



Hughston Health Alert

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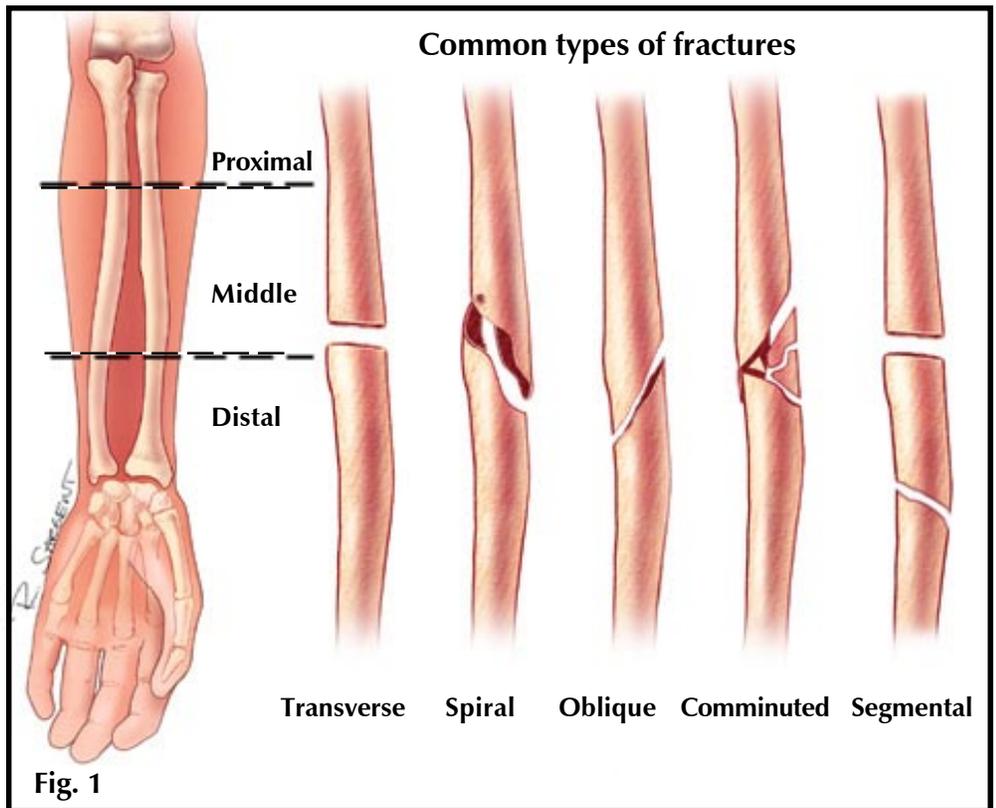
SPRING, 2002

What is a Fracture?

Fracture descriptions and classifications

"Give it to me straight doc—is it broken or is it just fractured?" Patients often ask this question when they are told they have a fractured bone because they consider a break and a fracture two different injuries. Many people think a break means broken, requiring surgical treatment and a long recovery period, and a fracture needs only a cast or brace. However, the two terms mean the same thing. Actually, the general appearance of the fracture and the involved portion of the bone determines the necessary treatment.

Orthopaedists use uniform fracture descriptions and classifications to help explain to patients the appropriate



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treatment and the expected outcome of the treatment. The first consideration in fracture description is the age of the patient. Fractures in children require special attention because a child's bones are still growing and changing. An adult fracture is classified based on its location, direction, alignment, articular involvement (involving most of the joint rather than the shaft), and whether it is open or closed. Fracture description is further divided into the

location of the break, that is the portion of the bone involved—proximal, middle, or distal. The direction of the fracture is described as transverse (fracture line is straight across the bone), spiral (fracture line spirals down the bone), oblique (slanted fracture line), comminuted (more than two fragments), or segmental (several large fractures in the same bone) (Fig. 1). Alignment describes whether the bone is angulated or straight. Finally, an open

