PELVIC PACKING

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DISCLOSURES

✓ None.
#1 Cause of Preventable Death After Injury
 Preventable Deaths From Hemorrhage at a Level I Canadian Trauma Center

Homer C. Tien, MD, Fernando Spencer, MD, Lorraine N. Tremblay, MD, PhD, Sandro B. Rizoli, MD, PhD, and Frederick D. Brenneman, MD

- n=558 trauma deaths, retro
- Hemorrhage second only to TBI
- #1 cause, 75%—Pelvic Fracture
n=325 pelvic ring disruptions
Shock strong independent predictor of mortality
Pelvic Ring Disruptions: Prediction of Associated Injuries, Transfusion Requirement, Pelvic Arteriography, Complications, and Mortality

Adam J. Starr, Damian R. Griffin, Charles M. Reinert, William H. Frawley, Joan Walker, Shelley N. Whitlock, Drake S. Borer, Ashutosh V. Rao, and Alan L. Jones

✓ n=325 pelvic ring disruptions
✓ Shock strong independent predictor of mortality
✓ Pelvic fracture + hypotension mortality=57%
Iliac Branches

1. Iliolumbar a.
2. Lateral Sacral a.
4. Obturator a.
5. Internal Pudendal a.
7. Vesicular a.
- Pelvic Venous Plexus: 80-85%
- Internal Iliac Branches: 15-20%
- Major Iliac veins: 10%
- External Iliac Branches: 3-4%
✓ Pelvic Venous Plexus  80-85%
✓ Internal Iliac Branches  15-20%
✓ Major Iliac veins  10%
✓ External Iliac Branches  3-4%
✓ Pelvic Venous Plexus 80-85%
✓ Internal Iliac Branches 15-20%
✓ Major Iliac veins 10%
✓ External Iliac Branches 3-4%
UNSTABLE PELVIC FRACTURE PRIORITIES
UNSTABLE PELVIC FRACTURE PRIORITIES

✓ Resuscitation
✓ Associated injuries
UNSTABLE PELVIC FRACTURE PRIORITIES

- Resuscitation
- Associated injuries
- Mechanical stabilization
UNSTABLE PELVIC FRACTURE PRIORITIES

- Resuscitation
- Associated injuries
- Mechanical stabilization
- Embolization
- Packing
UNSTABLE PELVIC FRACTURE PRIORITIES

- Resuscitation
- Associated injuries
- Mechanical stabilization
- Embolization
- Packing
PACKING

✓ PRE-PERITONEAL
✓ DIRECT TRANS-PERITONEAL
PACKING

✓ PRE-PERITONEAL
✓ DIRECT TRANS-PERITONEAL
Retroperitoneal Packing as a Resuscitation Technique for Hemodynamically Unstable Patients with Pelvic Fractures: Report of Two Representative Cases and a Description of Technique

Wade R. Smith, MD, Ernest E. Moore, MD, Patrick Osborn, MD, Juan F. Agudelo, MD, Steven J. Morgan, MD, Anand A. Parekh, MRCS(Eng), Clay Cothren, MD

✓ Technically straightforward
✓ Fast
✓ Basic equipment only
✓ Bridge to embolization
Extraperitoneal Pelvic Packing: A Salvage Procedure to Control Massive Traumatic Pelvic Hemorrhage

Anna Tötterman, MD, Jan Erik Madsen, MD, PhD, Nils Oddvar Skaga, MD, and Olav Røise, MD, PhD

2007

Extraperitoneal Packing

Lower Midline Incision

N=18
80% had positive angiography post-packing
PACKING

✓ PRE-PERITONEAL

✓ DIRECT TRANS-PERITONEAL
Bilateral Internal Iliac Artery Ligation as a Damage Control Approach in Massive Retroperitoneal Bleeding After Pelvic Fracture

Joseph DuBose, MD, Kenji Inaba, MD, Galinos Barmparas, MD, Pedro G. Teixeira, MD, Beat Schnüriger, MD, Peep Talving, MD, PhD, Ali Salim, MD, and Demetrios Demetriades, MD, PhD

- Laparotomy
- Control intra-abdominal sources of bleeding (1/3)
- Expose and ligate both IIAs
- Direct pelvic packing
- Damage control closure
UNSTABLE PELVIC FRACTURE
UNSTABLE PELVIC FRACTURE

FAST/DPA
1/3 intra-abdominal injury
+-/- Direct packing and BIIA ligation
+-/- Pre-peritoneal with post-op angiography
UNSTABLE PELVIC FRACTURE

FAST/DPA

-

+

LAPAROTOMY
UNSTABLE PELVIC FRACTURE

FAST/DPA

-

ANGIOGRAPHY

+

LAPAROTOMY
UNSTABLE PELVIC FRACTURE

FAST/DPA

- PACKING

+ LAPAROTOMY

ANGIOGRAPHY

✓ No Interventional Radiology
✓ Too unstable to go to IR
UNSTABLE PELVIC FRACTURE

FAST/DPA

PACKING

ANGIOGRAPHY

LAPAROTOMY

ANGIOGRAPHY
Resuscitative Endovascular Balloon Occlusion of the Aorta (REBOA) as an Adjunct for Hemorrhagic Shock

Adam Stannard, MRCS, Jonathan L. Eliaason, MD, and Todd E. Rasmussen, MD
UNSTABLE PELVIC FRACTURE

FAST/DPA

+ RAPAROTOMY

- REBOA
  - ANGIOGRAPHY

- ANGIOGRAPHY
TAKE HOME

- Pelvic bleeding common cause of preventable mortality
- Primary packing is one option if severely hypotensive or no IR
- Pre or Direct Intra-Peritoneal
- If direct, pack and ligate BIIA
- If Pre, follow with Angiography
- REBOA may bridge to Angiography