DOWNLOAD PDF THE DIAGNOSIS OF FRACTURES AND PRINCIPLES OF TREATMENT

Chapter 1 : Greenstick fractures - Diagnosis and treatment - Mayo Clinic

Treatment of fractures takes various things into consideration -age of patient, fracture pattern, type of bone fractured, part of the bone fractured, any other associated injury any chronic problem and sometimes your expectation the treatment.

Symptoms of a tibia fracture can be as mild as bruising or as severe as intense pain in the lower leg. Your doctor will examine the area and conduct some tests before deciding how to treat the injury. Surgery may be necessary in some cases and recovery can take from four to six months. Causes Tibia fractures are often caused by traffic accidents, falls from great heights or onto hard surfaces, and the twisting movements common in certain sports. Type 2 diabetes and bone conditions like osteoarthritis make tibia fractures more likely. Symptoms Depending on how badly the bone has been broken, symptoms can range from numbness or tingling in the foot, swelling, and bruising to difficulty walking; a deformity in the lower leg, shin or ankle; or bone protruding through the skin. You may also have limited motion in the knee and be unable to bear weight. A tibia fracture may also affect the fibula, the other bone in the lower part of the leg. He or she will take note of any recent trauma as well as risk factors which may make you prone to bone fracture. In addition to looking for visible signs of injury, the doctor will also test your muscle strength and whether you respond to stimulation in the lower leg, foot, and ankle. X-rays, CT scans , bone scans and MRI scans may be ordered so the doctor can get a better look at the injury. If you have an open fracture where the bone is penetrating through a wound in the skin, multiple bones have been broken, or a major artery or nerve has been injured, you may need to be taken to surgery. In a stable fracture , the broken ends of the bone stay properly aligned. A displaced tibia fracture occurs when the bone is moved out of place when it breaks, and the ends no longer align. This is a serious injury that may require surgery. A comminuted fracture is the most unstable and severe case. This is when the bone breaks into three or more pieces. Some fractures, such as those of the oblique variety, may be fairly stable at first but become displaced over time. A spiral fracture can occur if the break is caused by a twisting motion. These include the extent of the injury, your overall health and the cause of the injury. If surgery is not required, the injured leg may be placed in a cast or splint and you may be given anti-inflammatory drugs or painkillers. Physical therapy may also be recommended along with exercises at home. Open fractures, comminuted breaks or unstable bones or limbs may make surgery necessary. An operation may also be the only option if non-surgical treatments fail to work. Surgery on the tibia usually takes the form of internal or external fixation. Internal fixation involves the use of screws, rods or plates to hold the tibia together. In external fixation, screws or pins in the fracture are connected to a metal bar outside the leg. This offers extra stability. Recovery time varies depending on the type of fracture and how complicated it was. Some shaft fractures heal in about four months while more serious breaks can require at least six months to heal. Your general health at the time of the break and whether you undergo consistent therapy afterward can make a major difference during the recovery process.

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Chapter 2 : Bone fracture - Wikipedia

Timely diagnosis is challenging because of late patient presentation, nonspecific symptoms that mimic common musculoskeletal injuries, and low suspicion by physicians. Plain radiography is the.

Every fracture behaves differently from other. In the same part fractured, there could be different types of treatment depending on many factors other than fracture geometry. Treatment of fractures takes various things into consideration -age of patient, fracture pattern, type of bone fractured, part of the bone fractured, any other associated injury any chronic problem and sometimes your expectation the treatment. We discuss it one by one. Age Patient age is an important consideration in treatment of a fracture. Most of pediatric fractures can be treated by non operative methods. There are many few indications for use of surgical treatment for children as compared to adult. Fracture Pattern An undisplaced fracture at any age would require just a plaster application there are exceptions to this statement through. A displaced fracture would always require closed or open reduction open reduction is term used to treat the fractures by surgically opening the fracture fragments. Intra-articular fractures fractures in which break also occurs in the end of bone that takes part information of joint require strict anatomical reduction when compared to non articular fractures. Associated Injuries Pressure of large wound along with fracture is an indication for wound cleaning, debridement removal of dead tissue and fixation. Associated multiple fractures in other bones is also an indication for surgery. The aim is to stabilize all the bones so that patient can be made mobile. Chronic problems if any also make an important factor in kind of treatment that can be given to patient. Choice of patient This too has an important bearing on treatment. Some people would accept plaster application for long time but will not take risk to undergo surgery. All said and done, basis of both non operative, operative treatment is same. To align the fractured fragments into anatomically acceptable position and hold it there till union between fractured fragments occurs. This simple principle is the guiding factor in all complex modes of treatment. These are main factors which form basis of treatment in case of fractures. A physician would always choose from one of the available choices and thus there could be variations in treatment from one doctor to another. Get more stuff on Musculoskeltal Health Subscribe to our Newsletter and get latest publications on Musculoskeletal Health your email inbox. Thank you for subscribing. We respect your privacy and take protecting it seriously Spread the Knowledge.