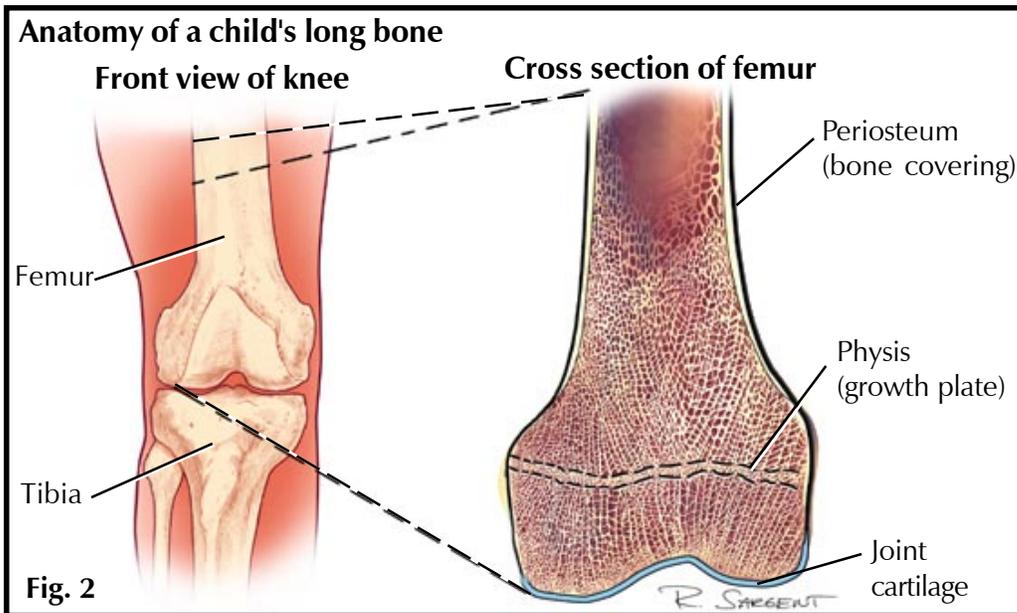


Fig. 2

cause disruption of normal growth. As the classification number increases, the more complex the fracture. For example, numbers 5 and 6 are the most complex because they result from a crush or avulsion (tearing away) injury, and are more likely to cause a growth plate injury.

There are many factors to consider in fracture description and classification. However, the most important aspect a patient should remember is that a break and a fracture are the same injury, and it always requires medical attention.

William D. Terrell, MD
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fracture means that bone fragments have broken through the skin causing an open wound, and a closed fracture means that there is no opening in the skin.

Children's fractures differ in classification and treatment from adult fractures because children have areas of cartilage called the **physis**, or **growth plate** (Fig. 2). Growth plates, located near each end of the body's long bones, determine the future length and shape of a mature bone. During adolescence, the growth plate's cartilage grows and matures into hard bone, therefore, the structure of the growth plate must be preserved so normal growth can occur. Unfortunately, the growth plate is the weakest area in children's bones. Of long bone fractures in children, 30% involve the growth plate—almost half of which are at the wrist.¹

injuries occur more often in boys than in girls, possibly because the growth plates remain open longer in boys and are exposed to more trauma through strenuous activity.² Most of these fractures, called **epiphyseal fractures**, occur in boys between the ages of 12 and 15 years and in girls between the ages of 9 and 12 years. The most common classification of children's fractures are the six classifications described by Salter and Harris³ (Fig. 3). The first type is the simplest and least likely to

