

SPINAL DEFORMITY SURGERY

Purpose

This booklet is designed to be an information source for you concerning your spinal deformity surgery. It is not meant to replace any personal conversations that you might wish to have with Dr. Kitchel, the nursing staff, his office, or other members of the healthcare team. My hope in preparing this booklet for you is that it will answer some of your questions and serve as a stimulus for you to ask appropriate questions about the surgery.

General Overview

Spinal deformity surgery has been performed safely in this country for the last 30 years. It is indicated for the treatment of scoliosis and kyphosis which have reached the point that they are likely to be progressive or cause cosmetic deformity which is unacceptable to the patient.

Spinal deformity surgery was first performed in this country in the early 1960's by Drs. John Moe and Paul Harrington. They are the pioneers of instrumentation and partial correction of spinal deformity with associated fusion. Since that time, a number of new rod systems have been developed and techniques have changed; however, the basic principle of the surgery continues to be partial correction of the deformity with solid bony fusion to prevent any further progression or recurrence of the deformity.

There are a number of alternatives in spine deformity surgery. These may involve anterior procedures to allow release and better correction of the spine as well as posterior procedures for instrumentation and fusion. Dr. Kitchel will discuss these with you individually and tailor your surgery to what is best indicated for correction of your deformity.

Indications for Surgery

The indication for spinal deformity surgery is deformity which has reached the point where it is likely to become progressive through adult life, causing cosmetic deformity which is unacceptable to the patient, or decreasing the available space in the chest cavity for proper functioning of the heart and lungs. This will generally be diagnosed by a series of x-rays which show progression of the deformity. Dr. Kitchel should review each of these films with you and show you what has been going on with your deformity and be sure that you understand the nature of it. In many cases, some attempt at conservative treatment has been accomplished. In both scoliosis and kyphosis this may include an active exercise program, bracing, or possibly the use of an electronic muscle stimulator. There are exceptions to this when the deformity is of such a degree at initial presentation that it cannot be treated with non-operative means.

In general, spinal deformity surgery is not specifically indicated for control of pain. It is more directed at the correction of the deformity and prevention of any progression.

Preparation for Surgery

There are a number of things that will allow you to have a better result from your surgery by preplanning them before the surgery is done. The most important of these is that you go into the surgery with a complete understanding of what is to be done and a positive attitude that you are taking the right step. This is best accomplished by being sure that all of your questions are being answered. Please do not hesitate to contact Dr. Kitchel or his nurse with any questions which you think may be too foolish or too trivial to bother them with. They truly want you to understand the procedure at length and to have all your questions answered.

You should be sure that Dr. Kitchel is aware of any health problems which you may have or medications that you are taking before surgery. He may want to stop some of the medications because of the possibility that they can increase your bleeding at the time of surgery. He may also ask you to see your family doctor or internist so that they can pronounce you fit and a good candidate to undergo the surgery. It is also possible that other medications may interact with the anesthesia and the anesthesiologist may ask you to modify how you are taking them.

If you are a smoker, it is advisable that you try to stop or taper off your smoking before the surgery. Inhaling smoke irritates the breathing tubes and may lead to respiratory problems during and after surgery. In addition, there is an increased rate of infection and postoperative wound problems in smokers.

It is desirable that your body be in the best possible condition for surgery. Your heart, lungs, and spine need to be as strong as possible. It is possible that Dr. Kitchel may recommend a program of aerobic strengthening or stretching exercises before surgery. You may be asked to see a physical therapist before surgery to show you a conditioning exercise program.

Spinal deformity surgery generally does require blood replacement. Because of this, Dr. Kitchel will discuss with you specifically the use of autologous blood and donating your own blood for replacement at the time of surgery. This is preferable to avoid the transmission of blood borne diseases such as hepatitis or AIDS. If you are asked to store your own blood, you will be given nutritional supplements such as iron and calcium to maintain your blood balance. In general, the blood may be given in your home community and then transferred to Eugene at the time of surgery. If you have questions regarding this, be sure and communicate them to Dr. Kitchel or the blood bank.

Surgery

For spinal deformity surgery you are admitted to the hospital the morning of surgery. It is no longer necessary for you to come into the hospital the night before. This allows containment of costs at the time of surgery and also allows you to have a good nights' rest at home before you enter the hospital. It is important that you do not eat or drink anything after midnight the night before surgery. This will allow the anesthesia to be safely administered.