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Chapter 3 : The Principles of Pediatric Fracture and Trauma Care | Musculoskeletal Key

Current clinical concepts are reviewed regarding the epidemiology, anatomy, evaluation and treatment of pediatric ankle fractures. Correct diagnosis and management relies on appropriate exam, imaging, and knowledge of fracture patterns specific to children.

Nearly one of three children will have at least one fracture during childhood 3. Orthopaedic surgeons, pediatricians, emergency room, personnel and primary care physicians will all be commonly exposed to fractures and other musculoskeletal trauma in children and, therefore, must have an understanding of the basic diagnostic and treatment principles. The general assumption is that fractures in children heal with little intervention and any deformity will remodel. Although this may be true much of the time, it is critical to be able to determine which injuries require greater attention and need intervention. For example, lateral condyle fractures may be more likely to go on to a nonunion, while physeal fractures are more likely to cause a growth arrest. It is also important to challenge the diagnosis and recognize that other disorders may first present as an acute injury, such as bone tumors diagnosed after a sports-related injury 1 or osteomyelitis seen within several days of a bone contusion from a fall 2. The purpose of this chapter is to provide a practice-based overview of fracture care in children. Fracturespecific information will be provided in the following chapters. The specific management of each of the various pediatric fracture types is beyond the scope of this chapter. The emphasis here is on the general principles of fracture management in the pediatric age group. The specific management of the individual fracture types is very adequately covered in the two major textbooks devoted specifically to Fractures in Children. The patterns and incidence depend on a number of variables including age, sex, climate, time of year, and environmental and cultural differences. Several studies have reported on the incidence of fractures in children 3 , 4 and 5. The vast majority of these do not require an inpatient admission 5. The number of fractures increases with age in boys into their late teen years. Girls have a similar pattern of incidence of fractures when young, but fracture occurrence decreases prior to the teenage years 3 , 5. These injury patterns differ from the incidence of other types of childhood injures, such as head and soft-tissue injuries, which peak by age 2 6. Child abuse as an etiology of fractures is less common as children age but must always be considered when fractures occur in young children, especially prior to walking age. Fracture incidence varies by location. Upper extremity fractures account for two-thirds of childhood fractures, with the forearm being the most common location. The most commonly fractured bone in children is the radius 4. Worldwide, over , children die each year from accidental injuries such as motor vehicle accidents, drowning, falls, and firearm injuries. Accidents are the leading cause of death in children 1 to 14 years of age www. These also result in 1. Injuries, including fractures, occur under many different circumstances. Although not all fractures and childhood injuries can be prevented, there are many ways in which the rate and severity of injuries can be decreased. An understanding of the causes and prevention strategies of childhood injuries is important for the health care providers, so they can share this with their patients and their caregivers. Several national and international organizations focus on injury prevention and serve as excellent sources of information for physicians and patients, such as the Pediatric Orthopaedics Society of North America www. Injuries and fractures most commonly occur at home, especially in the younger child. Most of these injuries are low-energy injuries, such as falls from low heights. Falls from windows can be much more serious, especially in an urban environment with high-rise buildings and concrete sidewalks. Serious injury or mortality occurs most frequently in falls from heights greater than three stories 8. Considering the amount of time that children spend at school, proportionally few injuries occur there. Most of these injuries are minor sprains and contusions and are associated with athletic activities; fractures infrequently occur at school 9. Most children, however, do not require hospital admission for playground injuries Changing playground surfaces from concrete to more impact-absorbing surfaces, such as bark or sand, can reduce the incidence and severity of head injury and potentially other injuries. Fracture risk, however, may be more related to the height

