



Abdominal Trauma in Adults

Principles of abdominal trauma management will be along the ATLS/ETC assessment and triage system and the general surgical management will be along the lines of the Definitive Surgical Trauma Skills (DSTS) Course run by the Royal College of Surgeons.

Abdominal injuries following trauma may occur in isolation or as part of polytrauma depending on the mechanism. Most abdominal trauma in our region is caused by blunt mechanism, although penetrating injuries overall are rising.

BLUNT ABDOMINAL TRAUMA

Blunt abdominal trauma commonly results from either a compression force or a deceleration injury. It has greater mortality than penetrating injury as there is often injury to multiple organ systems. Common mechanisms include rapid deceleration whilst wearing a lap only seat belt or direct impact from a car steering wheel. However, injury to abdominal structures should be considered for any injury between the nipple line and the pelvis.

Patients presenting with blunt abdominal injuries should be assessed using standard ATLS/ETC principles.

Assessment should include:

- Clinical examination within the ATLS/ETC protocol
- Bloods sent for FBC, U&Es, LFTs, Amylase, clotting, venous gas analysis and cross match (+ beta HCG where appropriate)
- FAST scan if shocked
- Trauma CT scan should be immediately available in a patient whose shock is not rapidly deteriorating.

Imaging

Focused Assessment with Sonography in Trauma (FAST)

All patients should have rapid access to a FAST ultrasound scan within the Major Trauma Centre/Trauma Unit. A FAST scan is sensitive at picking up free fluid within the peritoneal cavity and in the context of blunt abdominal trauma (without evidence of generalised peritonitis) this is assumed to be blood until proven otherwise.

The value of the FAST scan is to demonstrate the presence or absence of fluid (presumed blood) in the peritoneal cavity and not the site of bleeding which cannot be determined by this scan. FAST is a 'rule in' and not a 'rule out' test.

Please note a negative FAST scan does not exclude a significant intra-abdominal injury.

CT scan

In patients considered to be sufficiently stable, a CT scan is the gold standard investigation for abdominal trauma. Where there is a significant concern of an intra-abdominal injury, or where associated potential injury sites demand investigation (e.g. thorax) a CT scan should be requested. A multiphase CT scan should be performed to detect the presence or absence of haemoperitoneum and to assess for solid organ injury (liver, spleen, kidney).

Please note, CT scans early in the post injury period cannot completely exclude a hollow viscus injury or significant pancreatic trauma and clinical evaluation (possibly multiply repeated over a period of observation) is essential.

Management

A consultant surgeon should be involved in all decision making regarding the management of intra-abdominal trauma.

In cases of haemodynamic instability or unresponsive hypovolaemic shock an emergency laparotomy may be indicated (when assessed in the context of potential associated injuries). In such cases it may not always be possible to acquire CT imaging prior to theatre.

When CT has been completed:

- Where the site of bleeding is identified, especially in the case of solid organ or pelvic injury consideration should be given to embolisation therapy (See IR in trauma pathway).
- Evidence of generalised peritonitis or free gas will normally dictate the need for emergency laparotomy (or, in rare cases, laparoscopy).
- Hollow viscus injury, mesenteric injury or diaphragmatic injury are almost certain to require laparotomy or laparoscopy.
- Solid organ or pelvic injury with no evidence of ongoing bleeding may well be suitable for observation rather than surgical or radiological intervention. Observation should take place under the supervision of a consultant surgeon who has the skills to intervene if deterioration occurs.

Interventional radiology

The Interventional Radiologists should be involved in all blunt abdominal trauma cases where a massive transfusion protocol is initiated. Interventional radiology should be considered in cases where the bleeding site is identified on CT, especially in the case of solid organ or pelvic injury. Patients with significant yet stable splenic or hepatic injuries should also be considered for angiography and embolisation to lessen the risk of re-bleeding. Please see NTN Interventional Radiology in trauma guidance for referral pathways.