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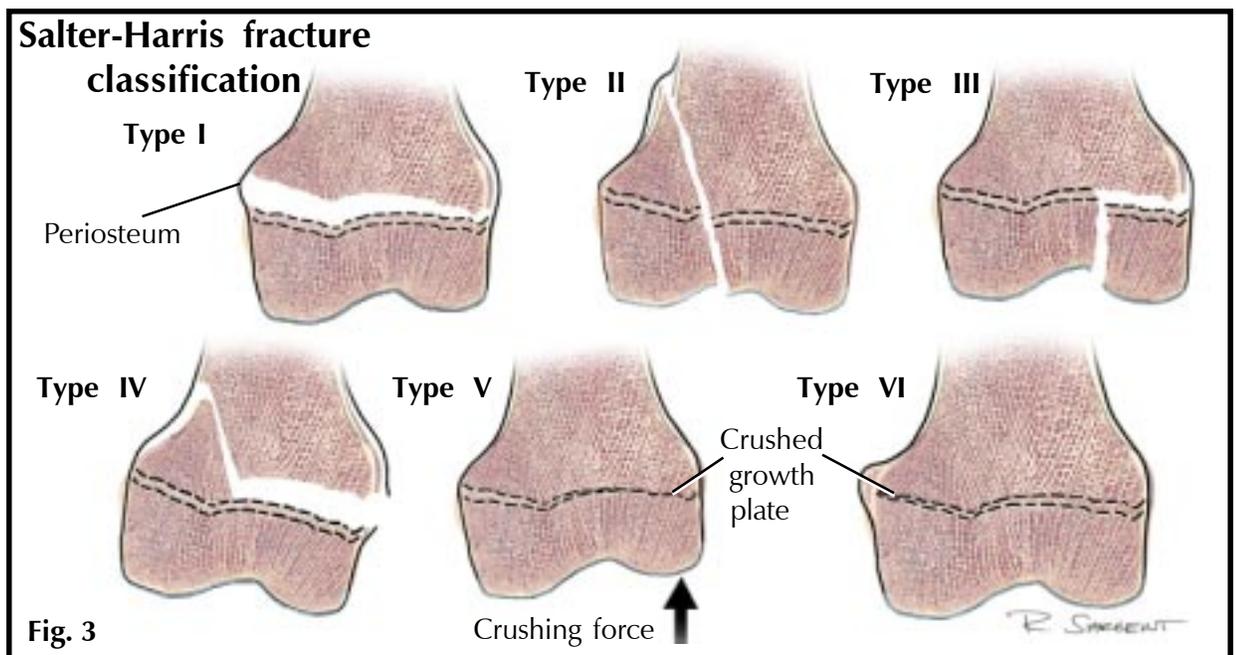


Fig. 3

The Hard Facts of Casting

Protecting injured bones

Casting techniques play an important role in the healing of an injury. A cast provides external support or a protective covering that reduces recovery time and aids in the proper alignment of bones. Casts are generally applied to fractured limbs, but they also help in the correction of pediatric deformities, such as club foot, a congenital (present at birth) foot deformity.

Casting Materials

Plaster and fiberglass are the most common materials used in casting today. Plaster, pliable and economical, is often used as a temporary measure for a fracture before your doctor decides on the best treatment for your injury. Stronger and more water-resistant than plaster, fiberglass dries much faster and is much lighter, allowing for quicker and easier mobility for weight-bearing injuries. The padding placed under the cast allows normal body moisture to be trapped and provides cushioning from the hard cast. It also provides protection from the cast saw blade, which, if used improperly, can cause burns or scrapes to the skin during cast removal. Silicone cast padding can be used as a method of

waterproofing the inside of a cast. Although more expensive than cotton, silicone padding reduces the chance of skin irritation, odor, and itching by keeping the padding dry. Covers designed to protect a cast during bathing help the patient avoid wetting the outside of the cast.

Dos and Don'ts

Most injuries are treated initially with temporary splints for the first few days to allow any swelling to subside before applying the cast. After the cast is applied, you should continue to watch for any swelling. Severe swelling, causing loss of feeling and discoloration in fingers and toes, indicates loss of circulation. The swelling can be kept to a minimum by elevating your injured arm or leg above your heart (Fig. 1) and icing the injured area. Ice may be applied directly around the cast on the exposed skin (Fig. 2). If swelling persists, your doctor may split the cast on the sides to provide relief.

You should never pour powder into your cast to reduce sweating and to cover odors. Plaster and fiberglass are breathable materials that do not need powder, which only temporarily relieves dampness and often adds to the odor.



in the skin or tear surgical incisions, thereby, increasing the chance for infection.

Cast Removal

Apply a strong sun block during the summer months after having a cast removed. After weeks of being covered, sensitive skin can easily burn and may create more prominent scar coloration.