of the fall than to the playground surface The four sports activities associated with the most injuries to bones and muscles are bicycle riding, basketball, football, and roller sports Over , injuries occur to children in the United States while bike riding. While most are minor soft-tissue injuries, over one-third are fractures. More significantly, bicycle accidents are the most common causes of serious head injury in children A well-fitting helmet is the best source of protection. Unfortunately not all children use helmets. Recently, however, evidence suggests that the use of helmets is increasing over the last several years Roller sport injuries include those from skateboarding, roller skating, and inline skates. These activities commonly involve fractures, most often to the upper extremity. Skateboarding tends to result in the most severe injuries 15 , with a high incidence of fractures. Inline skating also frequently results in musculoskeletal injury. Ice skating has a higher incidence of head injury than roller skating, making use of head protection for these athletes particularly important Appropriate instruction, supervision, and protective equipment, including helmets, wrist guards, and elbow and knee pads, should be mandated Trampoline-related injuries are becoming much more common and, like skateboard injuries, are frequently high-energy injuries. These injuries typically occur in the home setting often under the supervision and with the knowledge of the parents, most of whom know of the potential dangers of trampoline use 21 , Jumping with more than one person on the trampoline increases the risk of injury significantly. It is unclear if trampolines at home or on playgrounds can ever be used safely, and some advise that trampolines be used only in supervised training programs Motorized recreational sports, such as motocross and use of all-terrain vehicles, are also associated with serious musculoskeletal injuries when safety guidelines are disregarded. Vehicles that are too heavy or powerful to be handled properly and poor driver judgment are important factors in injury occurrence. Motor vehicle accidents are the most common cause of death for children and adolescents in the United States. Vehicle-versus-pedestrian accidents are about twice as common as injuries sustained by children who are occupants in a car involved in a crash. The character of injuries in restrained children is different compared to those unrestrained, with fewer fractures occurring but with higher proportion of femur, spinal, and pelvic injuries. Appropriate use of child safety car seats, combined with sitting the child in the rear seat center position ideally and never in the front seat with an airbag, is critical for the prevention of injury in a motor vehicle accident. All parents should be made aware of the safety guidelines for child restraints in motor vehicles established by the American Academy of Pediatrics, not only to minimize the risk of injuries in motor vehicle crashes, but also to facilitate adherence to state and federal guidelines for safe transportation of children. Anatomy Unique to the Growing Bone. Like adult bone, the diaphysis of long bones is comprised of dense cortical bone and the metaphysis is comprised of spongy, cancellous bone. There are four distinct areas that are associated with growth and remodeling processes. These include the epiphysis, physis, metaphysis, and diaphysis. Each area has its own unique structural and biomechanical characteristics. The epiphysis is the site of secondary bone ossification that determines the size and shape of the articular surface. The articular surface enlarges via the small area of endochondral ossification that is located in the subchondral area. The epiphysis is also the resting site of osteoprogenitor cells, or chondrocytes, that develop into the components of the physis. Ligaments take their origin from or insert into the epiphyses at many joints, such as at the knee or ankle. An apophysis is smaller site of secondary ossification located at a tendon origin or insertion, such as the anterior superior iliac spine origin of the sartorius muscle or the olecranon apophysis insertion of triceps. Apophyses enlarge bones by appositional growth but do not significantly contribute to longitudinal growth. Physeal growth and the appearance of the secondary ossification centers occur in a predictable manner as the child matures. The physis, or growth plate, is a narrow band of cartilage that lies between the epiphysis at the end of the bone and the metaphysis. Because it contains an expandable matrix, it can permit longitudinal bone growth. The physis or growth plate is the most important feature that differentiates bones of children from that of an adult. Longitudinal bone growth occurs primarily through the replacement of a cartilage anlage by a process termed endochondral ossification. The physis is highly organized at the cellular level into columns that span the epiphyseal end and the metaphysis. The germinal zone is closest to the articular surface and contains the resting chondrocytes, the