Once you have been admitted to the hospital, you will be taken to a room and prepared for surgery. This will include instruction about the surgery, cleansing of your body, as well as instruction about the postoperative period. In most instances, you will have met with the anesthesiologist before your admission to the hospital and have decided on the type of anesthesia. Dr. Kitchel has no preference as to the type of anesthesia and this should be worked out between you and the anesthesiologist so that you are both comfortable that it is being administered in the safest possible fashion.

About 1/2 hour before the surgery is actually to begin, you will be taken up to the operating room and put into a holding area. The anesthesiologist will come and visit you and start your IV at that time. You will then be taken to the operating room and anesthesia will be induced. Once the anesthetic has been successfully administered, you will be positioned for the surgery and surgery will be carried out.

After surgery you will wake up in the recovery room where your vital signs will be monitored and your immediate postoperative condition will be carefully watched. Most people stay in the recovery room between one and three hours after surgery. Once the anesthesiologist feels that you are doing well, you will be returned to your room in the hospital. The evening of surgery, it is normal for the area of your wounds to be very sore. The nursing staff will be checking to make sure that your vital signs are stable and that there is no problem with

either the wound or nerve function. Dr. Kitchel will be by to see you the evening of surgery to discuss how the surgery went and make sure that things are going as expected. In general, the evening after surgery, you will only be allowed to drink small amounts of liquid. This is to insure that there is no nausea. Vomiting and wretching at the time of surgery or that evening can be quite uncomfortable. In general, you will be allowed to begin eating the following day.

Most patients are up and out of bed on the second day following spinal deformity surgery. It is important to get you out of bed early to avoid the complication of blood clots forming in the legs or possible breathing problems associated with remaining in bed. The physical therapist will come in and help you make sure that it is an easy transition from lying to walking. Dr. Kitchel has prescribed a specified program of walking and exercises for the first few days after surgery. The physical therapist will take you through this gently and utilize their expertise. Depending upon the exact nature of your surgery, a brace may or may not be required in the postoperative period.

Your intravenous catheter will remain in place for two days after surgery. This is to give you adequate fluids as well as 48 hours of antibiotics in an attempt to lessen any chance of infection. You will also be taking pain medication through your IV for the first day or two. After that, the pain medication will be given by mouth.

The dressing will be changed on the second postoperative day and a small drain tube which is left in the incision will be removed at that time. Once the drain tube has been removed you are free to shower and the nurses will change the dressing each day. Should you be wearing a brace, it will only be necessary to wear that when you are out of bed. You will be allowed to shower out of the brace.

Most patients go home somewhere from 5-7 days after surgery. Dr. Kitchel will see you in the hospital that morning and then discuss with you the medications to take home as well as a prescribed program of activities. In general, you should do no bending, heavy lifting, or stooping at home until you are seen back in the office by Dr. Kitchel. You should take your medications as he prescribes. Be sure Dr. Kitchel answers all of your questions before you go home from the hospital that morning.

Generally, Dr. Kitchel will see you back in the office somewhere between one and two weeks after surgery to check the status of your wound and remove any sutures or staples. If, during that time, you have any questions or problems, you should call him at the office immediately.

The Operation

Spinal deformity surgery aims to reduce the deformity and associated symptoms by partially correcting it and then fusing your bones stable in that position. This is usually accomplished by intraoperative correction of the deformity by a rod, screw, and hook device. A second incision is generally made over the iliac crest so that bone graft strips can be removed to help make the area solid.

The specific incisions that will be made in your case depend on the exact type of deformity. You should ask Dr. Kitchel questions about these at the time of your preoperative visit. In general, there is a long longitudinal skin incision over the entire length of your spinal deformity. If anterior surgery is anticipated for your condition, then a second incision is required, usually in the flank or along the ribs.

The surgery itself will consist of instrumenting the spine to partially correct it and then the fusion portion which requires placement of the bone graft. During the entire time of this procedure the neurologic function of your spinal

cord and nerves will be monitored with an electrical device which specifically tracks the transmission of nerve impulses. This is called somatosensory evoked potentials and allows the surgery to be accomplished in a safe manner, decreasing the likelihood of any neurologic complications.

Once the surgery has been done, x-rays are taken before the wounds are closed to assure correct positioning. Once this has been done, the wound is washed out and sewn shut in layers. Drains are left deep within both wounds. Once the wounds have been closed then dressings are applied. The patient is then rolled over on to the back, awakened and taken to the recovery room.

