13.3: Common Musculoskeletal Conditions

Now that we have reviewed the basic anatomy of the musculoskeletal system, let’s review common musculoskeletal conditions that a nurse may find on assessment.

Osteoporosis

Osteoporosis is a disease that thins and weakens bones, causing them to become fragile and break easily. See Figure 1 for an illustration comparing the top right image of normal bone to the bottom right image of bone with osteoporosis. Osteoporosis is common in older women and often occurs in the hip, spine, and wrist. To keep bones strong, patients at risk are educated to eat a diet rich in calcium and vitamin D, participate in weight-bearing exercise, and avoid smoking. If needed, medications such as bisphosphonates and calcitonin are used to treat severe osteoporosis.
A fracture is the medical term for a broken bone. There are many different types of fractures commonly caused by sports injuries, falls, and car accidents. Additionally, people with osteoporosis are at higher risk for fractures from minor injuries due to weakening of the bones. See Figure \(\PageIndex{2}\) for an illustration of different types of fractures. For example, if the broken bone punctures the skin, it is called an open fracture. Symptoms of a fracture include the following:

- Intense pain
- Deformity (i.e., the limb looks out of place)
- Swelling, bruising, or tenderness around the injury
- Numbness and tingling of the extremity distal to the injury
- Difficulty moving a limb

A suspected fracture requires immediate medical attention and an X-ray to determine if the bone is broken. Treatment includes a cast or splint. In severe fractures, surgery is performed to place plates, pins, or screws in the bones to keep them in place as they heal.
Hip Fracture

A hip fracture, commonly referred to as a “broken hip,” is actually a fracture of the femoral neck. See Figure \(\PageIndex{3}\) for an image of a hip fracture. Hip fractures are typically caused by a fall, especially in older adults with preexisting osteoporosis. Symptoms of a hip fracture after a fall include the following:

- Pain
- An inability to lift, move, or rotate the affected leg
- An inability to stand or put weight on the affected leg
- Bruising and swelling around the hip
- The injured leg appears shorter than the other leg
- The injured leg is rotated outwards [6]

Hip fractures typically require surgical repair within 48 hours of the injury. In approximately half of the cases of hip fractures, hip replacement is needed. See more information about hip replacement under the “Osteoarthritis” section below. In other cases, the fracture is fixed with surgery called Open Reduction Internal Fixation (ORIF) where the surgeon makes an incision to realign the bones, and then they are internally fixated (i.e., held together) with hardware like metal pins, plates, rods, or screws. After the bone heals, this hardware isn’t removed unless additional symptoms occur. After surgery, the patient will need mobility assistance for a prolonged period of time from family members or in a long-term care facility, and the reduced mobility can result in additional falls if protective measures are not put into place. Additionally, hip fractures are also associated with life-threatening complications, such as pneumonia, infected pressure injuries, and blood clots that can move to the lungs causing pulmonary embolism. [7]

Figure \(\PageIndex{3}\): Hip Fracture

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**Osteoarthritis**

**Osteoarthritis** (OA) is the most common type of arthritis associated with aging and wear and tear of the articular cartilage that covers the surfaces of bones at a synovial joint. OA causes the cartilage to gradually become thinner, and as the cartilage layer wears down, more pressure is placed on the bones. The joint responds by increasing production of the synovial fluid for more lubrication, but this can cause swelling of the joint cavity. The bone tissue underlying the damaged articular cartilage also responds by thickening and causing the articulating surface of the bone to become rough or bumpy. As a result, joint movement results in pain and inflammation. In early stages of OA, symptoms may be resolved with mild activity that warms up the joint. However, in advanced OA, the affected joints become more painful and difficult to use, resulting in decreased mobility. There is no cure for osteoarthritis, but several treatments can help alleviate the pain. Treatments may include weight loss, low-impact exercise, and medications such as acetaminophen, nonsteroidal anti-inflammatory drugs (NSAIDs), and celecoxib. For severe cases of OA, joint replacement surgery may be required. [8]
See Figure \(\PageIndex{4}\) for an image comparing a normal joint to one with osteoarthritis and another type of arthritis called rheumatoid arthritis. (Rheumatoid arthritis is further explained under the “Joint Replacement” subsection.)

**Note**

For more information about medications used to treat osteoarthritis, visit the “Analgesic and Musculoskeletal Medications” chapter in Open RN *Nursing Fundamentals*.

