Severe Pelvic Fractures Management Guideline

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PURPOSE: To establish a guideline for the management of trauma patients with significant pelvic fractures resulting in significant hemorrhage. Hemorrhage from pelvic fracture is common in the setting of blunt trauma. Management requires a multidisciplinary treatment plan aimed at a balanced resuscitation, pelvic stabilization, and rapid hemostasis.

DEFINITIONS:

- Severe Pelvic Fracture- Pelvic fractures resulting in hemodynamic abnormalities related to hemorrhagic shock.
- Temporary Pelvic Stabilization- Any one of several methods of stabilizing the pelvis including pelvic binder, wrapping with a bedsheet, or external fixation. (See Pelvic Binder Application and Removal Guideline)

GUIDELINE/PROCEDURE:

A. ATLS practice governs primary and secondary survey.
B. Diagnosis of a pelvic fracture in the setting of hypotension should alert the team to the high probability for Massive Transfusion.
C. Temporary pelvic stabilization should be performed immediately on diagnosis of severe pelvic fracture.
    a. A Velcro pelvic binder is available in the trauma bay and should be placed per policy.
    b. The binder should not interfere with femoral access (See Attachment)
    c. Contraindications to a binder are: abdominal injury with protruding viscera and pregnancy. These patients should undergo thigh / toe taping to stabilize their fractures. (See Attachment **A** **)**
D. An assessment for intraperitoneal bleeding should be made. This will be either FAST or Diagnostic Peritoneal Aspiration depending on the circumstances.
E. Patients responding to resuscitation with placement of pelvic binder can undergo axial imaging following ATLS resuscitation. Further management will depend on CT findings.
F. Communication with both Orthopedic surgery and Interventional Radiology is an integral part to the management of patients with severe pelvic fractures.
    a. Management of these patients may require any one or combination of the following: Exploratory laparotomy, Extra Peritoneal Packing, Orthopedic stabilization (binder, temporary fixation (ex-fix or symphysis plate), or permanent fixation), Angioembolization, etc.
    b. If the patient requires suprapubic drainage for urethral injuries, this should be

communicated with the ortho trauma team, as this may impact how their fractures are managed.

c. Attached is the Western Trauma Association guideline for the management of severe pelvic trauma (Attachment B). This can serve as a reference.
d. The following is a list of situations (not exhaustive), that can provide guidance for common scenarios.
    i. Hemodynamically normal patients with an arterial blush on axial imaging:
        1. Monitor in the Intensive Care Unit overnight
        2. Alert Interventional Radiology for any hemodynamic abnormalities
    ii. Hemodynamically abnormal with positive FAST
        1. Take to hybrid OR for exploratory laparotomy (consider EPP)
        2. Alert Interventional Radiology for coordination of care and potential angioembolization
    iii. Hemodynamically abnormal with negative FAST
        1. Alert Interventional Radiology immediately for coordination of care and potential angioembolization
        2. Trauma and IR Faculty decide if patients require hybrid OR (EPP and angioembolization) or IR suite only

APPROVAL:

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Approval: Trauma Operations Committee

Related Documents: Pelvic Binder Application and Removal Guideline
REBOA Procedural Guideline (in Trauma Bay)
Trauma Guidelines - Froedtert Hospital - Froedtert Health

REFERENCES:

The American College of Surgeons Committee on Trauma. Abdominal and Pelvic Trauma. In: The American College of Surgeons Committee on Trauma, eds. The Advanced Trauma Life Support for Doctors Student Course Manual. 10th ed. Chicago, IL: American College of Surgeons; 2018 96-99.

Brenner M, Inaba K, Aiolfi A et al. Resuscitative Endovascular Balloon Occlusion of the Aorta and Resuscitative Thoracotomy in Select Patients with Hemorrhagic Shock: Early Results from the American Association for the Surgery of Trauma Aortic Occlusion in Resuscitation for Trauma and Acute Care Surgery Registry. J Am Coll Surg. 2018 Feb 6

Cothren CC1, Osborn PM, Moore EE et al. Preperitonal pelvic packing for hemodynamically unstable pelvic fractures: a paradigm shift. J Trauma. 2007 Apr;62(4):834-9; discussion 839-42.

