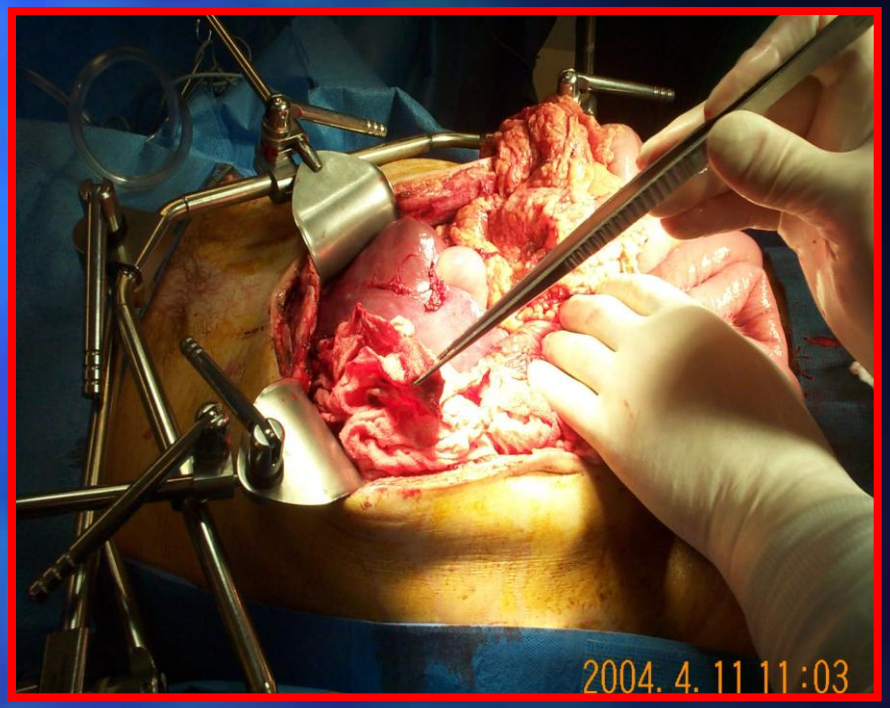
[1]Champion Sem Hematol 2004, [2]Sauaia J Trauma 1995, [3]Hoyt J Trauma 1994, [4]Rhee J Trauma 2003, [5]Bellamy 1984

How do you stop internal bleeding?

- Operative hemorrhage control
- Laparotomy
- Stopping the bleeding with your hands

Damage Control Surgery

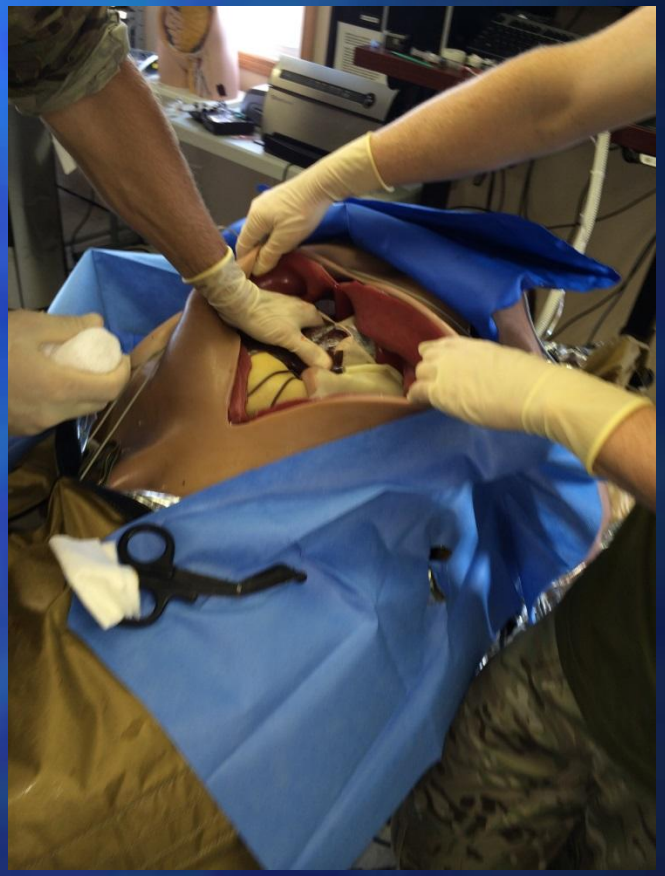
- Naval term
  - Emergency procedures to prevent sinking
- Abbreviated and staged surgery
- Aim to preserve physiology not to complete surgery
- Hemorrhage control not definitive surgery [1,2,3,4]
- Placing "packs" and leaving the abdomen "open" are the basic elements



