Total Joint Replacement

John V Horberg, MD
Fellowship Trained Joint Replacement Specialist

PREMIER
Bone & Joint Centers
WORTHY OF WYOMING

Welcome

To me, mobility is a precious gift that we often take for granted until injury, arthritis or other joint diseases start to take it from us. As an Orthopaedic surgeon and joint reconstruction specialist, I am passionate about helping my patients get their mobility back and to live more active, pain-free lives. Although I am a surgeon, there are many things shy of surgery we can do to help improve your symptoms. We will work together to help manage your pain and improve your quality of life however we can.

Once medications, exercise, activity modification and assistive devices can no longer provide you with meaningful relief, a total joint replacement is an outstanding option to improve your pain and function. Although joint replacement was popularized in the United States in the 1970s, amazing innovations in techniques and technology have made total joint replacements some of the most successful operations in all of medicine. I am committed giving my patients the highest quality care using the most cutting edge techniques available.

Choosing your surgeon is a challenging and important decision. We live in a time of incredible advancement and increasing specialization across medicine. While many many orthopaedic surgeons perform joint replacement as a part of their practice, there are sub-specialists with extra training in the most cutting edge techniques. I am a fellowship trained joint replacement specialist and my practice focuses entirely on joint replacement. I do a very high volume of primary (first time) joint replacements, manage complex deformities and also perform revision surgery to correct painful, worn out, infected or otherwise failed joint replacements performed by other surgeons.

Preparing yourself to undergo a Total Joint Replacement can feel overwhelming, it is a major life decision. Before we go any further, I want you to understand that you are not in this alone. Joint replacement is a team effort that involves myself as your surgeon, my team in the office and operating room, hospital staff, your primary care doctor and your family and friends all working together to make this a positive experience for you.

Sincerely,

John V Horberg, MD

FIND MORE INFORMATION ONLINE:

Website: ***https://www.horbergtotaljoints.com***

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Introduction

What is Total Joint Replacement?

Total Joint Replacement (TJR) is a surgery designed to treat arthritis and other degenerative conditions of major joints. These conditions can make the joint stiff and painful. A TJR replaces the worn out bone and cartilage in the joint with metal, plastic or ceramic. These operations have revolutionized the way in which we manage degenerative joint diseases. Advances in the materials used to make replacement joints, their design and the technology used to implant them have made joint replacement one of the most successful operations in all of medicine. These advances have allowed us to reliably provide pain relief, improved motion and improved stability with consistently long implant lifespan.

What Joints Can Be Replaced?

Although there are replacement surgeries for most major joints in the body, the knee, hip and shoulder are the most common. These joints also have the longest track record and best outcomes in long term studies. Dr. Horberg has focused his practice on replacing the knee, hip and shoulder and this pamphlet will provide details about these operations.

Who is a Candidate for Joint Replacement?

Indications:

Patients with knees, hips and shoulders that have worn out can find relief with TJR. The primary goal is pain relief with a secondary goal of improving range of motion.

Things to Try Before Surgery:

A joint replacement is a big operation and should not be undertaken unless less invasive treatments have failed. Before being considered a candidate for surgery, patients should try conservative options including:

- Activity Modification, Rest, Ice/Heat and Elevation
- Anti-Arthritis Supplements & Nutraceuticals
- Physical Therapy or Home Exercise Program
- Non-Steroidal Anti-Inflammatory Drugs (NSAIDs)
- Steroid and/or Viscosupplementation Injections
- Topical analgesics

Exclusions:

In order to be a candidate for TJR, a patient must be healthy enough to undergo surgery. Certain medical conditions must be controlled before surgery to minimize the risk of complications:

Weight: BMI must be **UNDER 40**

- BMI over 40 poses a very high risk of infection

Blood Sugar: Diabetics must have a Hb A1c **UNDER 8.0**

- Hb A1c over 8.0 poses a very high risk of infection

Nicotine: if you smoke or use nicotine products, you are **NOT** a candidate until you quit

- Nicotine increases the risk of infection, poor wound healing and cardiac complications after joint replacement surgery

Narcotics: patients must be off of all narcotics for **6 weeks** before surgery

These exclusions are **non-negotiable**. We will work with you to help you improve your baseline health so that you can become a candidate for TJR.

Pre-Operative Optimization

Pre-Operative Assessment

Joint replacement is an elective procedure. In order to get the best possible outcome and to minimize complications, it is important that your health is optimized before surgery.