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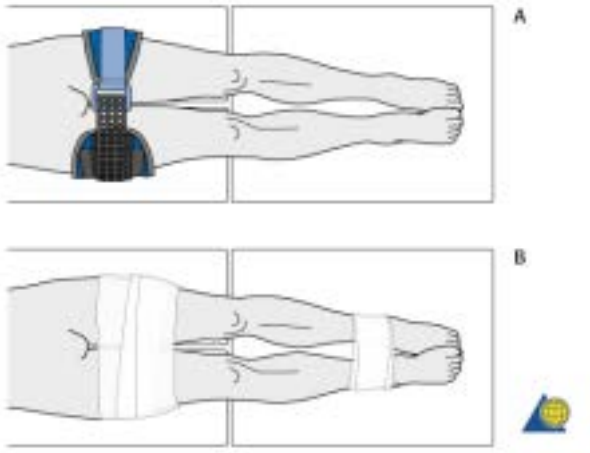
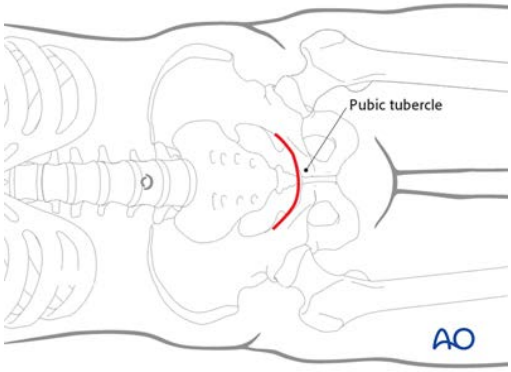
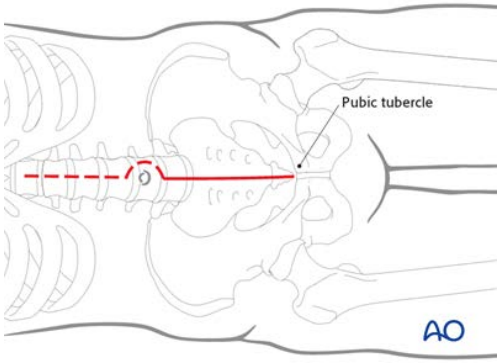
ATTACHMENT A:

Pelvic Binder Placement / Thigh and toe taping

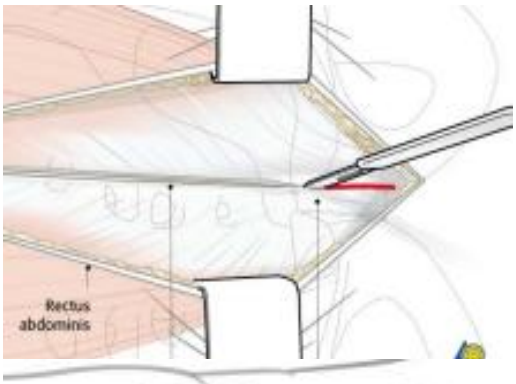


Extra Peritoneal Pelvic Packing





Both low-midline and low-transverse incisions are described



Extra-peritoneal Packing; suggested technique:

· A urinary catheter should be inserted prior to beginning the procedure.
  - o In males with a pelvic fracture, urethral ruptures should be excluded before introduction of the catheter to avoid creation of a false route.

· For pelvic packing to compress the source of bleeding, the pelvis should be stabilized and the pelvic binder may need to be placed more distally
  - o If required, internal rotation of the legs can be preserved during by taping the legs (See Picture A)

· Either a low-transverse or low midline incision can be used
  - o For concurrent laparotomies – do not connect abdominal and pelvic incisions.

· Dissect the subcutaneous tissue and identify the anterior rectus fascia.

· Locate the linea alba and incise it longitudinally. (Picture B)

· Both bellies of the rectus abdominis muscle are gently retracted laterally.

· Identify the peritoneal sack but do not open it.

· Use your fingers to bluntly retract the peritoneal sack superiorly. Dissect as far posteriorly as the SI joints to create retroperitoneal spaces bilaterally. These may already have been torn open by the injury.

· Care is taken not to tear the peritoneum.

· Fill the retroperitoneal spaces with at least three laparotomy sponges to create pressure on both sides of the retroperitoneal region.
  - o The deep sponge can be an 8”x8” QuickClot hemostatic gauze.
  - o If used, this should be tied to an RF tagged laparotomy sponge

· Orthopedic Surgery may elect to place a plate across the symphysis pubis at this time (Picture C)

· Prior to closure the bladder is inspected for any signs of injury.

