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### Complications of Treatment: Nonsurgical and Surgical

Whenever orthopedic surgeons discuss a treatment with patients we must always consider the risks and complications of any treatment we recommend. Part of my responsibility to my patients is to educate and help them understand their treatment options.

Although we usually discuss both risks and benefits of the treatment, patients typically recall the most of the benefits and a much smaller fraction of the risks and complications discussed. This has been proven in many studies that have examined this matter called “informed consent”. Understanding the risks and benefits of any treatment is an important part of our decision process and should be part of the patients’ decision process as well.

### Risks of Nonsurgical Treatments

Patients typically consider surgery higher risk than nonsurgical treatment and, in fact, the complications of surgery can be greater than those of nonsurgical treatment. But there are also risks associated with avoiding surgery. These may include but are not limited to the following:

- **Outcomes** Functional outcomes of nonsurgical treatments may be unsatisfactory when compared to the typical outcome that can be achieved with surgical treatment. This is often seen with the treatment of fractures, or advanced nerve compression syndromes such as carpal tunnel and cubital tunnel syndrome. The potential risks of nonsurgical treatment may include increased rates of arthritis, pain, stiffness, deformity, permanent numbness and weakness and overall functional impairment when compared to surgical treatment.
- **Medications** Risks to medication use may include adverse or allergic reactions for short-term use of medications such as non-steroidal anti-inflammatory (NSAID) medications. Long-term use of medications (longer than 3 months) may be associated with adverse effects on the liver or kidney. This is why we require that medications used over the long-term be refilled by your primary care physician. It would be their responsibility to make certain that other medications that you take do not interact with anything we provide and to monitor for side effects on the liver and kidney. Many medications can be taken indefinitely, if good and consistent monitoring is performed.
- Non-steroidal anti-inflammatory (NSAIDs) medications must be taken for extended periods of time to be effective. Many of these medications may not begin to work unless you take them for 2-3 weeks. During that time, patients may experience side effects such as gastric upset, heart burn, and other gastrointestinal reactions.
- The more important side effects of NSAIDs are listed below:
  - Some experts believe that all NSAIDs—except for aspirin—have the potential to increase the risk of heart attacks and strokes.
  - All NSAIDs have the potential to raise blood pressure.
  - Most NSAIDs have the potential to increase the risk of heartburn, ulcers, and gastrointestinal bleeding.
  - Taken over a long period of time, NSAIDs can damage the kidneys. Patients with kidney problems should avoid NSAIDs.
- Narcotic pain medications may be potentially addictive. Some patients may actually require such medications over the long-term, but the administration of those medications is best performed by primary care physicians or pain management physicians. Short-term use of narcotic pain medications is common in orthopedic practices and is generally handled by orthopedic surgeons.

## **Injections**

Patients often view cortisone injections with some skepticism. In fact, if cortisone (corticosteroid) injections are performed properly for the correct diagnosis, they may be safer than taking non-steroidal anti-inflammatory medications. Patient objections to cortisone injections usually include misconceptions including everything from the “worst pain ever experienced”, to “crumbling bones” to “brain cancer”. The pain associated with cortisone injections may depend on the amount of inflammation present and location of the injection but it is usually short lived. Patients who report higher pain levels with cortisone injections often report higher levels of pain and greater responses to all painful experiences.

## **Surgical Treatments**

Surgical treatments may also be associated with complications and adverse outcomes. As surgeons, we cannot guarantee a perfect result. We can only promise to do our best for patients and to work hard to get you the best result possible. Normal is not possible—we do not operate on normal joints. We can make a bad problem better and return patients to normal function in many cases but the likelihood of this depends upon the following factors:

- Your motivation to improve and recover
- The pre-operative severity of your problem
- The presence or absence of underlying joint disease (arthritis)
- The procedure performed
- Your job and life requirements
- Your age
- Your general physical condition

## **Complications of Surgery**

Every surgical procedure, simple or complex, routine or uncommon, can be associated with complications. Every surgeon of all experience levels at every institution has had complications from surgery. Those of us who treat a large volume of specific problems have certainly seen our own share of complications from surgery, but we also see the complications of others giving us a greater experience in treating more complex orthopedic problems. As orthopedic surgeons in practice, we develop an interest and comfort level with treating certain conditions allowing us to develop greater experience in our area of interest to better help our patients. The following is a general discussion of the potential complications of orthopedic surgery.

- **Nerve damage**

Nerve damage may be a result of fractures, soft tissue injuries, and age related changes. Damage to a nerve may also be a complication of surgery.