PENETRATING TRAUMA

The majority of penetrating injuries will be due to stabbings or impalements; but a small proportion will be due to gunshot injuries. Clinicians have a responsibility under GMC guidance to inform the police if a patient attends the A&E with either a knife or a gunshot injury after an assault but demographic information should only be shared with the patient's

consent in the first instance. Further advice can be obtained at: http://www.gmc-uk.org/guidance/ethical_guidance/28437.asp.

Initial assessment of a patient with penetrating abdominal injury mirrors that of blunt injury and again follows ATLS/ETC principles.

Special care and consideration must be taken with either multiple stab wounds to several body cavities or single stab wounds which may have traversed both the chest and abdomen as clearly there may be life threatening pathology in more than one body cavity.

Imaging

In patients where clinical condition allows, a trauma CT scan must be performed. Injury identification will allow specialist surgical teams, i.e. cardiothoracic, urology, gynaecology etc, to be present at initial surgery.

Clinical suspicion should remain high in patients who are suspected of having a hollow viscus injury such as those without overt shock but clinical signs of peritonitis. A FAST scan or an early trauma CT scan are unreliable in excluding visceral injury and these patients may require a laparotomy (or laparoscopy).

Management

The majority of patients with stab wounds which enter the peritoneum will have a degree of hypovolaemic shock, peritonitis or evisceration and will require laparotomy. Patients with unresponsive or transient responsive hypovolaemic shock due to abdominal trauma will require urgent transfer to theatre for laparotomy and any other damage control surgery. Surgical management will be along the lines recommended by the DSTS course.

PATIENTS PRESENTING TO A TRAUMA UNIT (blunt and penetrating)

Patients with blunt or penetrating trauma may present to a trauma unit for a number of reasons. Following assessment +/- imaging as appropriate, it must be decided if:

- The patient is stable and all injuries can be managed at the TU. This includes consideration that the unit has the appropriate surgical capabilities should the patient deteriorate.
- The patient is unstable and requires Damage Control Surgery at the TU. Following this the patient may or may not require secondary transfer to an MTC depending on their injuries. If DCS unavailable discuss with the MTC as per the secondary transfer protocol.
- The patient's injuries require MTC input and patient conditions allow transfer – see secondary transfer protocol
- The patient's injuries are amenable to interventional radiology and patient's condition allows transfer – see IR in trauma guidance