Medical Clearance: All patients undergoing TJR are required to see their primary care doctor for evaluation of their overall health and stabilization of any existing medical problems prior to surgery.

Specialty Clearance: Some medical conditions are known to place patients at higher risk for surgery. Some patients will be required to see a specialist such as a cardiologist for clearance before surgery.

MRSA: Methicillin Resistant Staphylococcus Aureus (MRSA) is a skin bacteria that has been shown to increase risk of infection. We screen all patients for MRSA and treat it with supplemental antibiotics before, during and after surgery to limit the risk.

Poor Nutrition: As a part of the pre-operative medical clearance, blood tests to assess your nutrition level will be taken. Poor nutrition can slow healing and will need to be addressed before surgery.

Mental Health: Studies have shown that patients with anxiety or depression do not do as well after joint replacement. These conditions should be treated before surgery.

Narcotic Usage: Patients who take narcotics for pain prior to surgery have more pain and complications after surgery. Patients should wean off all narcotics six weeks before surgery.

Pre-Operative Fitness

The more fit you are before surgery, the faster you will recover and get back to doing what you love to do afterwards. We recommend walking daily in the weeks leading up to surgery. We will also provide you with some basic home exercises to start before surgery that will help you recover more quickly after.

Pre-Operative Nutrition

Good nutrition is very important for wound healing after surgery. We provide nutrition education and a pre-operative diet plan for those undergoing joint replacement surgery to maximize healing potential. Continuing this diet after surgery will help you maintain a fit and healthy lifestyle.

Pre-Operative Education

Choosing to undergo a Total Joint Replacement is a major life decision. In order to make sure you have the best possible outcome we will work together as a team. Dr. Horberg's team is always available to answer questions, just call the office and ask for "Team Horberg". There are online resources available through Dr. Horberg's YouTube channel including therapy instructions, FAQs and our Joint Replacement "Boot Camp." We also have printed educational materials you can reference including the joint replacement handbook. Dr. Horberg is also happy to see you in person in the office if you have additional questions or concerns.

Total Hip Replacement

The hip joint is a ball and socket joint comprised of the head of the femur (ball) and the acetabulum (socket) which is found on the pelvis. When the hip joint wears out, it becomes painful and stiff which can make it difficult to do daily activities such as walking, sitting and tying your shoes.

During a hip replacement, the head of the femur is removed and a metal stem is inserted into the hollow part of the bone. Likewise, a reamer is used to removed diseased bone from the acetabulum and a metal shell is impacted in place. Finally, a ball made of either metal or ceramic is placed atop the stem and a polyethylene liner is placed in the shell to make a smoothly functioning total hip replacement.

For mor information: https://orthoinfo.aaos.org/en/treatment/total-hip-replacement/

Total Knee Replacement

The knee joint is a complex hinge type joint comprised of the distal end of the femur, the proximal end of the tibia and the patella (knee cap). When the knee joint wears out it can become stiff and painful making it difficult to walk, bend over, go up and down stairs and to get up and down from a chair.

During a total knee replacement, the top of the tibia and the bottom of the femur as well as any diseased meniscus remaining is removed. The end of the femur is replaced with a smooth metal cap and the top of the tibia is replaced with a metal tray. The kneecap is often spared but can be replaced as well in severe cases. Finally, a polyethylene liner is placed in the tibial tray to form a smoothly functioning total knee replacement.

For mor information: https://orthoinfo.aaos.org/en/treatment/total-knee-replacement/

Total Shoulder Replacement

The shoulder joint is a ball and socket joint with shallow socket resembling a golf ball on a tee. The shoulder is formed by the head of the humerus (ball) and the glenoid portion of the scapula (socket). When the shoulder joint wears out, it can become weak, stiff and painful making it difficult to use the arm for daily activities including feeding, bathing and dressing oneself.

During a shoulder replacement, the head of the humerus is removed and a stem is inserted into the hollow portion of the humerus. Likewise, the diseased portion of the glenoid socket is reamed away and a metal baseplate is impacted in place. Finally a ball and socket made of metal and polyethylene are placed to form a smoothly functioning joint. In the shoulder, sometimes the rotator cuff muscles are no longer functioning. Because of this, some patients get a “reverse total shoulder” in which the ball is placed on the socket side of the shoulder and the socket is placed on the ball side. This allows other muscles to make up for weak or damaged rotator cuff muscles.