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**Joint Replacement**

*Arthroplasty*, the medical term for joint replacement surgery, is an invasive procedure requiring extended recovery time, so conservative treatments such as lifestyle changes and medications are attempted before surgery is performed. See Figure \(\PageIndex{5}\) for an illustration of joint replacement surgery. This type of surgery involves replacing the articular surfaces of the bones with prosthesis (artificial components). For example, in hip arthroplasty, the worn or damaged parts of the hip joint, including the head and neck of the femur and the acetabulum of the pelvis, are removed and replaced with artificial joint components. The replacement head for the femur consists of a rounded ball attached to the end of a shaft that is inserted inside the femur. The acetabulum of the pelvis is reshaped and a replacement socket is fitted into its place.

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Hip Replacement

Hip replacement is surgery for people with severe hip damage often caused by osteoarthritis or a hip fracture. During a hip replacement operation, the surgeon removes damaged cartilage and bone from the hip joint and replaces them with artificial parts. \[\text{[12]}\]

The most common complication after surgery is hip dislocation. Because a man-made hip is smaller than the original joint, the ball may easily come out of its socket. Some general rules of thumb when caring for patients during the recovery period are as follows:

- Patients should not cross their legs or ankles when they are sitting, standing, or lying down.
- Patients should not lean too far forward from their waist or pull their leg up past their waist. This bending is called hip flexion. Avoid hip flexion greater than 90 degrees. \[\text{[13]}\]

Note

For more information about patient education after a hip replacement surgery, read the following article from Medline Plus: How to Take Care of Your New Hip Joint

Rheumatoid Arthritis

Rheumatoid arthritis (RA) is a type of arthritis that causes pain, swelling, stiffness, and loss of function in joints due to inflammation caused by an autoimmune disease. See Figure \(\PageIndex{6}\) \[\text{[14]}\] for an illustration of RA in the hands causing inflammation and a common deformity of the fingers. It often starts in middle age and is more common in women. RA is different from osteoarthritis because it is an autoimmune disease, meaning it is caused by the immune system attacking the body’s own tissues. \[\text{[15]}\] In rheumatoid arthritis, the joint capsule and synovial membrane become inflamed. As the disease progresses, the articular cartilage is severely damaged, resulting in joint deformation, loss of movement, and potentially severe disability. There is no known cure for RA, so treatments are aimed at alleviating symptoms. Medications such as nonsteroidal anti-inflammatory drugs (NSAIDS), corticosteroids, and antirheumatic drugs such as methotrexate are commonly used to treat rheumatoid arthritis. \[\text{[16]}\]
Gout

Gout is a type of arthritis that causes swollen, red, hot, and stiff joints due to the buildup of uric acid. It typically first attacks the big toe. See Figure \(\PageIndex{7}\) for an illustration of gout in the joint of the big toe. Uric acid usually dissolves in the blood, passes through the kidneys, and is eliminated in urine, but gout occurs when uric acid builds up in the body and forms painful, needle-like crystals in joints. Gout is treated with lifestyle changes such as avoiding alcohol and food high in purines, as well as administering antigout medications, such as allopurinol and colchicine.

Vertebral Disorders

The spine is composed of many vertebrae stacked on top of one another, forming the vertebral column. There are several disorders that can occur in the vertebral column causing curvature of the spine such as kyphosis, lordosis, and scoliosis. See Figure \(\PageIndex{8}\) for an illustration of kyphosis, lordosis, and scoliosis.

**Kyphosis** is a curving of the spine that causes a bowing or rounding of the back, often referred to as a “buffalo hump” that can lead to a hunchback or slouching posture. Kyphosis can be caused by osteoarthritis, osteoporosis, or other conditions. Pain in the middle or lower back is the most common symptom. Treatment depends upon the cause, the severity of pain, and the presence of any neurological symptoms.

**Lordosis** is the inward curve of the lumbar spine just above the buttocks. A small degree of lordosis is normal, especially during the third trimester of pregnancy. Too much curving of the lower back is often called swayback. Most of the time, lordosis is not treated if the back is flexible because it is not likely to progress or cause problems.