precursors of new bone. Guided by local and systemic growth factors, these cells divide, forming the proliferating zone In the hypertrophic zone, adjacent to these cells, the chondrocytes enlarge and mature. As these cells begin to degenerate, vascular budding from the adjacent metaphysis triggers the dystrophic calcification of the matrix producing the so-called zone of provisional calcification. Normally, the Ca and PHO4 ions are in a state of super-saturation in many areas of the body. Living cells produce a substance that prevents the Ca and PHO4 ions from precipitating. Because the cartilage cells in this area of the physis are degenerating, they can no longer prevent the precipitation of the calcium and phosphate salts in the matrix. It needs to be emphasized that this process of calcification is degenerative and does not contribute directly to the ossification process. As the metaphyseal vessels migrate into this dead cartilage and its degenerated matrix, they bring in either chondroclasts or osteoclasts that reabsorb the dead cartilage cells and replace them with osteoclasts to produce osteocytes and a truly ossified tissue. With further vascular ingrowth, this zone remodels rapidly and becomes mature metaphyseal lamellar bone to form the diaphysis. The main portion of the bone is the diaphysis. This is composed of mature cortical bone which, in children, has remodeling potential. Healthy bone growth requires normal vascularity of the physis. Because vessels do not traverse the cartilage cell layer of the physis, a strict separation exists between circulation to the epiphysis and metaphysis. Two patterns of blood flow to the epiphysis have been identified Intracapsular epiphyses, such as the proximal femur and proximal radius among others, receive blood through vessels that enter around the base of the growth plate and span a narrow gap between the articular cartilage and the physis. Extracapsular physes are more richly vascularized by vessels that penetrate directly into the periosteum and the capsular attachments that surround them. Because of this, intracapsular epiphyses are more susceptible to vascular disruption from physeal fractures or osteoarticular infections. Serious growth disturbances, manifesting as articular surface deformity, angular deformation, or limb-length inequalities, may occur in younger children from these etiologies. It must be also remembered that underlying the articular cartilage is a small area of endochondral ossification that contributes to the growth of the cartilage of the articular surface. Any injury to this area of endochondral ossification can result in the development of a defect in the articular surface.

Chapter 4 : Compression Fracture Symptoms, Diagnosis, Treatment and Prevention | Aurora Health Care

The principles of treatment for fractures in adolescents requires a unique and individual approach. In this instructional review, the management of fractures in patients between childhood and adult age is presented.

