# Liver, Spleen Are Frequent Sites of Sports Trauma

*Computed tomography is the imaging modality of choice for injuries of this type.*

BY MICHELE G. SULLIVAN
*Mid-Atlantic Bureau*

NASHVILLE, TENN. — Liver and spleen injuries account for most sports-related solid organ injuries, William Dexter, M.D., said at the annual meeting of the American College of Sports Medicine.

Liver injuries, which occur in about 5% of athletic abdominal traumas, can be occult, which makes them especially concerning, said Dr. Dexter of the Maine Medical Center, Portland. "While these aren't terribly common injuries, they can cause serious problems."

"We have to have a game plan in mind for dealing with these folks, both on the field and after treatment," he said.

**Liver injury symptoms include vomiting, pain in the abdomen or referred to the right shoulder or right side of the neck, and a rapid pulse.**

Liver injuries are usually caused by blunt force to the abdomen. Symptoms include vomiting, pain in the abdomen or referred to the right shoulder or right side of the neck, and a rapid pulse.

Diagnosis must be made by both clinical assessment and diagnostic imaging. Ultrasound is becoming more popular, but remains second to computed axial tomography. "It's fairly clear that a CT scan is leading the way," Dr. Dexter said.

"Ultrasound has become more popular, but a 2005 Cochrane review found insufficient evidence to promote an ultrasound-based treatment algorithm," he said.

Oral contrast is unnecessary when CT scans are used, he said. "Oral contrast doesn't increase the sensitivity or predict outcome, but it does delay time of diagnosis by at least 30 minutes."

Diagnostic peritoneal lavage has fallen out of favor because, while it is sensitive for intraperitoneal bleeding, it is invasive and does not predict outcome or the need for laparotomy.

Minor injuries (contusion or small laceration), in which the patient is clinically stable (no active bleeding or other peritoneal signs, no associated abdominal injury), heal without surgery with a success rate of up to 98%. These athletes can usually return to play 1 month after the injury.

Major injuries (large laceration, burst, or pedicle injury) usually require surgical intervention. "There are no consistent guidelines on return to play for these athletes, but most authors advise at least 3-6 months," Dr. Dexter said.

The spleen is another commonly injured organ. The usual cause is a direct blow to the abdomen, though injury can be related to lower rib fracture. The diagnostic imaging method of choice is the CT scan.

Surgery is usually unnecessary if the patient is clinically and hemodynamically stable and if there are no other abdominal injuries. In these cases, rest with close monitoring is advised because late rupture can occur.

Most athletes with minor spleen injuries can return to play about 1 month after the injury. Surgery is advised if the patient is unstable or there is a pedicle injury. Athletes can return to play 6 weeks after a splenectomy.

There has been some speculation that splenomegaly associated with infectious mononucleosis increases the risk of splenic rupture in sports, especially among college-aged males.

"Splenic fragility is greatest on days 4-21 of the infection, when there is a profuse lymphocytic proliferation," he said.

"Most ruptures occur on days 4-21 from symptom onset and most are spontaneous. They are rarely lethal."

There is no consensus in the literature about return to play for athletes with mononucleosis, Dr. Dexter said. "In general, if there are no signs or symptoms, and the labs and ultrasound are normal, the athlete can return to contact sports within 3 weeks." ■


COURTESY DR. WILLIAM DEXTER

**A damaged solid organ, such as the lacerated spleen in this MRI, usually results from a direct blow to the abdomen.**

# Golf-Related Head Injuries Increase as More Children Tee-Off

BY PATRICE WENDLING
*Chicago Bureau*

As the number of children taking to the links has steadily risen, so too has the number of pediatric golf-related head injuries.

Golf-related accidents were the second most common cause of sports injury, after bicycle use, among 2,546 patients younger than 19 years who were evaluated by neurosurgeons for any cause at the Medical College of Georgia in Augusta between 1996 and 2002.

A chart review revealed 64 sports injuries, 15 (23%) of which were golf related, according to Scott Y. Rahimi, M.D., lead author and neurosurgery resident at the medical college.

Seven of the golf injuries were caused by golf cart accidents, seven by golf clubs, and one by a golf ball (J. Neurosurg. [Pediatrics 2] 2005;102:163-6).

The mean age of the children in the study was 7 years, and the youngest was 9 months.

The most common injury was depressed skull fracture, which occurred in 7 (47%) of the 15 cases, followed by nondisplaced skull fracture in 3 (20%), subarachnoid hemorrhage in 2 (13%), epidural hematoma in 2 (13%), and subdural hematoma in 1 (6%), Dr. Rahimi reported.