**Scoliosis** causes a sideways curve of the spine. It commonly develops in late childhood and the early teens when children grow quickly. Symptoms of scoliosis include leaning to one side and having uneven shoulders and hips. Treatment depends on the patient’s age, the amount of expected additional growth, the degree of curving, and whether the curve is temporary or permanent. Patients with mild scoliosis might only need checkups to monitor if the curve is getting worse, whereas others may require a brace or have surgery.
Dislocation

A dislocation is an injury, often caused by a fall or a blow to the joint, that forces the ends of bones out of position. Dislocated joints are typically very painful, swollen, and visibly out of place. The patient may not be able to move the affected extremity. See Figure \((\PageIndex{9})\)\(^{[23]}\) for an X-ray image of an anterior dislocation of the right shoulder where the ball (i.e., head of the humerus) has popped out of the socket (i.e., the glenoid cavity of the scapula). A dislocated joint requires immediate medical attention. Treatment depends on the joint and the severity of the injury and may include manipulation to reposition the bones, medication, a splint or sling, or rehabilitation. When properly repositioned, a joint will usually function and move normally again in a few weeks; however, once a joint is dislocated, it is more likely to become dislocated again. Instructing patients to wear protective gear during sports may help to prevent future dislocations. \(^{[24]}\)

Figure \((\PageIndex{9})\): X-ray of Dislocated Shoulder
Clubfoot

Clubfoot is a congenital condition that causes the foot and lower leg to turn inward and downward. A congenital condition means it is present at birth. See Figure \(\PageIndex{10}\)\(^{[25]}\) for an image of an infant with a clubfoot. It can range from mild and flexible to severe and rigid. Treatment by an orthopedic specialist involves using repeated applications of casts beginning soon after birth to gradually moving the foot into the correct position. Severe cases of clubfoot require surgery. After the foot is in the correct position, the child typically wears a special brace for up to three years.\(^{[26]}\)

Sprains and Strains

A sprain is a stretched or torn ligament caused by an injury. Ligaments are tissues that attach bones at a joint. Ankle and wrist sprains are very common, especially due to falls or participation in sports. See Figure \(\PageIndex{11}\)\(^{[27]}\) for an illustration of an ankle sprain caused by eversion or inversion of the ankle. Symptoms include pain, swelling, bruising, and the inability to move the joint. The patient may also report feeling a pop when the injury occurred.

A strain is a stretched or torn muscle or tendon. Tendons are tissues that connect muscle to bone. See Figure
Strains can happen suddenly from an injury or develop over time due to chronic overuse. Symptoms include pain, muscle spasms, swelling, and trouble moving the muscle.

Treatment of sprains and strains is often referred to with the mnemonic RICE that stands for Resting the injured area, Icing the area, Compressing the area with an ACE bandage or other device, and Elevating the affected limb. Medications such as acetaminophen or nonsteroidal anti-inflammatory drugs (NSAIDs) may also be used.

Knee Injuries and Arthroscopic Surgery

Knee injuries are common. Because the knee joint is primarily supported by muscles and ligaments, injuries to any of these structures will result in pain or knee instability. Arthroscopic surgery has greatly improved the surgical treatment of knee injuries and reduced subsequent recovery times. This procedure involves a small incision and the insertion of an arthroscope, a pencil-thin instrument that allows for visualization of the joint interior. Small surgical instruments are inserted via additional incisions to remove or repair ligaments and other joint structures.

Contracture

A contracture develops when the normally elastic tissues are replaced by inelastic, fiber-like tissue. This inelastic tissue makes it difficult to stretch the area and prevents normal movement.

Contractures occur in the skin, the tissues underneath, and the muscles, tendons, and ligaments surrounding a joint.
They affect the range of motion and function in a specific body part and can be painful. See Figure \(\PageIndex{13}\) for an image of severe contracture of the wrist that occurred after a burn injury.

Contracture can be caused by any of the following:

- Brain and nervous system disorders, such as cerebral palsy or stroke
- Inherited disorders, such as muscular dystrophy
- Nerve damage
- Reduced use (for example, from lack of mobility)
- Severe muscle and bone injuries
- Scarring after traumatic injury or burns

Treatments may include exercises, stretching, or applying braces and splints.

Foot Drop

Foot drop is the inability to raise the front part of the foot due to weakness or paralysis of the muscles that lift the foot. As a result, individuals with foot drop often scuff their toes along the ground when walking or bend their knees to lift their foot higher than usual to avoid the scuffing. Foot drop is a symptom of an underlying problem and can be temporary or permanent, depending on the cause. The prognosis for foot drop depends on the cause. Foot drop caused by trauma or nerve damage usually shows partial or complete recovery, but in progressive neurological disorders, foot drop will be a symptom that is likely to continue as a lifelong disability. Treatment depends on the specific cause of foot drop. The most common treatment is to support the foot with lightweight leg braces. See Figure \(\PageIndex{14}\) for an image of a patient with foot drop treated with a leg brace. Exercise therapy to strengthen the muscles and maintain joint motion.
also helps to improve a patient's gait.\[34\]

Figure \(\PageIndex{14}\): Foot Drop Treated with Leg Brace

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