Treatment[edit] X-ray showing the proximal portion of a fractured tibia with an intramedullary nail Proximal femur nail with locking and stabilisation screws for treatment of femur fractures of left thigh The surgical treatment of mandibular angle fracture; fixation of the bone fragments by the plates, the principles of osteosynthesis are stability immobility of the fragments that creates the conditions for bones coalescence and functionality Treatment of bone fractures are broadly classified as surgical or conservative, the latter basically referring to any non-surgical procedure, such as pain management, immobilization or other non-surgical stabilization. A similar classification is open versus closed treatment, in which open treatment refers to any treatment in which the fracture site is opened surgically, regardless of whether the fracture is an open or closed fracture. Pain management[edit] In arm fractures in children, ibuprofen has been found to be as effective as a combination of acetaminophen and codeine. Bone fractures typically are treated by restoring the fractured pieces of bone to their natural positions if necessary , and maintaining those positions while the bone heals. Often, aligning the bone, called reduction , in a good position and verifying the improved alignment with an X-ray is all that is needed. This process is extremely painful without anaesthesia , about as painful as breaking the bone itself. To this end, a fractured limb usually is immobilized with a plaster or fibreglass cast or splint that holds the bones in position and immobilizes the joints above and below the fracture. When the initial post-fracture oedema or swelling goes down, the fracture may be placed in a removable brace or orthosis. If being treated with surgery, surgical nails , screws, plates, and wires are used to hold the fractured bone together more directly. Alternatively, fractured bones may be treated by the Ilizarov method which is a form of an external fixator. Occasionally smaller bones, such as phalanges of the toes and fingers , may be treated without the cast, by buddy wrapping them, which serves a similar function to making a cast. A device called a Suzuki frame may be used in cases of deep, complex intra-articular digit fractures. Splinting results in the same outcome as casting in children who have a distal radius fracture with little shifting. With some fractures such as hip fractures usually caused by osteoporosis , surgery is offered routinely because non-operative treatment results in prolonged immobilisation, which commonly results in complications including chest infections, pressure sores, deconditioning, deep vein thrombosis DVT , and pulmonary embolism , which are more dangerous than surgery. When a joint surface is damaged by a fracture , surgery is also commonly recommended to make an accurate anatomical reduction and restore the smoothness of the joint. Infection is especially dangerous in bones, due to the recrudescent nature of bone infections. Bone tissue is predominantly extracellular matrix , rather than living cells, and the few blood vessels needed to support this low metabolism are only able to bring a limited number of immune cells to an injury to fight infection. For this reason, open fractures and osteotomies call for very careful antiseptic procedures and prophylactic use of antibiotics. Occasionally, bone grafting is used to treat a fracture. Sometimes bones are reinforced with metal. These implants must be designed and installed with care. This problem is reduced, but not eliminated, by the use of low- modulus materials, including titanium and its alloys. The heat generated by the friction of installing hardware can accumulate easily and damage bone tissue , reducing the strength of the connections. If dissimilar metals are installed in contact with one another i. The metal ions produced can damage the bone locally and may cause systemic effects as well. Other[edit] A Cochrane review of low-intensity pulsed ultrasound to speed healing in newly broken bones found insufficient evidence to justify routine use. Child bone fracture In children, whose bones are still developing, there are risks of either a growth plate injury or a greenstick fracture. A greenstick fracture occurs due to mechanical failure on the tension side. Growth plate injuries, as in Salter-Harris fractures , require careful treatment and accurate reduction to make sure that the bone continues to grow normally. Plastic deformation of the bone, in which the bone permanently bends, but

does not break, also is possible in children. These injuries may require an osteotomy bone cut to realign the bone if it is fixed and cannot be realigned by closed methods.

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Chapter 5 : Bone fractures - Better Health Channel

Open (compound) fracture. In this type of fracture, the skin is pierced by the broken bone. This is a serious condition that requires immediate, aggressive treatment to decrease your chance of an infection.

Information from references 3 and Radiographs showing potential malignancies should prompt additional imaging Figure 3 and Figure 4. Early magnetic resonance imaging is superior to computed tomography for staging of bone tumors before treatment and can help determine tumor involvement in surrounding muscle, soft tissue, and neurovascular structuresâ€”information that is critical for limb-salvage surgery. When combined with computed tomography, positron emission tomography can be used to plan biopsies or evaluate lesions in patients who cannot undergo magnetic resonance imaging. Imaging of the right knee of an year-old boy with right knee pain for approximately four weeks. Although there was no history of specific trauma, the patient and his parents attributed the pain to daily participation in basketball. A The anteroposterior view shows an ill-defined mixed sclerotic and lytic lesion in the distal right femoral metaphysis. B The lateral view shows anterior soft tissue swelling and osteoid matrix deposition. C Coronal magnetic resonance imaging after radiography better defines the extent of tumor involvement. D Sagittal magnetic resonance imaging better shows the anterior soft tissue tumor extension. Subsequent biopsy of the lesion confirmed high-grade osteosarcoma. Imaging of the pelvis of an year-old boy with left hip pain one week after falling during a football game. A The anteroposterior view shows asymmetric patches of lucency and sclerosis in the inferomedial left iliac bone. B Coronal magnetic resonance imaging shows a large, hyperintense, T2, aggressive-appearing enhancing mass with an extensive soft tissue component. The mass measured approximately C A whole-body nuclear bone scan shows significant signal intensity of the left iliac bone but does not suggest bony metastases at the initial presentation. Subsequent biopsy confirmed Ewing sarcoma of the iliac bone. However, delays in diagnosis are common. Bone cancers can also present with relapsing and remitting symptoms, including pain and fever. Symptom-free periods may mislead physicians and patients into thinking the condition has resolved. Initial pain and swelling in bone cancers can mimic symptoms of minor musculoskeletal injuries. In cases of persistent or recurrent bony pain or soft tissue swelling without known trauma, physicians should be encouraged to perform radiography.