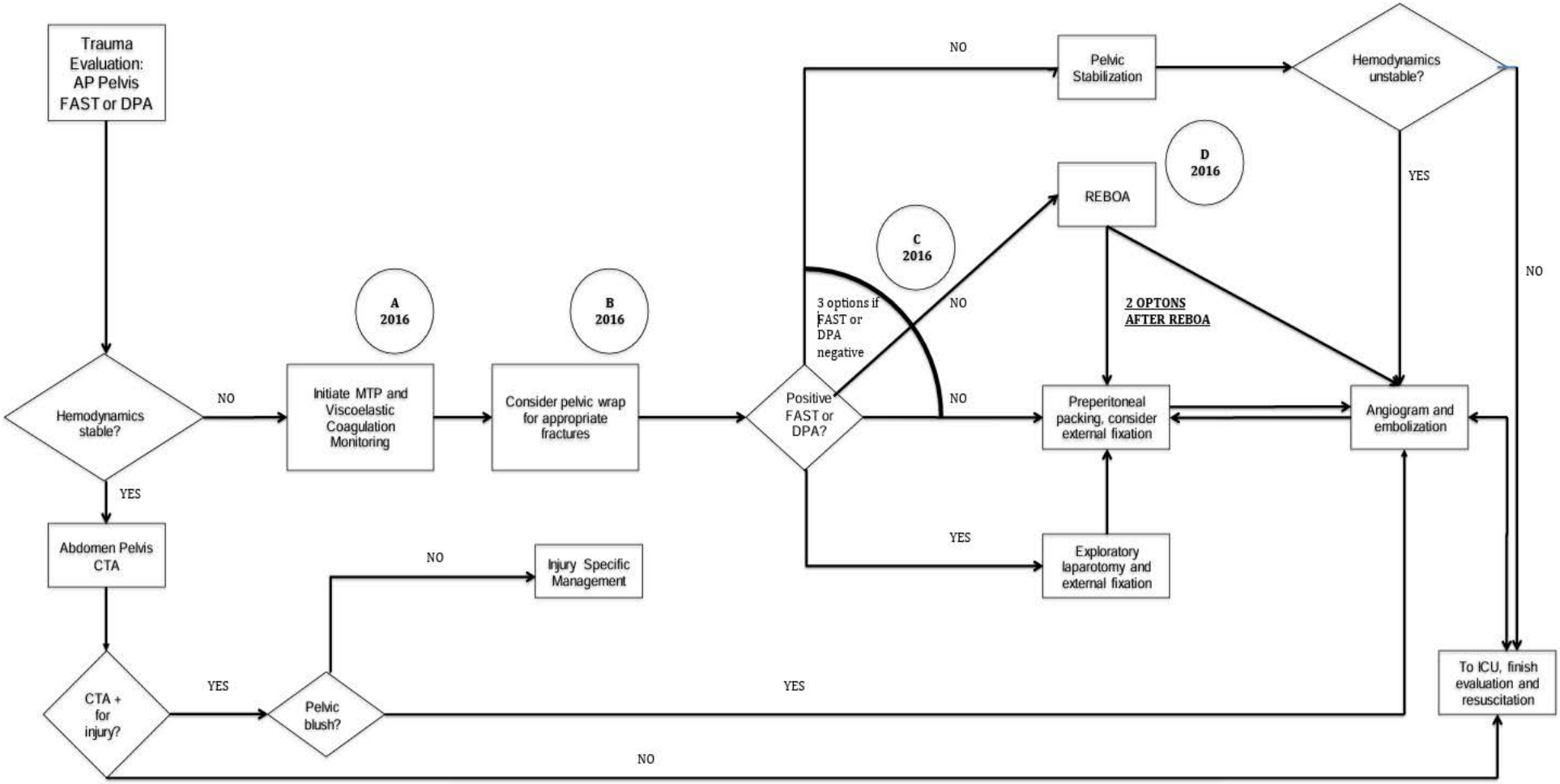
· A suprapubic tube can be placed at this time if necessary

- Bring the tube out lateral to the incision

· The fascia of the abdomen is temporarily closed to aid in the applied pelvic pressure.

· A "second look" must be done between 24 and 48 hours. If bleeding has stopped, the packs are soaked and gently removed. If bleeding persists, they should be replaced.

- NB: Wound infection rates dramatically increase when patients need to be packed a second time

· Obtain a Pelvic XR prior to closure to evaluate for retained sponges

ATTACHMENT B : Management Flow Diagram