All surgery carries risks. This document has been compiled to educate patients on the risks/complications of realignment osteotomies in the lower extremity. At the Sanders Clinic we recognize these risks and take preemptive action to minimize their occurrence. **THE MOST IMPORTANT RISK FACTOR FOR POST OPERATIVE COMPLICATIONS IS ENTIRELY UNDER THE PATIENT'S CONTROL. THESE PROCEDURES CANNOT BE SUCESSFULLY PERFORMED ON THOSE WHO CONTINUE TO USE TOBACCO OF ANY FORM.**

1. **Nerve or Vessel injury.** These are uncommon complications. Avoidance of these problems is best accomplished by careful surgical technique. Immediate recognition and repair of an injured structure is indicated in such cases. Sometimes temporary interruptions of nerve function occurs secondary to swelling around the nerve. These resolve with time.
2. **Thrombosis/embolism.** These complications can occur with greater frequency and are best avoided. It has been shown that their occurrence is reduced when spinal anesthesia is used. Furthermore use of compression stockings, foot pumps and mechanical venous compression is our routine. Certain patients with greater risk will be placed on blood thinning medication. All patients must discontinue the use of tobacco and all patients must be walking no later than the day after their procedure.
3. **Thromboembolic Disease.** This is a category of possible conditions that can complicate Orthopaedic Surgery, most commonly in the lower extremities though can also affect the upper extremity. It involves a blood clot that occurs inside of a vein. That clot can break off and travel to the lungs. While rare, such a clot can be fatal. Much of Dr. Sanders' postoperative protocols, such as early motion, ambulation, TED (Thromboembolic deterrent) stockings, use of spinal anesthesia when available, minimal use of a tourniquet in surgery, and use of Aspirin or other blood thinning medications are done to reduce the incidence of this problem. However, no mechanism is entirely effective.

It is important for patients to understand the warning signs of Thromboembolic diseases. The most likely complaints or signs that the patient can notice include:

1. **Excessive swelling of the limb**. This does not include echymosis or black and blue marks which are common and expected to be seen under the skin.
2. **Soreness in the calf.**
3. **Rapid Heart Rate.**
4. **Rapid Breathing Rate.**

**(continued)**

5. **Shortness of breath.**
6. **Chest pain.**
7. **Fever.**

If you experience a rapid heart rate, rapid breathing, shortness of breath and chest pain—**call 911**. These symptoms are serious signs of a possible clot in your lungs and require immediate medical attention. If you experience any of these problems, please call the clinic, Michelle, or Dr. Sanders on his cell phone (713.907.6076) as soon as possible.

4. **Disturbed wound healing.** This problem is preemptively addressed by assuring that patients are on a high protein diet with adequate caloric intake. Placing Platelet Rich Plasma (PRP), which is spun down from the patient's own blood, into the wound has been shown to accelerate wound healing.

5. **Early or late infection.** This can occur in less than 1% of patients when antibiotics are given before surgery. The incidence is further reduced by preoperatively culturing the noses of patients looking for Staphylococcus bacteria. Those patients who harbor these bacteria can be treated with nasal antibiotic ointment and a different preoperative antibiotic. Furthermore, regular care of the surgical wound by showering with Hibiclens soap, and then placing an antibiotic ointment will keep the wound from being colonized.

______________
Patient Initials

6. **Delayed Bone healing**. Like all surgical problems this is best addressed by proper patient selection and proper surgical technique. Former smokers or those with large corrections greater than 13 millimeters or degrees require bone grafting from the hip for "opening wedge" osteotomy of the tibia. Bone graft is almost always needed for "opening wedge" osteotomy of the femur, except in cases were only a small correction is necessary. "Closing wedge" and rotational osteotomies do not require bone grafts. In all cases we use Platelet Rich Plasma (PRP), which appears to accelerate bone healing. In cases where a potential problem is identified, we will use biological products such as Bone Morphogenic Protein.

**(Continued)**

7. **Hematoma.** This is blood that accumulates in the wound and may require a return trip to the operating room for evacuation. We strive to prevent this problem by taking down the tourniquet to electrocoagulate the small bleeding vessels in all surgeries, use of Platelet Rich Plasma (PRP) to jump start the coagulation and healing process, and an adequate cold/compression dressing. This device is called the Cryo/Cuff® and is a mandatory part of the process.

8. **Minimal lengthening of the operated lower extremity.** This occurs in all opening wedge osteotomies. It is rarely problematic for the patient and in these cases, often returns the limb to the length it was before the arthritic process wore away the articular cartilage.

9. **Partial weight bearing for six weeks postoperatively and the need for range of motion exercises**. After surgery two-handed support with crutches is necessary for at least six weeks. Some patients require an extra week or two. All surgical procedures are associated with stiffness in the operated limb and attention must focused, from the day of surgery until recovery, on obtaining and maintaining full range of motion in the knee. This is much easier to obtain when begun in the Recovery Room rather than in the Physical Therapy Department following several weeks of immobilization.

______________
Patient Initials

10. **Over or under correction**. The correction of a deformity is a complex procedure. While not common, occasionally X-rays may show that the deformed limb has been either over corrected or under corrected. When this happens, its is best to correct the problem immediately before the bone has healed. The screws in the TOMOFIX plate are inserted such that they can be easily changed without much trouble beyond a second anesthetic. Every effort is taken to prevent this problem, including digital preoperative planning and intraoperative fluoroscopic control.

11. **Hardware sometimes needs to be removed**. In most cases in which the TOMOFIX hardware is installed, it doesn't bother the patients after the bone heals. In patients with very thin skin, it is sometimes prominent and patients opt to remove the offending metal plate that has all ready done its job. Removal is performed in the outpatient surgery section of the hospital, and one can return to most activities within a few days and sports after six to eight weeks.

**(Continued)**

12. **Medical Complications**. Surgery always carries risk of complications remote to the operated part. At the Sanders Clinic, we do not regularly do hip replacements on young people. Older people may have heart, circulatory, pulmonary, kidney, arterial, venous, and diabetic problems. Our osteotomy patients may need to be seen before surgery by an internal medicine doctor; undergo vascular tests read by a vascular surgeon /or radiologist, and frequently by a cardiologist as well. Spinal anesthesia reduces the incidence of medical complications, but despite our best efforts, they still occur.

I have read this document and have had my questions answered by Dr. Sanders and his staff. I agree to completely avoid any and all tobacco products from this day forward.

________________________
Patient signature

________________________
Date

Revised 06.01.10