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Chapter 6 : Broken leg - Diagnosis and treatment - Mayo Clinic

Therapeutic principles of osteoporotic fracture include fracture reduction, surgical or non-surgical immobilization, rehabilitative exercise, and anti-osteoporosis therapy; ideally treatment involves an organic combination of all four principles.

Outlook The shinbone or tibia is the long bone located in the lower leg between the knee and foot. Tibial fractures are common and usually caused by an injury or repetitive strain on the bone. A fracture is another word for a break. In some cases, the only symptom of a small fracture is a pain in the shin while walking. In more severe cases, the tibia bone may protrude through the skin. The recovery and healing time for tibial fractures differs and depends on the type and severity of the fracture. This article looks in detail at types of tibial fractures, along with the symptoms, treatment, and recovery times for a fractured tibia. What is a tibia fracture? The tibia is the larger bone in the lower leg. According to the American Academy of Orthopedic Surgeons , the tibia is the most common long bone in the body to fracture. A tibia fracture refers to any crack or breaks in the tibia bone. The tibia is one of two bones that make up the lower leg, the other being the fibula. The tibia is the larger of these two bones. The tibia plays a key role in body mechanics, as it is: It should always be checked out by a medical professional. Types of tibia fracture Depending on the cause of the broken bone, the severity and type of fracture may vary. It may be a transverse fracture, meaning the crack is horizontal across the bone, or oblique, meaning the crack is at an angle. Proximal fractures are those that affect the upper part of the tibia. Tibia shaft fractures occur below this area. The tibia can have the following types of fracture: A stable fracture involves a crack in the bone that leaves most of the bone intact and in its normal position. The broken parts of the tibia line up and maintain their correct position during the healing process. This is called a non-displaced fracture. With a displaced fracture, a crack in the bone moves part of the bone so that it is no longer aligned. Surgery is often needed to correct this type of fracture and realign the bones back together. Stress fractures, also called hairline fractures, are common overuse injuries. These fractures are small, thin cracks in the bone. When a twisting movement causes a break, there may be a spiral-shaped fracture of the bone. When the bone fractures into three or more pieces, this is called a comminuted fracture. Below is a 3-D model of a stable fracture of the tibia. This model is fully interactive and can be explored with your mouse pad or touchscreen. When bones are broken, they can either stay under the skin or break through its surface. Open fractures are fractures where a broken bone breaks through the skin. With closed fractures, the bone does not break the skin, though there may still be internal tissue damage. Cause of tibia fractures Long bones in the body are resilient, but there are many ways that a person can sustain a tibia fracture.

Chapter 7 : Tibia fracture: Types, symptoms, and treatment

A fracture often requires emergency treatment at a hospital. An example of a minor fracture that may not require emergency care is a fracture of the tip of a toe.