For mor information: https://orthoinfo.aaos.org/en/treatment/shoulder-joint-replacement/

The Cutting Edge

“Minimally Invasive Surgery”

In the late 1990’s and early 2000’s, the term “Minimally Invasive Surgery” (MIS) was used to describe the use of a substantially shorter incision for joint replacement. Unfortunately, these MIS techniques led to **increased complications** after surgery. This included slower recovery time, poor implant positioning, implant loosening, fractures and longer surgery times. This is likely because some surgeons used an incision too small to see and work safely.

Dr. Horberg makes every effort to limit the size of the incision to only what he needs to do the surgery **safely** and **effectively**. The term minimally invasive has been inappropriately used as a marketing tool to attract patients. Dr. Horberg believes that performing surgery **carefully** and **precisely** in a way that does not damage soft tissues and limits bleeding is much more important to a speedy recovery than the length of the incision.

In truth, there is nothing minimally invasive about a surgery that replaces a large joint. We measure the success of a joint replacement by the quality of the outcome and avoidance of complications rather than by the length of the scar. Having said this, the length of the incision needed to replace a joint has decreased over the years and the techniques we use to close the wound and heal the scar have improved dramatically.

Surgical Approaches

Like most things in life, total joint replacement can be performed in a variety of different ways. Which surgical approach to use is an area of intense debate amongst surgeons, especially as it pertains to the hip. While most

surgeons use subtle variations of the same approach for knees and shoulders, there are at least four widely used options for hip replacement.

Total Knees: Dr. Horberg, like most joint replacement surgeons uses a midline approach centered over the knee cap.

Total Shoulder: Dr. Horberg, like most surgeons, uses an approach through the front of the shoulder between the deltoid and pectoralis muscles.

Total Hip: Dr. Horberg uses the **DIRECT ANTERIOR** approach for nearly all of his hip replacement surgery including in complicated cases. Unlike other approaches, the direct anterior approach is **muscle sparing** and has been shown to have **less pain**, **faster recovery** and a **LOWER RISK** of complications such as dislocation.

Computer Navigated & Robotic Assisted Surgery

Computer navigated surgery has been around for many years, but the technology has dramatically improved in recent years. Some of this newer technology can be used to improve the quality of a joint replacement in selected patients. Dr. Horberg uses intraoperative X-Ray guidance, computer navigation as well as robotic technology such the ROSA system to aid in precise positioning of components during surgery.

The Importance of High Surgical Volume

Many studies have shown that surgeons and hospitals that do more joint replacements have better outcomes. Furthermore, studies have shown that **surgeons who specialize in joint replacement** have better outcomes than generalists who perform the same procedure. Although there is no "magic number" after which outcomes improve, we perform hundreds of primary and revision total joints every year. Dr. Horberg is a **fellowship trained joint replacement specialist**. In fact, Dr. Horberg has trained residents and fellows to perform joint replacement surgery and travels around the country **teaching other surgeons** as well.

Improving Recovery After Total Joint Replacement

Minimizing Blood Loss

We place a great emphasis on limiting blood loss during surgery. In the past, joint replacement surgery often entailed a great deal of blood loss, so much so that blood transfusions were routine. Fortunately, improvements in our surgical techniques and the use of a medication called tranexamic acid (TXA) which is given during surgery, blood loss during TJA is now much lower. TXA works by temporarily preventing your body from breaking down blood clots which reduces bleeding during surgery. Studies have shown that the use of TXA not only limits blood loss but also decreases complications and infections.

Minimizing Inflammation

Much of the discomfort experienced after surgery is caused by inflammation. We use anti-inflammatory medications before and after surgery to not only help with pain and swelling but also with nausea. These medications also reduce the need for narcotic medications.

Decadron: (a steroid) is given through an IV on the day of surgery. Studies have shown that Decadron greatly decreases pain after surgery as well as nausea.

Celebrex/Meloxicam: (NSAIDs) these medications are taken by mouth after surgery. They help with pain and inflammation.

Anesthesia & Pain Control

The way we manage pain and anesthesia has improved dramatically over the years. We work closely with the anesthesiologist who is responsible for making patients comfortable before, during and after surgery. It is important to understand that experiencing some pain after surgery is completely normal and expected. However, we work hard to minimize this.

Multimodal Pain Control: Extensive study in recent years have taught us that limiting pain is best achieved by using multiple medications that act in different ways.