Risks and Complications

Your decision to undergo spinal deformity surgery should not be made lightly. You need to understand that there are certain risks and complications which accompany any surgical procedure. Thankfully, complications in spinal deformity surgery are rare.

The most common complication is a wound infection. This occurs in approximately 1-3% of all spine surgery. Dr. Kitchel will do everything he can to avoid this complication. Your body will be sterilely scrubbed and the operation will be performed in a sterile room. Gloves, gowns, and masks will be worn by all personnel in the room. You will be given antibiotics for 48 hours around the time of surgery. Despite all these precautions, infection does occasionally occur. Infection is generally not a devastating complication, but may require that the patient come back into the hospital for further antibiotics and possibly to reopen the wound. If you have any personal history of susceptibility to infections, this should be communicated to Dr. Kitchel before surgery.

The complication of blood loss can also be significant in spinal deformity surgery. The general blood loss ranges from about a cup to two pints, depending

on the specifics of the procedure. This is why autologous blood is donated and will be used for replacement at the time of surgery. A device will also be used at the time of surgery to salvage your own blood and give it back to you.

Nerve damage or spinal cord damage is an extremely rare complication of spinal deformity surgery. This is why spinal cord monitoring is used continuously throughout the procedure. This occurs in approximately 1/10,000 to 1/100,000 cases. If there is damage to your nerve or spinal cord, it could result in numbness, tingling, or weakness in the legs. If your spinal cord is damaged, it is conceivable that you could be paralyzed.

There are complications related directly to the device inserted to correct and stabilize the spine. With time, the rods may dislodge or break. If this were to occur, Dr. Kitchel would recommend either re-insertion of the rods or their removal. In some slender individuals, the rods may be prominent or tenderness may develop over their ends. The rods could then be removed electively when the fusion is solid at about a year after surgery.

The final risk is that the fusion may not become solid. This is called non-union or pseudarthrosis. This occurs in less than 10% of cases. Should this occur, Dr. Kitchel would recommend repeat bone grafting of that area to obtain solid bony fusion.

The risks of anesthesia should be covered in your conversation with the anesthesiologist. It is up to you to be sure that you are comfortable with the form of anesthesia which you have chosen. Dr. Kitchel has no specific preference for whether you go all the way to sleep or have a spinal block.

Expectations After Spinal Deformity Surgery

The desired result of your spinal deformity surgery is to reduce the deformity and prevent it from recurring. The earliest result to be expected is in the x-rays which will be obtained when you return to the office. X-rays taken can be measured and compared to the x-rays which were done before surgery. Dr. Kitchel will be happy to go over those with you.

It is normal to have a good deal of ongoing pain in both the region of the spine where the surgery was accomplished as well as the pelvis where the bone graft was harvested. This pain may wax and wane as well as change with the positioning of your body. Dr. Kitchel will provide you with pain medication to take when you return home. It will also be necessary to modify your activities in an attempt to decrease the pain. When you first go home from the hospital, the best form of therapy is simply daily activities and walking. You should not engage in any heavy lifting, bending, or stooping. You will find that frequent changes in your position will help your back to be more comfortable. Once Dr. Kitchel feels that your wound is adequately healed, he will start to increase your activities. The first of these will be a walking program. Once there has been further wound healing, you will be encouraged to increase your activities and begin on a supervised course of physical therapy exercises to strengthen and recondition your back. During this initial phase at home, Dr. Kitchel will be seeing you in the office about every two weeks to re-x-ray your back and check the progress of your wound.

Again, if you have been told a brace is necessary for your postoperative period, you should be wearing it whenever you get out of bed. This does include even short trips to the bathroom or walking at night. The only exception is for showering. The brace is usually worn for 12 weeks after surgery.

When You Go Home

Dr. Kitchel will generally tell you the evening before he plans to dismiss you the next morning. The hospital prefers that you go home in the morning before 11:00 a.m. That morning, Dr. Kitchel will come in and visit you to answer any questions as well as arrange for your take-home medications and an appointment to see him back in the office.

When you get home, it is important to maintain moderate physical activities. You should not overdo it, but by the same token you should not spend all your time in bed or sitting.

You will have medications to take home as they are ordered by Dr. Kitchel. It is important that you take all of this on the schedule which he has provided you. His nurse will call you within a day or two of your discharge from the hospital to make sure everything is going okay.

Unless Dr. Kitchel has specifically told you otherwise, it is all right to shower. Simply dry the wound well after showering. It is not recommended that the wound be soaked in water such as a bath or hot tub.