Early Femoral Arterial Line Placement for Trauma

Purpose

Identify patients who would benefit from early femoral arterial access and describe the process facilitating early femoral arterial access.

Background

Hemorrhage is the leading cause of preventable death in trauma patients. Decision making regarding optimal therapy for the patient experiencing life threatening hemorrhage can be challenging. Early femoral arterial access provides additional information by way of continuous blood pressure monitoring. In addition to improved monitoring, common femoral artery (CFA) access is an essential and rate-limiting step in performing hemorrhage control interventions such as resuscitative endovascular balloon occlusion of the aorta (REBOA) or angioembolization. As the hemorrhaging patient progresses further into hemorrhagic shock, CFA access becomes more challenging to obtain.

Inclusion Criteria

- Trauma patients with blunt or penetrating mechanism
- Concern for life threatening hemorrhage as evidenced by any of the following
    - Shock index greater than 1
    - Assessment of Blood Consumption (ABC) score greater than 2
    - Revised Assessment of Bleeding and Transfusion (RABT) score greater than 2
    - Systolic blood pressure less than 90 mmHg
    - Transient or non-responder to initial resuscitation
- Difficulty obtaining non-invasive blood pressure management
- REBOA deployment is considered as an adjunct for hemorrhage control

Exclusion Criteria

- Concern for pericardial tamponade
- Concern for supradiaphragmatic hemorrhage
- Patient not a candidate for REBOA

Trauma Bay Workflow

- For full trauma activations, ensure that a functioning ultrasound machine is present in the trauma bay, is powered up and otherwise ready to be used

- Ensure either femoral arterial line kit or 5 French micropuncture kit is immediately available
- Ensure that sterile probe cover, Chloraprep and ultrasound gel are immediately available
- Communicate with nursing staff that early CFA access may be pursued giving them time to set up pressure transducer
- Using the criteria above at the discretion of the trauma surgeon or their surrogate, decision to pursue early CFA access is made
- The groin is prepped and draped sterilely
- The linear array ultrasound probe is draped in the usual fashion
- Using real time ultrasound guidance, the CFA is accessed and the catheter placed in the usual fashion. A detailed description of this technique is beyond the scope of this document. Ultrasound guidance should be standard of care, however access by landmarks can be considered on a case by case basis
- Once the catheter has been inserted into the CFA, it is connected to the pressure transducer set up
- The catheter is secured and a sterile dressing is applied
- Depending on the patient's hemodynamics, their response to resuscitation and their injury pattern, this femoral catheter can remain for hemodynamic monitoring or can be upsized to a 7 French sheath to facilitate placement of REBOA

Key Contributors

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