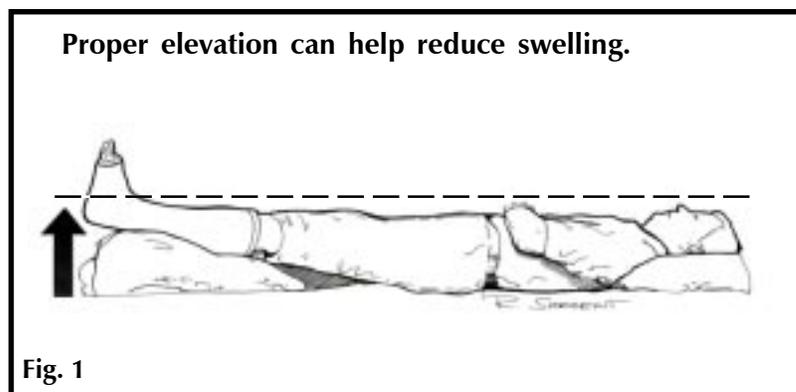
After the cast is removed, dry, flaky skin can be washed and treated with skin lotion. You may experience some mild pain and stiffness, and your muscles may appear smaller due to the lack of use. The condition of your injured limb will gradually return to normal with regular use and appropriate physical therapy. Slowly return to your daily activities. If you wore a cast for 4 to 6 weeks, then you may expect your recovery to take 4 to 6 weeks.

Taking care of your protective cast usually results in a successfully healed fracture, and keeping a good attitude will help the time to pass more quickly.

Jay Graham, OTC
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Never place a sharp item inside your cast. Scratching itchy skin with a clothes hanger, nail file, or other object can cause breaks

Physical Therapy for Cast Immobilization

Often after an injury or surgery, a patient undergoes a period of immobilization to allow the injured area or surgical site to heal properly and to reduce the risk of further damage. Cast immobilization is useful in a variety of situations, however, a number of problems can arise from this form of treatment. In particular, patients often suffer decreased cardiovascular fitness, muscle strength, and range of motion to the injured limb. Physical therapy counters these adverse effects, reduces recovery time, and allows the patient to return to normal activities quickly and safely.

Cardiovascular Fitness

Cardiovascular or aerobic fitness can be lessened if your immobilized limb leads to a decrease in physical activity. For example, a patient with a long leg cast who must use crutches finds it difficult to do many of the daily activities that he or she did before the injury. To improve cardiovascular fitness, a physical

therapist can design an aerobic program that fits your needs and injury. You may use a stationary bike if you have an immobilized upper extremity, or an upper extremity arm bike can be used if you cannot use your legs. If you want to return to an active lifestyle, a cardiovascular program accelerates your rate of return and helps if you are less active by increasing the blood flow and oxygen to the healing tissue to speed the healing process.

Loss of Muscle Strength

Another significant problem related to immobilization is muscle atrophy, or loss of muscle strength and size, which often begins around day 10 of immobilization (Fig. 1). To combat atrophy, a physical therapist often prescribes isometric exercises which are done by contracting the muscle against resistance but without moving the joint (Fig 2). Although the muscle does not work through the normal range of motion, the contraction and hold improves muscle strength and slows the results of muscle atrophy.

Regaining Movement

After cast removal, regaining movement is the next step in physical

therapy. The immobilized body part is generally stiff and difficult to move depending on the length of immobilization. Typically, 6 to 8

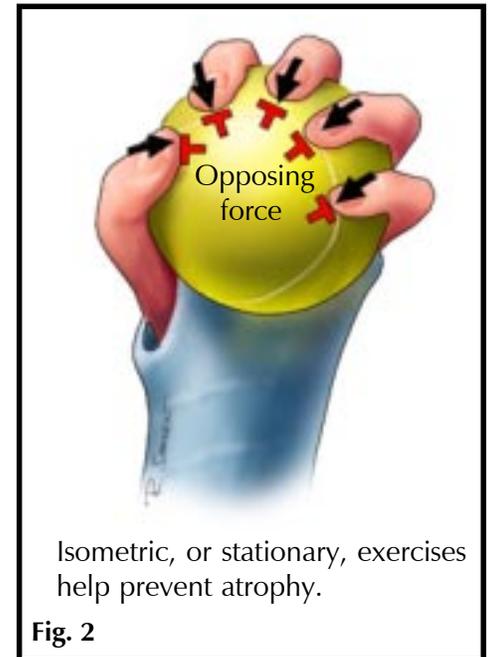


Fig. 2

weeks of immobilization are required for adequate healing of bone fractures. During this time, muscle tissue and other connective tissues affected by the immobilization often undergo changes. These tissues not only weaken due to lack of normal use, but they can also shrink, thereby limiting normal motion. With daily use, your motion is usually regained, however, a physical therapist can help you progress faster and more safely through exercise, stretching, and other therapies. The physical therapist helps you regain normal use of the extremity, pushes for a speedier recovery, and decreases the risk of injury to the weakened tissue. For the active or athletic population, this phase of therapy includes higher level exercises such as plyometric (vigorous drills), proprioceptive (receiving stimuli with the muscles and tendons), and sport specific training. These activities ensure a safe return to your desired activity level.