If the nerve is a “sensory nerve”, injury may result in numbness, tingling or burning. This may be temporary as in the case of retracting the nerve during the procedure or the manipulation of a fracture. The numbness, tingling or burning may be permanent if the nerve is cut (sometimes intentionally as part of a surgical exposure), stretched, or if it becomes trapped in bone that develops around a healing fracture or if the nerve becomes trapped in scar tissue during the healing process.

If the injured nerve is a “motor nerve”, there may be weakness of the muscles that are supplied by that nerve. Traction on the nerve may result in weakness that may be temporary or permanent. If the nerve is cut, weakness is permanent. Although the nerve may be fixable, it is not likely that full strength will be restored.

Some nerves have combined motor and sensory functions and an injury to such a nerve may result in a combination of the above problems.

- **Bleeding**

Any surgical procedure can be associated with some bleeding. In most procedures, the amount lost is insignificant. Other surgical procedures, however, can be associated with more significant amounts of blood loss that can sometimes require transfusion. Fractures of large bones and surgery around larger joint can result in injuries to arteries or veins resulting in bleeding. Transfusion may be required if the amount of blood lost causes changes in your heart rate or blood pressure or if you are at risk for other problems such as heart attack or stroke as a result of the blood loss.

- **Infection**

Infections can occur following surgery. Many of these infections are limited to the skin around the incision and can be treated with local wound care and oral antibiotics. A smaller number of these infections may be more severe and may require additional surgery to resolve the infection. Implanted hardware to treat fractures and metal joint replacements may need to be removed in the more severe cases. Infections that involve the bone and infections in joints or following joint replacements usually require long-term treatment with intravenous antibiotics.

Patients with joint replacements will always require antibiotics prior to having dental work or teeth cleaning. We also advise joint replacement patients to be treated with oral or IV antibiotics if they undergo colonoscopy, endoscopy, any urology procedures or if they have any other serious infections (pneumonia, urinary tract or kidney infection, skin infections, etc.).

Patients who are immunocompromised (diabetes, rheumatoid arthritis and related conditions, hepatitis, AIDS and HIV, among other problems) and those taking certain medications may be at increased risk for infection. This is why your complete medical history and a list of you medications are important to your orthopedic surgeon.

- **Fractures : Loss of Fixation**

Fractures, broken bones, chips, cracks are all the same. They are just different terms to describe damage to a bone. There are different degrees of damage that may occur to bones and the treatment of fractures depends on the degree of damage and which bone is broken (fractured).

When a bone breaks it may need to be “reduced” or set. This involves manipulation of the fracture (broken bone) in an effort to restore the bone to its prefracture position. Often the fractured bones can be held in place with a cast or splint while it heals. Other fractures may require surgery in order to restore the bone to an acceptable position and restore function. Loss of fixation occurs when a fracture is placed in a cast or repaired surgically with plates, screws, pins or rods. Fracture fixation may be lost in patients with soft or weak bones or severe fractures that result in extensive fragmentation of the bone and inherent instability of the fracture. Fracture fixation may also fail when patients do not comply with postoperative directions such as remaining non-weight bearing following repair of a fracture of the leg or ankle or the use of a splint or cast.

Loss of fixation may require additional surgery to restore the fracture to acceptable position.

- **Fractures: Nonunion or Delayed Union**

Most fractures heal in 6-12 weeks. Some fractures may take a longer time to heal. Certain fracture may not heal without surgery. Fractures that occur in certain bones may have difficulty healing due to the poor blood supply to those bones. Other fractures may not heal due to open wounds that may have occurred at the time of the fracture that damages the blood supply to the bone.

Some fractures must be immobilized in order to heal. Patients who do not comply with the orthopedic surgeons directions to wear a sling or care for their cast or splint increase their chances of having a fracture that will not heal or will not heal in the best possible position. This can result in a less than optimal outcome or the need for surgery.

Older patients and those who may have poor healing (diabetics) may have greater rates of poor or slow healing.

Smokers often heal more slowly than non smokers. In fact, there are higher rates of healing problems in smokers and surgery to repair a fracture nonunion will not be performed until smoking has been stopped for several months.

- **Fractures: Stiffness and Lost Motion**

Fractures treated in casts or splints or those treated with surgery may result in stiffness of the joint involved. This is due to scar tissue that develops in the joint as a result of the original injury, surgery or immobilization. Physical therapy can be an important way to recover that lost motion.