[1]Hirshberg, Surg Clin N Amer 1997;77:813-20.
[2]Holcomb, Milt Med 2001;166:490-3.
[3]Burch, Ann Surg 1992;215:476-83
Sugrue, Injury 2004;35:642-648

Todays Goals

- High-level
  - To conduct a Damage control laparotomy on the Cutsuit surgical trainer
- Specific – to put packing around the spleen and liver in order to stop the loss of blood



Recruitment Letter

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PROJECT # 0025-07109

October 9, 2014

Information Letter for the Project Entitled

The Marriage of Advanced Surgical Simulation Training with Tele-presence [Mentoring: Training for Damage Control Surgery in Austere Environments: Part A) Trained Surgeons versus non-physician Medical Assistants and Physician Assistants

Dear Medical Assistant or Physicians Assistant

This letter is an introduction to our research project that we would like to invite you to participate in as a research subject. At the highest level you will be asked to perform emergency resuscitative surgery on an inanimate but life-like human model. The overall purpose of this study is to evaluate the equipment and organization necessary to allow emergency medical responders who are not surgeons to perform life-saving interventions including simple intra-abdominal surgery in catastrophic circumstances where there is no other choice but to let the victim die. There will be three overall phases to this study. The purpose of this phase (A) of the study is to evaluate the relative ability of either trained surgeons versus non-surgically trained medical assistants to provide life-saving interventions using a realistic model of an very badly wounded human.

If you are interested in participating you will be given a full explanation by myself our one of my collaborating colleagues. You will also be asked to read and sign a consent form, which is only part of the process of informed consent. If you want more details about anything concerning this study and especially your potential participation please contact me for more detail.

What Will I Be Asked To Do?

You will be asked to answer a short anonymous questionnaire regarding your medical training background in general and your surgical training background in particular. You will also be asked questions regarding your familiarity and any previous experiences wih

Page 1 of 2

- Over-view and introduction
- General information

Comparison between trained surgeons and mentored non-surgeons

- Surgeons
  - In charge of the whole procedure
  - One assistant who will only take directions from the surgeon
- Non-surgeons (A)
  - Will do their best with no outside guidsance
  - One assistant who will only take directions from the operator
- Non-surgeons (B)
  - Will be guided using "just-in-time" guidance from a trained surgeon using tele-mentoring
  - One assistant who will only take directions from both the operator and remote surgeon

Just-in-Time Telementoring

- Remote real-time guidance of a less experienced care provider using simple information technologies to obtain medical data or to perform procedures

Damage Control Laparotomy

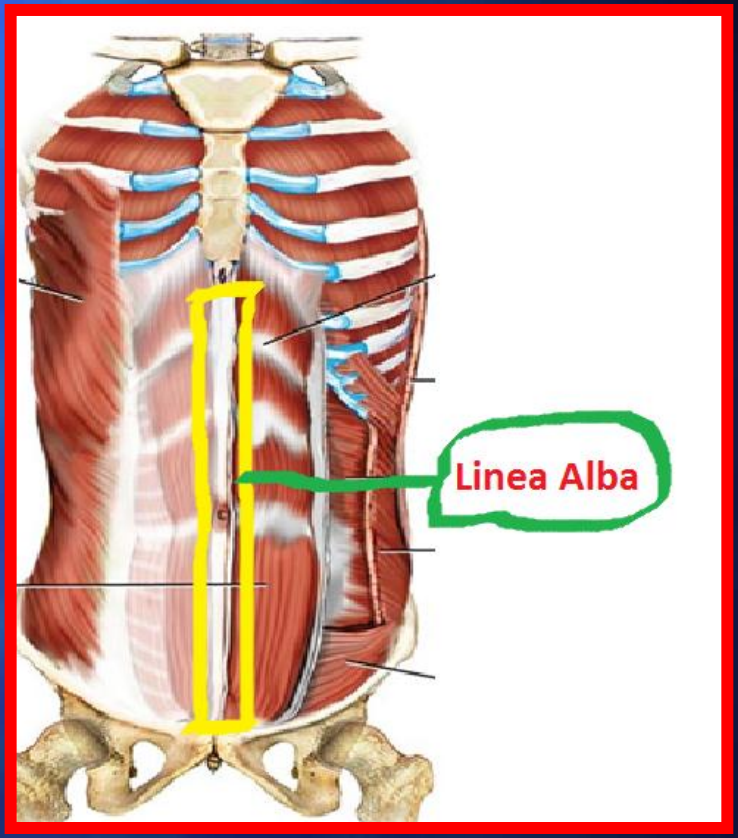
- Open the Anterior Abdominal Wall
- Enter the peritoneal cavity
- Identify the bleeding
- Pack the bleeding organs
- Close the skin only
  - Suture
  - iTClamp wound clamps