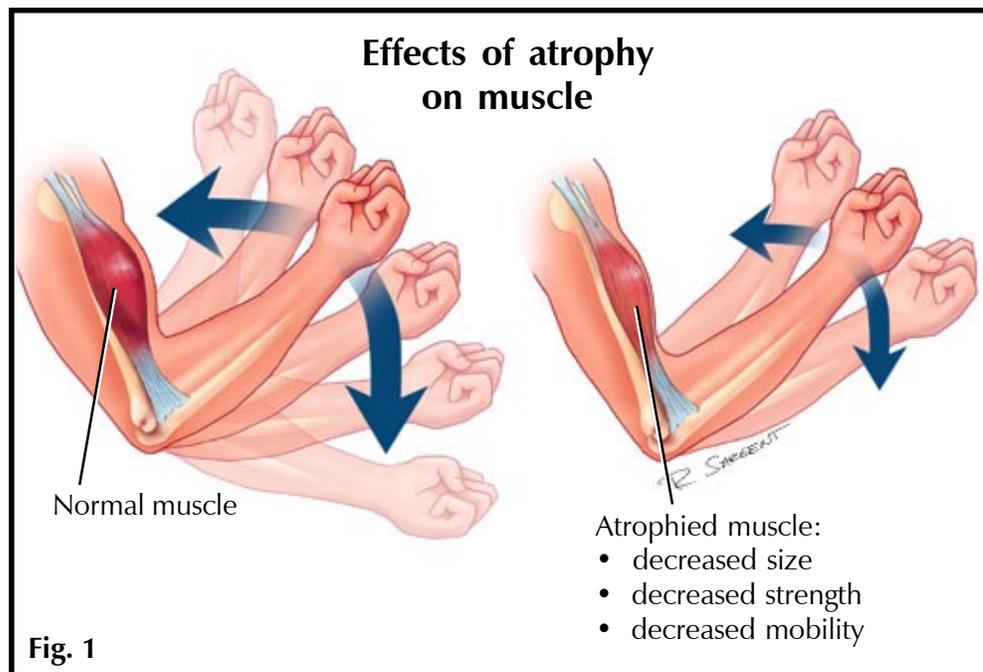


Fig. 1

If you require some type of immobilization, physical therapy can speed your return to full activity, improve function, and decrease the risk of future injuries.

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TMJ Disorders and Treatments

The temporomandibular joint connects the mandible (lower jawbone) to the temporal bone of the skull in front of the ear (Fig.). Within the joint formed by these two bones, there is a tiny disc of cartilage. The masseter and temporal muscles provide power to the joint, making it one of the most used joints in the body. The temporomandibular joint is responsible for all the movements of the jaw, including chewing, swallowing, breathing, and talking.