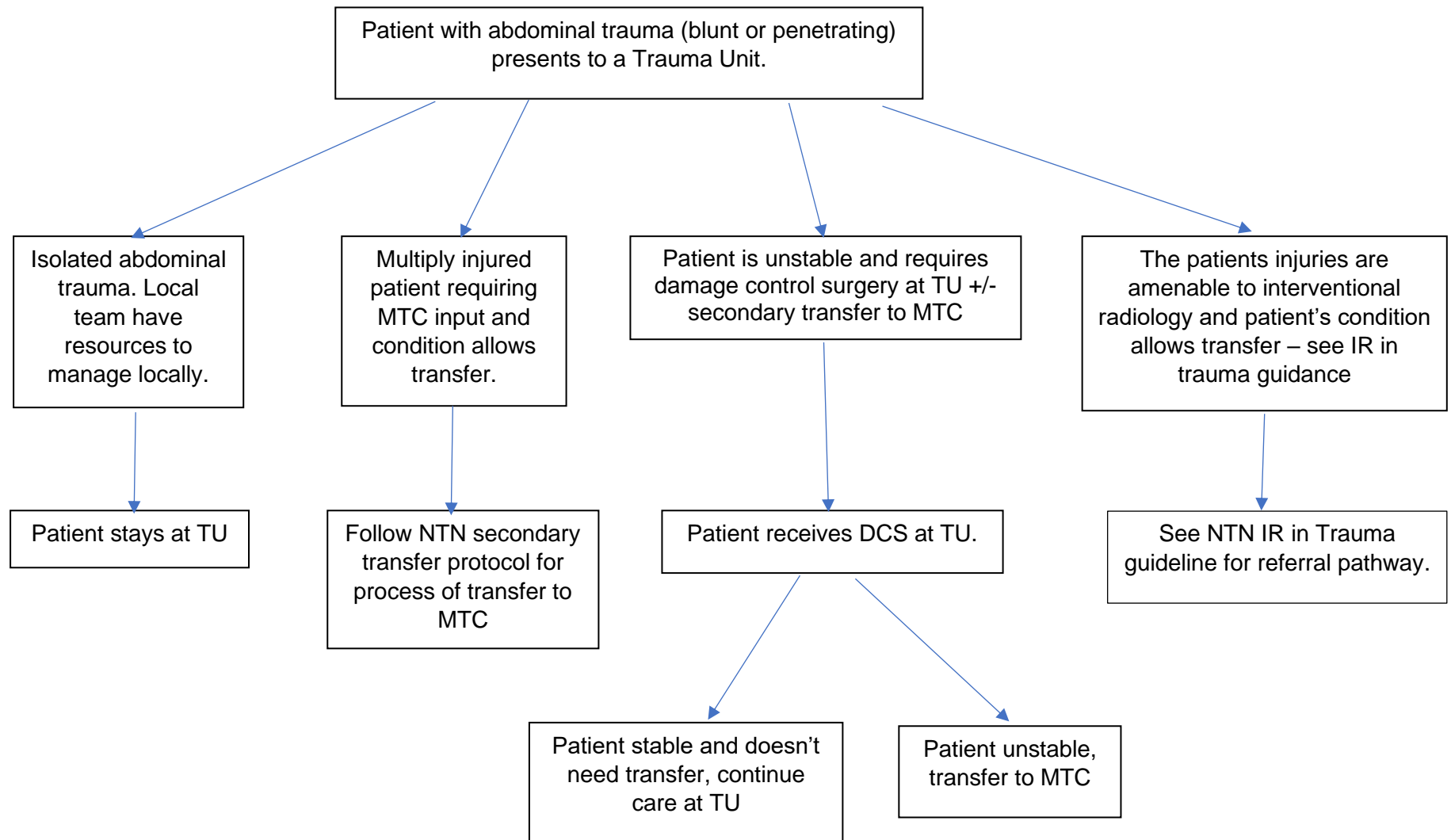
HEPATIC TRAUMA

The supra regional liver unit is based at the Freeman Hospital which is not a Major Trauma Centre. Polytrauma patients should not be transferred to the Freeman hospital for management of their hepatic trauma as their other injuries may not be optimally treated. Polytrauma patients requiring specialist hepatobiliary input should be discussed with the trauma team leader at the Royal Victoria Infirmary (0191 282 0311).

For most cases of isolated liver trauma, particularly in the unstable patient, local surgeons will perform a damage limitation surgery to the liver and refer onwards as individual circumstances dictate. In the event of isolated hepatic injury requiring early specialist input and where the clinical condition permits, arrangements may rarely be made to transfer the patient to the supra regional liver unit in Freeman Hospital. However, these cases must be discussed with RVI ED Trauma Team Leader.

Comments

Trauma patients form a homogenous group of patients and each case is unique. The general surgical team are trained and responsible for the overall management of abdominal trauma injuries but are not expert in the management of chest or cardiac trauma and it is the cardiothoracic team on call and its consultant who will be expected to manage those injuries in conjunction with the general surgeons (where abdominal and thoracic trauma co-exist) Active, physical input may also be essential from the urological and gynaecological consultant on call where requested. Neurosurgical and orthopaedic input will frequently also be required in holistic management plans. Only patients with isolated abdominal trauma will be admitted onto the general surgical ward and then only with the express, documented agreement of the consultant general surgeon on call. All other polytrauma patients with abdominal injuries will be admitted to the trauma ward or ITU under the overarching care of the trauma specialist and contributory input from the abdominal surgeons will continue as required.



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RELATED INFORMATION	NTN Interventional Radiology in Trauma Guideline