6 formal phases of a laparotomy

- Incision
- Retraction
- Direction
- Identification
- Hemostasis
- Closure

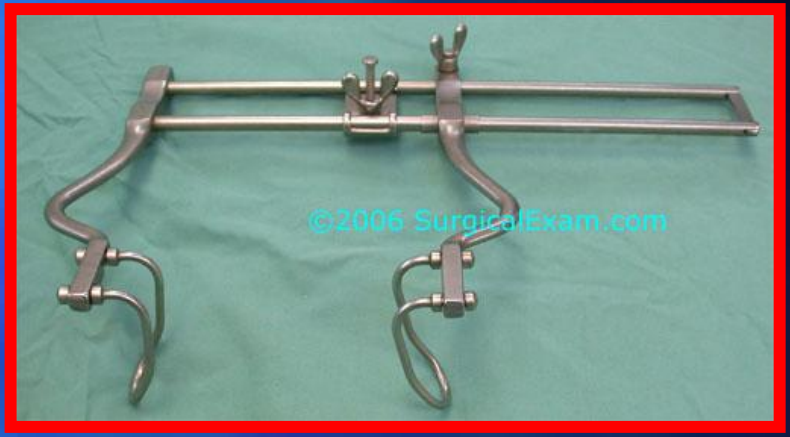
Incision

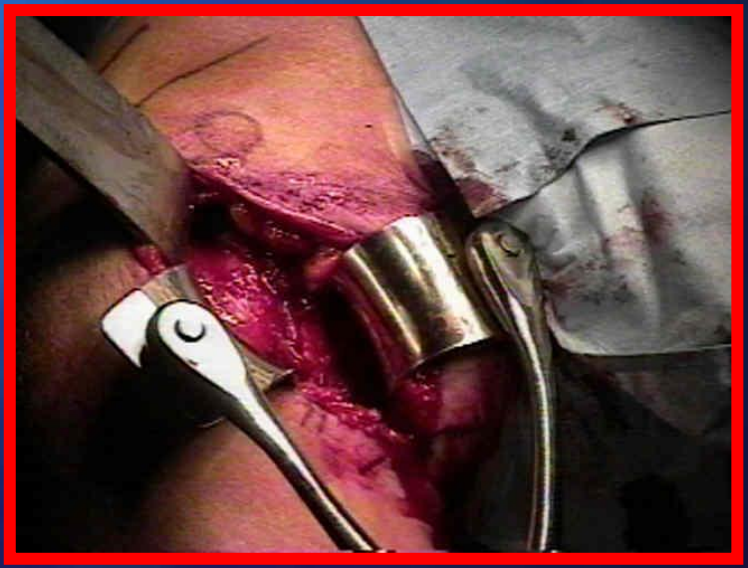
- In the midline
- In the fascia
- Between the recti muscles
- From top (xiphoid) to the bottom (symphysis pubis)
- Through the peritoneum