Disorders

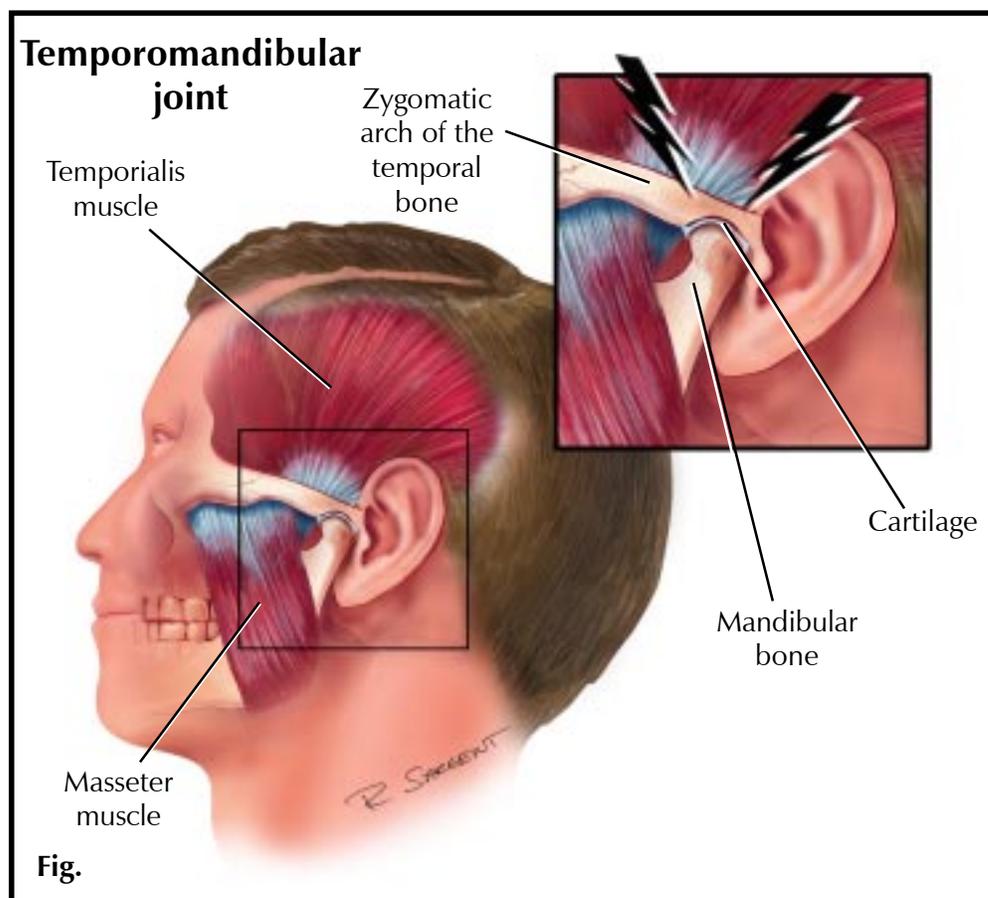
The causes of temporomandibular joint syndrome (TMJ) are the same as for any other joint in the body. Arthritis, cartilage damage, dislocation, and injury are all possible sources of pain and dysfunction. The

muscles that move the joint are also subject to fatigue, injury, and disease. Minor to severe and incapacitating pain can arise from the joint, the muscles, or both. Symptoms range from clicking or popping of the jaw, to headaches, facial pain, neck pain and stiffness, or a “locked” jaw. Some patients experience symptoms for many years and have no apparent loss of function, however, others slowly get worse and require treatment.

The causes of TMJ disorders are varied and can be difficult to determine. For patients who experience TMJ disorders due to an injury and trauma, it is clear that an injury has occurred, however, the injury does not always directly involve the joint. For example, a car accident that causes a whiplash injury to the head and neck can injure the temporomandibular joint. Aging can also affect the joint. One-third of the population over the age of 50 has signs of osteoarthritis in their joints, including the temporomandibular joint. Oral habits, however, are often the culprit for patients younger than 50. These patients usually discover the cause of their problem by examining their oral habits. Tongue thrusting, wide yawning, nail biting, gum chewing, or teeth grinding and clenching, are a few of the activities that place the jaw in an abnormal position and cause unnecessary wear and tear on the structures of the temporomandibular joint. The habitual action of the temporomandibular joint causes the same wear and tear injuries that are often seen in many active people, especially competitive athletes who damage joints with repetitive movements. TMJ syndrome can also be associated with bite problems, jaw alignment, tooth problems, and stress.

Treatment

The treatment options for patients with TMJ syndrome are varied and



sometimes controversial. The first area of controversy is whether the condition is medical or dental in nature. This issue is even a topic of discussion with insurance companies. Dentists and oral surgeons provide patients with a good course of treatment, but ear, nose and throat physicians (otolaryngologists) also offer excellent TMJ treatment plans.

Treatment for TMJ syndrome is most successful when the symptoms are recognized early and treatment is sought quickly. The longer you wait to seek treatment, the longer it will take to resolve the problem. This is especially true if your jaw becomes disabled due to the dysfunction of the joint. Often, a health care provider can recommend a conservative treatment plan that may include resting the muscles of the jaw by eating soft foods and avoiding foods that require the jaw to open wide, such as corn on the cob, large sandwiches, or apples. You may be told to stop chewing gum, nail biting, and clenching or tensing the jaw. Treatments may also include applying moist heat to relax the muscles of the jaw for 30 minutes, twice a day or applying ice for 20 minutes, twice a day to reduce inflammation and soreness in the muscles of the jaw.