Print Diagnosis During the physical exam, the doctor will inspect the affected area for tenderness, swelling, deformity or an open wound. X-rays usually can pinpoint the location of the break and determine the extent of injury to any adjacent joints. Occasionally, your doctor may also recommend more-detailed images using computerized tomography CT or magnetic resonance imaging MRI. Treatment External fixation External fixation An external fixation device provides stability during the healing process and is usually removed after about six to eight weeks. Treatment of a broken leg will vary, depending on the type and location of the break. Stress fractures may require only rest and immobilization. Fractures are classified into one or more of the following categories: In this type of fracture, the skin is pierced by the broken bone. This is a serious condition that requires immediate, aggressive treatment to decrease your chance of an infection. In closed fractures, the surrounding skin remains intact. In complete fractures, the bone has snapped into two or more parts. In this type of fracture, the bone fragments on each side of the break are not aligned. A displaced fracture may require surgery to realign the bones properly. Setting the leg Initial treatment for a broken leg usually begins in an emergency room or urgent care clinic. Here, doctors typically evaluate your injury and immobilize your leg with a splint. If you have a displaced fracture, your doctor may need to manipulate the pieces back into their proper positions before applying a splint â€" a process called reduction. Some fractures are splinted for a day to allow swelling to subside before they are casted. Immobilization Restricting the movement of a broken bone in your leg is critical to proper healing. To do this, you may need a splint or a cast. And you may need to use crutches or a cane to keep weight off the affected leg for six to eight weeks or longer. Medications To reduce pain and inflammation, your doctor may recommend an over-the-counter pain reliever, such as acetaminophen Tylenol, others or ibuprofen Advil, Motrin IB, others or a combination of the two. Rehabilitation can help, but it may take up to several months â€" or even longer â€" for complete healing of severe injuries. Surgical and other procedures Immobilization heals most broken bones. However, you may need surgery to implant internal fixation devices, such as plates, rods or screws, to maintain proper position of your bones during healing. These internal fixation devices may be necessary if you have the following injuries: Multiple fractures An unstable or displaced fracture Loose bone fragments that could enter a joint Damage to the surrounding ligaments Fractures that extend into a joint A fracture that is the result of a crushing accident A fracture in particular areas of your leg, such as your thighbone For some injuries, your doctor may also recommend an external fixation device â€" a frame outside your leg attached to the bone with pins. This device provides stability during the healing process and is usually removed after about six to eight weeks. Request an Appointment at Mayo Clinic Clinical trials Explore Mayo Clinic studies testing new treatments, interventions and tests as a means to prevent, detect, treat or manage this disease. Preparing for your appointment Depending on the severity of the break, your family doctor or an emergency room physician may recommend examination by an orthopedic surgeon. What you can do You may want to write a list that includes: Detailed descriptions of the symptoms and the precipitating event Information about past medical problems All the medications and dietary supplements you or your child takes Questions you want to ask the doctor For a broken leg, some basic questions to ask your doctor include: What kinds of tests are needed? What is the best course of action? What restrictions will need to be followed? Should I see a specialist? What pain medications do you recommend? What to expect from your doctor Your doctor is likely to ask you questions, including: What happened to cause the symptoms? How severe are the symptoms? What, if anything, seems to improve the symptoms? What, if anything, appears to worsen the symptoms?

Chapter 8 : Fractures of the Body of the Mandible: Classification, diagnosis and indication for treatment

The principles of access and repair follow the same principles as for type I and II fractures, although establishing pretraumatic osseous and soft tissue contour is more challenging because of the level of comminution.

