NORTHERN TRAUMA NETWORK NTN	Abdominal Trauma
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RELATED INFORMATION	North Yorkshire and Humber Trauma Network

Principles of trauma management will be along the ATLS/ETC assessment and triage system and the general surgical management will be along the lines of the DTSC course run by the Royal College of Surgeons. The majority of patients presenting with abdominal trauma will have sustained their trauma as a result of blunt abdominal force; most typically motor vehicle collisions, falls and assaults. A much smaller number of patients are injured through penetrating mechanisms such as knife wounds or gunshot injuries. These penetrating injuries will be considered separately to the blunt abdominal trauma patients in terms of management protocols.

BLUNT ABDOMINAL TRAUMA

In cases of blunt abdominal trauma, the patient will be assessed by the trauma team and a physical examination of the abdomen is included in the assessment of the C (circulation) element as a potential site for bleeding. If a patient is in shock and suspected of having intra-abdominal injury, the following should occur:

- Switchboard to contact consultant general surgeon and registrar on call
- Bloods to be sent for FBC, BCP, clotting, venous gas analysis and cross match.
- Where appropriate a pregnancy test

All patients should have rapid access to a FAST (Focused Assessment with Sonography in Trauma) ultrasound scan within the trauma centre. 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.
Intestinal fluid or ascites are uncommon alternative explanations dependent on the clinical context.

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. Please note a negative FAST scan does not exclude a siginificant intraabdominal injury. FAST is a 'rule in' and not a 'rule out' test.
In cases of haemodynamic instability or unresponsive hypovolaemic shock an emergency laparotomy may be indicated (when assessed in the context also of potential associated injuries).

In patients considered to be sufficiently stable and 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 solid organ injury (liver spleen kidney). Where the site of bleeding is identified, especially in the case of solid organ or pelvic injury consideration should be given to embolisation therapy (if Interventional Radiology is available at the site). 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. Evidence of generalised peritonitis or free gas will normally dictate the need for emergency laparotomy (or, in rare cases, laparoscopy).

Hence in a patient with suspected major abdominal blunt trauma, clinical examination within the ATLS/ETC protocol should be followed with bloods, clotting and cross match samples, a FAST scan may be performed and in a patient whose shock is not rapidly deteriorating, a trauma CT scan should be immediately available. The Interventional Radiologists (if available at the site) should be involved in all cases where a massive transfusion protocol is initiated or when there is evidence of solid organ bleeding on the trauma CT scan. A patient with solid organ or pelvic injury but no evidence of ongoing bleeding may well be suitable for observation rather than surgical or radiological intervention. Patients with significant splenic or hepatic injuries should be considered for angiography and embolisation (if interventional radiology is available at the site) to lessen the risk of re-bleeding. Any patients with hollow viscus injury, mesenteric injury or diaphragmatic injury are almost certain to require laparotomy or laparoscopy and should be discussed with the on call surgeon.

HEPATIC TRAUMA
In the event of isolated hepatic injury where the clinical condition permits, arrangements may rarely be made to transfer the patient to the supra regional liver unit in Freeman Hospital. However this case must be discussed with RVI ED Trauma Team Leader
(0191 2821602). For most cases of 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.

For patients presenting initially to Trauma Units, Consultant Team Leaders should consider referring to Freeman Hospital for all patients with documented isolated liver injury or where

catastrophic liver injury is the immediate threat to life, in circumstances where the referring team believe it is clinically safe to do so. All other patients would be transferred to the nearest MTC.

PENETRATING TRAUMA

A majority of penetrating injuries will be due to stabbings or impalements; but a small proportion will be due to gunshot injuries and these latter patients will be treated somewhat differently as the nature of the associated tissue trauma is different.

The majority of patients with stab wounds which enter the peritoneum will also have a degree of hypovolaemic shock, peritonitis or evisceration and will require laparotomy. 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.

Patients with unresponsive or transient responsive hypovolaemic shock due to abdominal trauma will require a transfer to theatre for laparotomy and any other surgery prior to controlled bleeding. Care 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. In patients who are stable, a trauma CT scan must be performed. Patients who are suspected of having a hollow viscus injury such as those without overt shock but clinical signs of peritonitis require a laparotomy (or laparoscopy). A FAST scan or an early trauma CT scan is unreliable in excluding visceral injury.

It is remembered that penetrating injuries may involve more than one body cavity and special care and consideration is needed in the case of wounds close to the diaphragm If the patient is stable a CT scan can help in evaluation. Surgical management will be along the lines recommended by the DTSC and following the principles of damage limitation surgery

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 and wherever requested. Neurosurgical and orthopaedic input will frequently also be required in the 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 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.