Your physician or dentist may try a variety of treatment options, including medication or prescribing an occlusal splint that allows the TMJ to improve while preventing additional wear and tear on the joint. Surgery to improve the alignment of the upper and lower teeth is an option, but it is usually reserved for advanced cases and when no other treatment plan has worked. Disorders of the TMJ are treatable and often can be resolved with heat and ice applications, a soft diet, anti-inflammatory medications, and changing a few habits.

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Orthopaedic Traumatology

An emerging subspecialty

As new knowledge is acquired and technology becomes available, the specialty of orthopaedics continues to grow and include new subspecialties—one of the newest being the field of **orthopaedic traumatology**. Although all orthopaedic surgeons are trained to treat musculoskeletal injuries, the traumatologist brings a new level of expertise to the handling of complex and cluster (multiple) injuries.

Fred Flandry, M.D., director of The Hughston Clinic's Advanced Reconstruction and Traumatology Service (ARTS), explains it this way: "Whereas we all receive adequate training in treating a patient's individual injury, the traumatologist becomes adept at treating a patient who has suffered multiple injuries, such as fractures, soft tissue injuries, skin wounds, and injuries to other organs. The treatment for any one problem can conflict with that for another, and life-threatening injuries may preclude addressing all problems at once. The presence of multiple injuries also increases the risks of metabolic complications, such as blood clot, fat embolism, compartment syndrome, and uncontrolled bleeding from a condition called DIC. Therefore, the traumatologist must know not only what to do, but in what order to do it, which treatment to put on hold (and how to handle the problems that can arise from delayed treatment), how to reconcile treatment conflicts, and how to anticipate and prevent complications."

Apart from multiple injuries, other conditions, such as pelvic fractures or poorly healed fractures, are gradually becoming a specialty of the traumatologist. Years ago, pelvic fractures were treated by months of

bed rest and traction. If the fracture involved the hip joint, the patient was almost certain to suffer crippling arthritis later. Now, surgery by an experienced traumatologist offers the chance to walk sooner, leave the hospital sooner, and have better results. In dealing with the most complex injuries, traumatologists also develop special expertise with problems of fracture healing. Thus, patients who have deformities after a fracture, fractures that don't heal, and bone infections are often sent to the traumatologist by their doctor.

Expertise in treating multiple traumatic injuries requires years of experience as well as additional training. William Terrell, M.D., codirector of Hughston ARTS, has just such a background. After years in practice, he returned for training at the Medical Hospital Hannover in Germany, one of the leading trauma centers in the world. Both Drs. Terrell and Flandry have studied at trauma centers in Europe and Canada, as well as in the U.S. They are on the faculty of an innovative Swiss-based traumatology think tank that carries on trauma research and education worldwide, and they are members of the U.S.-based Orthopaedic Trauma Association.

Because this subspecialty is so new, doctors trained in traumatology are still in short supply. Recognizing this need, The Hughston Clinic established ARTS to provide expertise in orthopaedic traumatology to the Columbus region. The region spans hundreds of miles, and accepts referrals from orthopaedists who have patients with challenging injuries. According to Dr. Terrell, "In this way, cutting-edge techniques are available to anyone virtually anywhere." Dr. Flandry adds, "We want to be a resource that supports but in no way replaces the local community orthopaedist."

To learn more about the Hughston ARTS program, visit their website at www.problemfracture.com.

Smokeless Tobacco

Where There's No Smoke—There Is Fire

Smokeless tobacco, known as spit tobacco, chew, snuff, and dip, is a form of tobacco that has become popular, especially with athletes. It seems as if you can't watch a baseball game without seeing a player or coach with a "chaw" or a dip. Although smokeless tobacco may seem harmless, it is a dangerous habit that carries serious health consequences that can even lead to death.

Spit tobacco has been around for a long time, but in the 1970s the industry leaped into the public eye

alternative. Today, we know that spit tobacco has many health risks associated with its use, the most serious being oral and other cancers (Fig.). When people who chose smokeless tobacco as a safe alternative to cigarettes had to have their tongue, jaw, or throat removed, they realized too late that they were wrong.