Inability to use the limb. Types of bone fracture Different types of fracture include: Closed simple fracture â€" the broken bone has not pierced the skin Open compound fracture â€" the broken bone juts out through the skin, or a wound leads to the fracture site. Infection and external bleeding are more likely Greenstick fracture â€" a small, slender crack in the bone. There may be damage to the veins, arteries or nerves, and there may also be injury to the lining of the bone the periosteum Comminuted fracture â€" the bone is shattered into small pieces. This type of complicated fracture tends to heal more slowly Avulsion fracture â€" muscles are anchored to bone with tendons, a type of connective tissue. Powerful muscle contractions can wrench the tendon free and pull out pieces of bone. This type of fracture is more common in the knee and shoulder joints Compression fracture â€" occurs when two bones are forced against each other. The bones of the spine, called vertebrae, can have this type of fracture. Older people, particularly those with osteoporosis, are at higher risk. Trauma to the head, chest, spine or pelvis can fracture bones such as the skull and ribs. These fractures are further complicated by the underlying body structure that the bone normally protects. Some of these fractures can be very difficult to manage using first-aid principles only as they may represent life-threatening injuries. Always seek emergency assistance if you suspect this type of fracture. Complications of bone fractures Other problems caused by bone fracture can include: Blood loss â€" bones have a rich blood supply. A bad break can make you lose a large amount of blood Injuries to organs, tissues or surrounding structures â€" for example the brain can be damaged by a skull fracture. First aid for bone fractures Good first-aid care of fractures is always important. Moving the broken bones can increase pain and bleeding and can damage tissues around the injury. This can lead to complications in the repair and healing of the injury later on. First aid for fractures is all about immobilising limiting movement of the injured area. Splints can be used for this. Control any external bleeding. Complicated breaks where a limb is very deformed may need to be realigned before splinting â€" only paramedics or medical staff should do this. Fractures of the head or body such as skull, ribs and pelvis are all serious and should be managed by paramedics. If you suspect a bone fracture, you should: Keep the person still â€" do not move them unless there is an immediate danger, especially if you suspect fracture of the skull, spine, ribs, pelvis or upper leg Attend to any bleeding wounds first. Stop the bleeding by pressing firmly on the site with a clean dressing. If a bone is protruding, apply pressure around the edges of the wound If bleeding is controlled, keep the wound covered with a clean dressing Never try to straighten broken bones For a limb fracture, provide support and comfort such as a pillow under the lower leg or forearm. However, do not cause further pain or unnecessary movement of the broken bone Apply a splint to support the limb. Splints do not have to be professionally manufactured. Items like wooden boards and folded magazines can work for some fractures. You should immobilise the limb above and below the fracture Use a sling to support an arm or collarbone fracture Raise the fractured area if possible and apply a cold pack to reduce swelling and pain Stop the person from eating or drinking anything until they are seen by a doctor, in case they will need surgery In an emergency, call triple zero for an ambulance. Diagnosis and treatment of bone fractures Doctors can diagnose bone fractures with x-rays. Broken bones heal by themselves â€" the aim of medical treatment is to make sure the pieces of bone are lined up correctly. The bone needs to recover fully in strength, movement and sensitivity. Some complicated fractures may need surgery or surgical traction or both. Depending on where the fracture is and how severe, treatment may include: Splints â€" to stop movement of the broken limb Braces â€" to support the bone Plaster cast â€" to provide support and immobilise the bone Traction â€" a less common option Surgically inserted metal rods or plates â€" to hold the bone pieces together Pain relief. Operation procedure for bone fractures A cast made from plaster of Paris is one of the most common ways of immobilising a limb. This cast is made from a preparation of gypsum that

sets hard when water is added. Depending on the location and severity of the fracture, the operation procedures can include: Closed or simple fractures â€" the two ends of the broken bone are lined up and held in place. The limb is thoroughly bandaged, then the wet plaster is applied. Sometimes, once the plaster is dry, the cast is split into two and the two halves are re-bandaged on the outside. This allows for any swelling that may occur Open or compound fractures â€" these are thoroughly cleaned in the operating room to remove debris before being set, because a broken bone exposed to the open air may become infected Long bones â€" long bones such as the bone of the thigh femur are difficult to keep aligned. In adults these are often treated by internal nailing. A child may need traction for a couple of days before setting the bone in a cast. Once the two ends of bone start to show signs of healing, the leg and hip joint are immobilised in plaster of Paris. This is done under a general anaesthetic. Immediately after an operation on a bone fracture After surgery, your doctor will check that you have full feeling in the area. For example, if you have a broken arm in plaster, they may ask you to wiggle your fingers. They will also check your limb for tingling, pallor pale colour or coolness. The injured part is kept as still as possible in the first few days. Nurses will offer you pain-relieving medication. They will determine the difference between the pain of your fracture and any pain that could be caused by the splint, traction, plaster cast, poor alignment of the limb or swelling of the limb. The healing process for bone fractures Blood clots that form on the broken ends of bone are the start of the healing process. Over about five weeks, the body joins the two bone portions together with a combination of fibrous cells and cartilage. This temporary bone callus is not as strong as real bone. It can break easily until it is slowly replaced with real bone. For this reason the doctor may remove your cast or splint after a few weeks, but you still need to treat the bone with care for at least one more month. Other treatments for bone fractures Some bones, such as the collarbone or bones of the toes, are immobilised with a sling or splint instead of plastered and rested for about two months. Complications of bone fractures.

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Fractures are common in children. Nearly one of three children will have at least one fracture during childhood ().Orthopaedic surgeons, pediatricians, emergency room, personnel and primary care physicians will all be commonly exposed to fractures and other musculoskeletal trauma in children and, therefore, must have an understanding of the basic diagnostic and treatment principles.