- Spinal Anesthesia- many studies have shown that spinal anesthesia results in less pain, less bleeding, less nausea and less confusion as well as faster recovery and mobilization after surgery than general anesthesia.
- Nerve Blocks- temporarily numb the nerves around the surgery site.
- Local Injections- we use a special cocktail containing numbing medicine and anti-inflammatories to inject into the deep tissues surrounding the joint during surgery.
- Ice- multiple studies have shown the regular use of ice in the first several days after surgery dramatically decreases incisional pain.
- Anti-Inflammatories- oral and IV anti-inflammatories decreases swelling and pain and are given before and after surgery.
- Tylenol- oral Tylenol acts directly on pain receptors in the brain and spinal cord to help prevent pain.
- Narcotics- we work very hard to limit the need for narcotics after surgery and they are typically only needed for occasional breakthrough pain.

Because of these advancements, nearly all patients go home on the day of surgery or the day after. This has led to less narcotic use, fewer falls and lower complication rates.

Preventing Nausea

In the past, one of the most uncomfortable and debilitating parts of recovery from surgery was nausea and vomiting. Fortunately, a major shift in how we manage anesthesia has made nausea and vomiting after surgery quite rare. Decadron, a steroid given before and after surgery substantially limits nausea experienced after surgery. The use of spinal anesthesia can also limit the amount of noxious anesthetic medication needed during surgery. Finally, limiting narcotic use has dramatically decreased post-surgical nausea as well.

Preventing Blood Clots

Blood clots are a potential risk of any major surgery, including THR, and can be life threatening. In the past, we used high doses of strong blood thinners to prevent this. Unfortunate side effects of these medications included bruising, bleeding, hematoma formation and an increased risk of infection. Fortunately, many studies in recent years have shown that, in most patients, Aspirin is just as effective in preventing blood clots with fewer complications. We assess each patient's individual risk of blood clot and select the safest medication with the fewest side effects for them. In most patients, this is Aspirin twice a day.

Preventing Infection

Infection is a very rare but serious complication following TJR and can require revision surgery to manage. A great deal of research has been done on how to prevent infection.

Sterile Technique: we rigorously adhere to sterile techniques during surgery and wear special "space suits" to ensure the surgical field is sterile throughout surgery.

Surgical Antiseptics: before surgery we ask patients to bathe with antiseptic soaps. We then use special antiseptic scrubs in the operating room to clean the skin further. We also use antiseptic soaks and rinses during surgery.

Antibiotics: Patients get IV antibiotics before and after surgery to prevent infection. Some patients with certain risk factors may also take oral medications for several days after surgery.

Patient Optimization: We now know that a patient's health is vitally important to prevent infection. We work with patients before surgery to ensure they are healthy enough for surgery.

Long Term Follow Up

Undergoing joint replacement surgery is the beginning of a **lifelong partnership** between a patient and Dr. Horberg. Even after you've recovered from surgery and are back to doing the things you love, it is important to periodically check in. We will check X-Rays to ensure your prosthetic joint is in a good position and functioning well. Although modern joint replacements are typically expected to last you the rest of your life, they can wear out. Catching problems early will allow us to address them before they become big problems.

Complications

Advancements in surgical techniques, instruments, implants and perioperative medical management have dramatically decreased the rate of complication after joint replacement surgery. However, although rare, complications can occur.

Medical Complications: Medical complications including but not limited to blood clot, pulmonary embolus, heart problems, breathing problems or stroke can happen after undergoing any surgery. These complications can be life threatening.

Infection: Infection of a total joint is a rare but very serious complication and can require surgery. We work very hard to prevent this as discussed above.

Fracture: Fractures are also rare but can happen where the implants meet the bone. Some fractures occur during surgery and can be easily fixed at that time. Some fractures that occur after surgery may need an additional operation to repair.

Implant Loosening: Modern implants have an excellent track record and tend to adhere to the bone without difficulty. Should an implant come loose, further surgery is needed to repair this.

Bleeding: All surgery involves blood loss but this is typically limited and does not require transfusion. Injury to arteries and veins is possible but very rare.

Damage to Nearby Structures: Nerves that run through the surgery site can be injured. This can cause numbness or weakness of the extremity below the incision. These injuries are uncommon and typically recover.

Leg Length Discrepancy: It is normal to have limbs of different lengths. It is common to feel as though one leg is longer than the other after surgery but this feeling typically goes away with therapy and recovery. It is very rare for leg length discrepancy to cause symptoms.

Dislocation: Dislocation is an uncommon complication after total joint replacement. If it does happen, it can usually be managed without surgery but can become recurrent and require surgery to correct.

Dissatisfaction: Although joint replacement surgery is usually very successful and predictable, some patients are not completely satisfied with their outcomes.