Six children underwent neurosurgical procedures to treat their injuries. Twelve patients made a full recovery, including nine patients who were managed conservatively.

One child developed chronic headaches after a 3-year follow-up.

Another child required permanent shunt placement and underwent multiple shunt revisions because of device malfunction. One child died due to uncontrollable cerebral edema following a golf-cart accident.

A review of the literature by the investigators found that not only are golf-related injuries increasing, but they are the leading type of sports injury in regions where golf is popular, Dr. Rahimi and his colleagues wrote. For example, Augusta, Ga., where this research was conducted, is home of the Masters Golf Tournament and a hotbed of golf enthusiasm.

The authors cite a 1997 review of head injuries at the Westchester Medical Center in New York in the 3-month period following Tiger Woods' first Masters championship. The review showed that of the eight children who required surgery for their head injury, half had a depressed skull fracture from a golf club. No similar golf injuries were seen in the 12 months prior to Mr. Woods' win (Surg. Neurol. 1998;50:608).

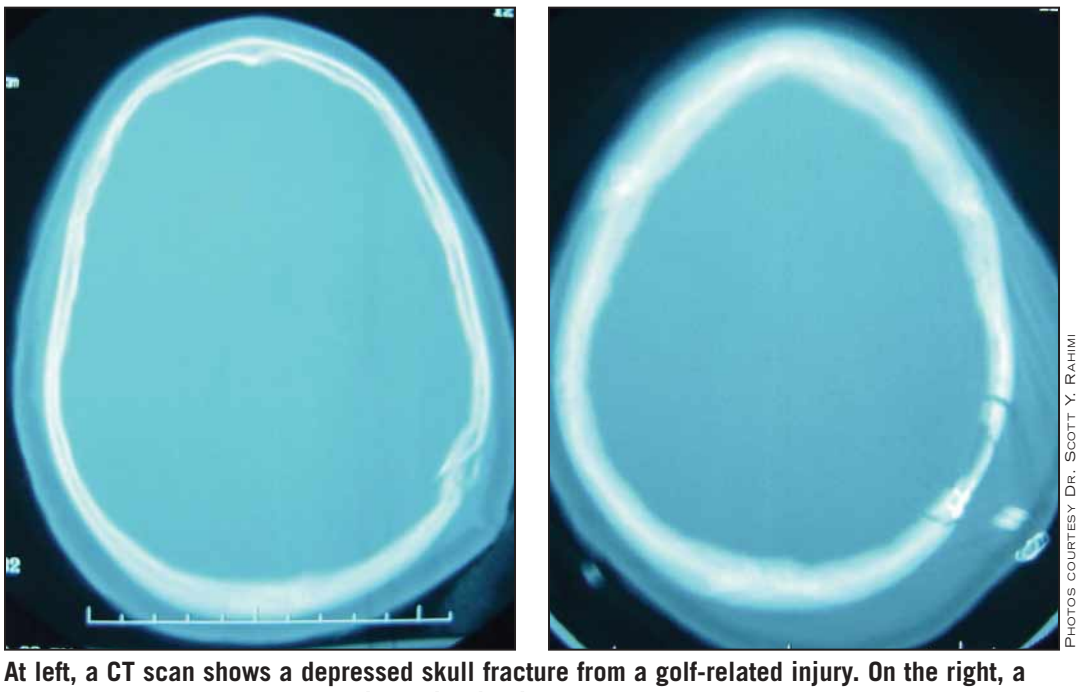
A report by the Consumer Product Safety Commission identified 19 deaths between 1973 and 1996 that were a direct consequence of children playing with golf clubs (Percept. Mot. Skills 1998; 86:747-53).

Golf-related injuries most often involve golf clubs and balls and occur at parks and homes, rather than at golf courses.

Still, the author noted, the growing use of golf carts also has contributed to the increase in accidents.

As a way to prevent or reduce injuries, Dr. Rahimi and his colleagues recommended precautionary guidelines and safety training programs, proper storage of golf clubs, adult supervision of golf-club and golf-cart use, and the requirement of a minimum legal age to drive a golf cart.

In Georgia and many other states, it is illegal to drive a golf cart without a valid driver's license. ■



PHOTOS COURTESY DR. SCOTT Y. RAHIMI

**At left, a CT scan shows a depressed skull fracture from a golf-related injury. On the right, a scan shows such a fracture repaired with titanium screws and plates.**