- **Blood Clots / Phlebitis**

When a blood clot forms in a vein, it may result in painful inflammation. This usually forms in the veins in the leg but can affect the veins in the arms. Clots in the superficial veins are called a superficial phlebitis. Clots in the deep veins of a muscle (often in the calf) result in a deep venous thrombosis (DVT). These deep vein clots are serious since a piece of the clot can dislodge and go to the lung blocking an artery (pulmonary embolus). A large pulmonary embolus can be fatal.

Blood clots can occur after prolonged inactivity, after any surgery on the leg or hip, or after a fracture treated with a leg cast.

Signs and symptoms of phlebitis include:

- Warmth, tenderness and redness in the affected area
- Redness and swelling
- Calf pain or pain behind the knee
- Swelling of the leg
- Chest pain, shortness of breath, persistent coughing
- After surgery on the leg, if you experience any of the above signs or symptoms, you should call our office to notify us. A test called an ultrasound will be performed to find the clot. If it is present, you may require blood thinners for up to 6 months.

- **Tendons: Failure of Repair**

Tendons are those structures that connect muscles to bones. When you want to move any joint, a muscle contracts and pulls on a tendon which is connected to a bone. This muscular contraction enables us to move all of our joints. As a result of trauma (traumatic rupture or cutting the tendon) or as a consequence of age-related changes, tendons may tear away from the bone or muscle and may fail to allow us to function normally. The rotator cuff is the set of 4 tendons that allow us to move our shoulder.

Many of the tendons may require repair since they do not heal themselves. Rotator cuff tears do not heal without surgery. Regardless of the tendon or the technique used, tendons require at least 6 weeks to heal. It may take another 6 or more weeks to recover close to normal function of the joint. Rotator cuff repair may take 6-12 months to reach maximum recovery.

Several things may result in the failure of an otherwise well done tendon repair.

- Since it takes 6 weeks for tendons to heal to bone or to other tendons, early active (normal) use of the repaired tendon stresses the repair before it is adequately healed and will result in a disruption of the tendon repair. Active motion means that you use the joint by contracting the muscles of the joint. It is different than passive or protected motion of the joint which may be instituted under the supervision of a physical therapist.
- Specifically, after a rotator cuff repair, patients are expected to wear an arm immobilizer for 6 weeks after repair. Physical therapy may be started within the first week after surgery, but the passive motion exercises started at that time

are designed to minimize stiffness without stressing the tendon repair. Patients actively using the arm before 6 weeks risk a repeat rupture of the tendon and a poor outcome.

- Tendon repairs around the elbow, hand, knee and ankle may be protected in special hinged braces. But they still take 6 weeks to heal. Normal function and strength may take an additional 6-12 weeks. The types of activities permitted will be determined based on your injury, quality of tissue and ease of repair. It also depends on your age and functional expectations.
- Certain factors that may affect the success of a tendon repair are beyond our control. These other factors include the following:
  - Patient age
  - Size of the tear
  - Quality of the tendon tissue
  - How far the tendon has retracted
  - How long the tear has been present

### • **Rates of Complications and Success**

The incidence of complications and success rates of treatment are often a part of a patient consultation. While these rates vary depending on the problem being discussed, one thing never changes. Rates of success and complications tell an individual patient nothing about how they will respond to treatment. For example, if the rate of blood clots in the leg after knee arthroscopy is 1%, most of us would say that is low risk. What this really means is that of 100 knee arthroscopies, one patient will develop a potentially serious blood clot in the leg. That's great if you are in the group of 99 and not so great if you are the one patient who got the clot. Importantly, before surgery, there is no way to predict if you are going to be in the group of 99 or the one unfortunate patient with a blood clot. Everyone needs to be aware of these risks so that we can protect the one person who does develop the problem.

Some studies report success rates for rotator cuff repairs of massive tears between 60-80%. If we look at this differently, what these numbers really tell us is that as many as 4 out of 10 repairs of a massive rotator cuff tear will retear within 1 year. That's great if you are in the group of 6.

These statistics tell us a great deal about large groups of patients, but predict nothing about individual patients.

### **Finally...**

This is meant to be a brief review of some of the complications that may be associated with treating your orthopedic condition. It is in no way intended to be a complete review of all of the risks or complications that may occur.

There is no such thing as a treatment without some risk. Our goal is to minimize risk and maximize benefit for our patients. While risks can be reduced, they can never be completely eliminated from patient care.

You can get more information about the complications online at [www.OrthoOnTheWeb.com](http://www.OrthoOnTheWeb.com) or at [www.Orthodoc.aaos.org/jtmazzara](http://www.Orthodoc.aaos.org/jtmazzara).