Retraction

- Insertion of the "Balfour" self-retaining surgical retractor



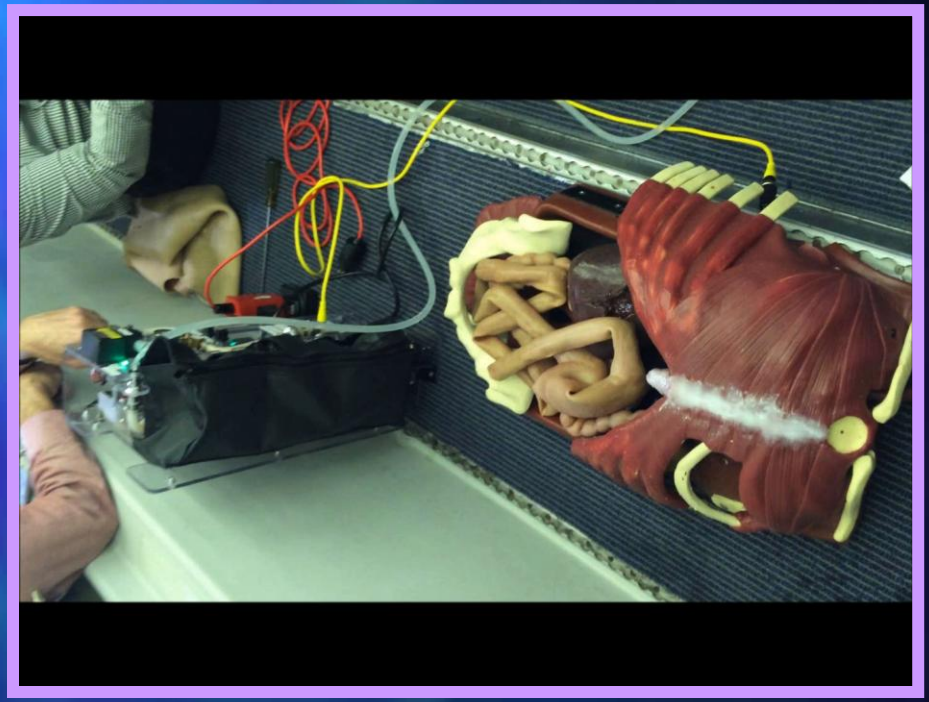


Direction

- Use of the assistant holding the Richardson abdominal wall retractor
- Operator will director the assistant to improve their view of the peritoneal cavity

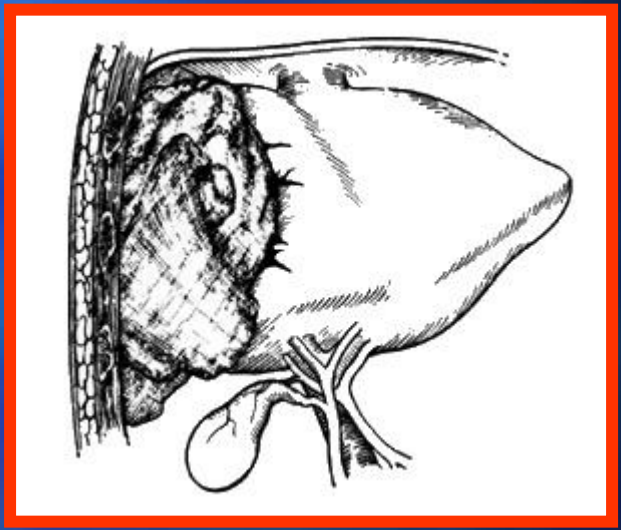
Identification

- Recognition by the operator of where the bleeding is coming from inside the peritoneal cavity



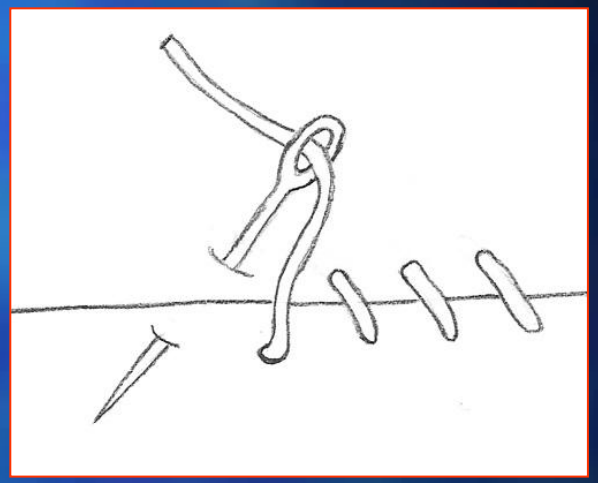
Hemostasis

- Control of the identified bleeding through packing of that bleeding with surgical sponges



Closure

- A skin only closure to contain the packed abdominal contents
- Suturing of the Skin
  - Vs
- Application of the ITClamp



Measurements

- Time
  - Equates to blood loss
- Accuracy and task completion

- Safety
  - Safety surgeons
- Remote Mentors
- Physical Assistant

Informed Consent

- Participation is completely voluntary
- You may withdraw at any time
- Participation or withdrawal will be completely voluntary

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Title of Project:

The Marriage of Advanced Surgical Simulation Training with Tele-presence Mentoring: Training for Damage Control Surgery in Austere Environments: ***Part A) Trained Surgeons versus non-physician Medical Assistants and Physician Assistants***

Sponsor:

Department of National Defence, the Royal College of Physicians and Surgeons of Canada, and the Canadian Space Agency

Previous Experience Survey

- No right or wrong answers
- Records your ANONYMOUS prior experience with trauma surgery and the Cutsuit

Advanced Surgical Simulation Training with Tele-Mentoring: Training for Damage Control Surgery in Austere Environments

Demographic Survey of Participants and Prior Experience

Dear Participant _____ (Participant Number)

The following anonymous questionnaire is designed to assess your surgical experience and familiarity with surgical simulation and the Cut-suit. There is no right or wrong answer and all data will be analyzed anonymously.

A) General Demographics of Training

1) Are you a Physician _____ or Non-Physician _____?
2) Are you a Surgeon _____ or Non-Surgeon _____?
3) Do you possess a valid license to practice surgery (yes____/no____)?

Questions