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Best Practice Recommendations

A series of evidenced-based guidelines to improve your patient care, provided by the developers of ATGenius.com.

Abdominal Injuries

Each Best Practice Recommendation includes key elements to evaluating or treating the condition, a Strength of Recommendation (SOR) grade based on research quality, and supporting evidence.

Best Practice Recommendation #1: DELAYED SYMPTOMS

Internal organ injuries from blunt trauma are rare and may present with mild symptoms initially, with delayed symptoms such as abdominal pain, guarding, nausea, vomiting, referred pain and syncope occurring hours later. SOR:C (case reports, literature review)

- Life-threatening multi-organ abdominal injuries from blunt trauma (ie: knee to abdomen during sports) are rare but can present with delayed symptoms 12 hours later. Delayed symptoms include abdominal pain, rebound tenderness, nausea, and vomiting, although blood pressure can be normal.[1]

- Splenic injury can present with diffuse abdominal pain, left shoulder, flank and/or chest pain, lightheadedness and syncope. Splenic injury symptoms can be delayed up to 4 hours and abdominal pain may be initially mild.[2]

- Isolated splenic injury can occur after blunt abdominal trauma. The athlete may appear stable initially with abdominal pain and tenderness as the sole symptoms. Delayed complications such as abscesses and rupture can occur 48 hours after the initial injury.[2]

- Liver injuries can present initially with subtle symptoms and a lack of abdominal tenderness, requiring a high level of clinician suspicion. Signs and symptoms include right upper quadrant pain, guarding, radiating pain to the right shoulder or neck, and rib tenderness over the liver. Symptoms may be accompanied by nausea, vomiting, elevated heartrate, elevated or painful respirations and syncope with near-normal blood pressure.[3,4,5]

- Serial clinical evaluation is critical for renal trauma patients.[6]

- Pancreatic injuries resulting from blunt abdominal trauma are rare and a diagnostic challenge. They can present with minimal symptoms initially as the "wind knocked out," with delayed abdominal pain, tenderness, spasm and vomiting occurring 3 hours after the incident.[7]

Best Practice Recommendation #2: COMMON INJURY SITES

Sports-related abdominal and genitourinary injuries most commonly affect the spleen, liver and the kidneys. SOR: C (literature reviews)

- The spleen has been reported as the most common internal organ injury in sports, and is the most common cause of death due to abdominal trauma in athletics.[8]

- Among abdominal and genitourinary sports injuries, the kidney, spleen and liver are the most common, with the spleen being the most common among these three organs.[9,10]

Best Practice Recommendation #3: TREATMENT

Non-operative treatment is indicated for most sports-related abdominal injuries. SOR:C (literature review articles)

- Non-surgical management of spleen injuries is the standard of care in pediatric patients and has a 90-95% success rate.[11]

- The trend towards treating liver injuries is non-operative if the patient is hemodynamically stable; 50-80% of liver injuries stop bleeding spontaneously.[4]

- 80% of kidney injuries are managed conservatively.[6]

Best Practice Recommendation #4: IMAGING

A CT scan is the gold-standard for spleen, liver and kidney injury diagnosis. SOR: (literature, retrospective reviews)

- An abdominal CT scan is the gold standard for splenic injury diagnosis. Radiographs are normal in 95% of those with blunt abdominal trauma; ultrasonography has limited sensitivity for splenic parenchymal injuries.[2,12]

- CT is the gold standard imaging modality for hepatic injuries.[13]

- CT scan is the primary imaging method used for suspected renal injuries.

Best Practice Recommendation #5: KIDNEY INURY INCIDENCE

Sports-related kidney injuries are rare, typically not catastrophic, and often do not require surgery or result in loss of one or both kidneys. SOR: C (case reports, literature reviews)

- High school sports-related kidney injuries are very rare (18 injuries per 4.4 million athlete exposures; football and girls soccer have the highest rates), and usually are not catastrophic or require surgery. The literature does not support withholding sports participation due to a single kidney, however families should be counseled on the life-altering risks in an individual with one kidney participating in contact or collision sports.[14]

- Kidney injuries are rare in the National Football League. Over an 18-year period, 52 renal injuries occurred and none of these injuries required surgery, or loss of one or both kidneys.[15]

Best Practice Recommendation #6: KIDNEY INJURY RECOGNITION

Kidney injuries usually result in hematuria, flank pain and tenderness, and are often associated with multi-organ injuries. In addition to posterior thorax or flank trauma, anterior trauma can also cause a kidney injury. SOR: C (case reports)

- Hematuria is present in over 95% of patients with renal injury, however the absence of hematuria does not rule out a renal injury.[6,16]
- Hematuria (including microscopic hematuria) is an important marker of serious intra-abdominal injury for both renal and non-renal injuries.[2]
- Signs and symptoms of renal injury include flank pain and tenderness, flank bruising or skin injury, loss of flank contour and hematuria.[6]
- A renal injury requiring surgery can result from a blow to the anterior abdomen.[6]
- Up to 75% of those with major renal injuries from blunt trauma have multi-organ involvement.[17]

Information researched and provided by Casey Christy, DAT, ATC, CSCS, Co-Developer, ATGenius.com. Treatment decisions should be made based on the best available evidence, patient preference, and clinician expertise, in consultation with, and at the direction of a physician.

See our other best practice documents: **Acromioclavicular Joint Injuries** **ACL Injuries**

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