Who uses spit tobacco?

Spit tobacco was once associated with middle-aged and older men. Now, men ages 18 to 24 are the highest users. About 12 million people in the U.S. use smokeless tobacco regularly; 3 million of whom are under 21.¹

Why are users starting younger?

Peer pressure, the use and promotion of spit tobacco products by prominent athletes, and attractive advertising by tobacco companies that target younger markets are the primary reasons young people use smokeless tobacco. Tobacco companies also promote free sample campaigns that give away mild, flavored forms of spit tobacco. These campaigns are starter programs designed to graduate the user to stronger, more addictive brands in the future.

Why isn't more being done?

People who can influence young users are often unaware of the harmful effects of spit tobacco. Parents, teachers and coaches see and hear the words "smokeless" and believe the products are harmless. Many adults who use spit tobacco are providing a negative role model and

have an "at least they are not smoking" attitude when, in reality, spit tobacco is not a safe alternative to smoking.

Some facts about spit tobacco:

- Some people develop mouth cancer after just a few years of using spit tobacco.
- Spit tobacco can lessen the user's taste for food.
- Spit tobacco stains the teeth and causes bad breath.
- Spit tobacco does not increase athletic performance.

How serious is the problem?

The nation's leading public health officials predict that if action is not taken to eliminate the use of spit tobacco today, we will see an epidemic of oral cancer in our lifetime.

Although its use is prevalent in society, many sports organizations have established rules against using spit tobacco. The National Collegiate Athletic Association (NCAA) has banned its use in all practice and contests. Major League Baseball has banned the use of spit tobacco as well. There are many organizations dedicated to eliminating the use of spit tobacco, especially in young people. These efforts resulted in a 10% decrease in the use of spit tobacco over a three-year period from 1996 through 1999, as reported by the NCAA. It is hoped that this trend will carry over to society in general. The outlook is deadly if it doesn't.

*Bruce Getz, ATC
Columbus, Georgia*

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Effects of smokeless tobacco

Bad breath

Permanent teeth discoloration

Precancerous leukoplakia

Painful ulcers

Fig.

with the phrase "smokeless tobacco," suggesting that smokeless is harmless. At the time, cigarette smoking was becoming recognized as the true health hazard that it is, so some smokers switched to a smokeless

A native of Georgia, **William D. Terrell, MD**, received a degree in biology from and pursued graduate studies in biochemistry at the University of Georgia. He attended medical school and completed an orthopaedic surgical residency at the Medical College of Georgia. Before joining The Hughston Clinic, Dr. Terrell completed a sports medicine fellowship at The Hughston Clinic and the Hughston Sports Medicine Foundation. He then practiced at a private orthopaedic clinic in Griffin, Georgia, for more than two years, and he completed a trauma fellowship in Hannover, Germany.



Board certified in orthopaedic surgery, Dr. Terrell is a member of the American Academy of Orthopaedic Surgeons and is a Synthes AO faculty member in North America. He specializes in general orthopaedics with an interest in sports medicine and trauma. In addition to treating patients, Dr. Terrell conducts research at the Hughston Sports Medicine Foundation and co-directs the Hughston Advanced Reconstructive and Trauma Service of The Hughston Clinic.

The *Hughston Health Alert* is a quarterly publication of the Hughston Sports Medicine Foundation, Inc. The Foundation's mission is to help people of all ages attain the highest possible standards of musculoskeletal health, fitness, and athletic prowess. Information in the *Hughston Health Alert* reflects the experience and training of physicians at The Hughston Clinic, P.C., of physical therapists and athletic trainers at Rehabilitation Services of Columbus, Inc., of physicians who trained as residents and fellows under the auspices of the Hughston Sports Medicine Foundation, Inc., and of research scientists and other professional staff at the Foundation. The information in the *Hughston Health Alert* is intended to supplement the advice of your personal physician and should not be relied on for the treatment of an individual's specific medical problems.

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Health Hint

To identify a fracture:

- Check for deformity by comparing the injured limb with the opposite limb.
- Look for an open wound and exposed bone.
- Monitor swelling because swelling caused by a fracture usually occurs rapidly.

Without an x-ray, it's not easy to identify a fracture. If in doubt, treat the injury as a fracture and seek medical attention immediately.



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