

1: Different Types of Hip Replacement Implants, Materials & Manufacturers

Advanced Concepts in Total Hip Replacement: morning session; Advanced Concepts in Total Knee Replacement: afternoon session; A panel of recognised European experts with an in-depth experience in total hip and knee replacement will share their knowledge of key issues with a focus on day-to-day practice in both primary and revision surgery.

Contact Us Fracture of the Hip Fundamentals A hip fracture occurs when there is a break in the hipbone, usually in the upper part of the femur or the pelvic bone. Hip fractures are also a concern for women who have gone through menopause. Approximately one out of every seven women will experience a hip fracture. A hip fracture may also lead to hip replacement surgery when an artificial prosthesis is used to replace the broken hipbone. Most people who have had a hip fracture do not regain the level of independence they had before the injury. And, approximately half of those who have had a hip fracture require some kind of assisting device, such as a walker, to ease movement after recovery. What causes hip fractures? Hip fractures are typically caused by a fall. They are considered an orthopaedic emergency and require immediate attention and emergency treatment. For people who suffer from osteoporosis, since their bones are less dense and more brittle and prone to injury, fractures can even be caused by simple weight-bearing activities. Although some fractures are minor and cause only pain, other fractures can be more severe. It is important to alert your physician if you experience any of the following hip conditions: What are the benefits of treatment for hip fractures? Since hip fractures are considered an orthopaedic emergency, a benefit of treatment is relief of pain that results from the injury. Patients applying initial treatment for a hip fracture can control the movement of the painful limb. Applying ice to the injured area can also reduce swelling. Based on your general health and current medications, your doctor will plan the best form of treatment for you. Hip fractures most commonly require emergency surgery by an orthopaedic surgeon to restore bones to their original positions. During surgery, a surgeon may use metal devices to stabilize the bone and hold it in place. Metal rods and bone grafts may also be needed. Total hip replacements are sometimes performed for hip fractures if pain is severe enough to restrict daily activity, pain is not relieved by anti-inflammatory medicine for arthritis, and the patient has advanced arthritis or significant stiffness of the hip. Based on your medical condition, your physician will determine if total replacement is the best treatment option for your hip condition. Total hip replacement may offer relief for patients who suffer pain and the loss of motion in the hip. What are the risks for hip fractures? Age is a significant risk for hip fractures. Other risks may include the following: For individuals with osteoporosis, their bones are so brittle that a fracture may occur simply from weight-bearing activity. Patients who are underweight, such as people with anorexia nervosa, usually have bones that are less dense, which makes repair and recovery from a hip fracture much more difficult. These problems may include: In addition, surgical procedures may result in infection, injury to nerves and blood vessels, weakness and stiffness of the joint, pain, or the need for additional surgeries. Especially among the elderly, a hip fracture may represent a great loss of mobility. And, only about one in three people who have a hip fracture in later life regain enough function to return to the level of independence and mobility they had prior to injury. It is also important to note that for patients who require a total hip replacement the average life expectancy for an artificial hip joint prosthesis is approximately years, after which hip revision surgery may become necessary. What is the rehabilitation for hip fracture surgery? If patients require surgery, a physical therapist will meet with patients shortly after their procedure to start exercising the hip joint, primarily with gentle movements and then with crutches or a walker. In the event of total hip replacement, hip precautions and the prevention of hip dislocation will be emphasized in physical therapy so patients can learn to live most effectively with their new hip. How can I manage at home during recovery from the procedure? Depending on their treatment plan, patients will receive specific instructions from their physician and physical therapist as to how they can manage home recovery for their hip condition. Prevention is important for avoiding future hip fractures. Seniors should keep their homes well-lit and free from hazards that may cause a fall. In addition, how well a person recovers from a hip fracture is dependent on how healthy they are prior to injury. Regular exercise and

a well-balanced diet are important to avoid additional problems associated with a hip fracture.

2: Total Hip Replacement: Exercises for an Earlier Return to Normal Gait | MedBridge Blog

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By Grace McClure April 25, Ultimately, the hip replacement implant you end up with is selected by your surgeon depending on fit, your arthritic damage, activity level, weight, age, and other lifestyle factors. In saying this, like most things in life, the more you know, the better you can do. Knowing about the different manufacturers, styles and materials will help you work with your surgeon to select the best implant for you beforehand. Since each implant is very different, surgeons tend to work with only a couple of styles and brands. The number one thing when zeroing-in on the best hip replacement prosthesis: This way, you can join the conversation when picking the implant that best matches your lifestyle, activity level, metal allergy or other requirements you may have. Allows for normal activities and motion. Lasts the expected years or more. Has a good track record of use in joint replacement recipients this should be years minimum. Meets your condition, needs, and any additional requirements e. Your surgeon will ask about lifestyle, allergies and so forth. A very familiar brand and style to your chosen surgeon. Thinking of having a hip replacement? Get matched to a top surgeon in your area who can work with you to choose the best implant. What is Involved in a Standard Hip Replacement? First, the hip is dislocated. The socket is then resurfaced, removing the damaged bone and cartilage. Then, an artificial metal cup is set into place. The small metal cup fits perfectly into the hollow of your bone. Then, a plastic, bowl-shaped insert is fastened into the metal cup. With cementless or a press-fit, the implant is specially textured so that your actual bone will grow onto the prosthesis and secure it into place. Cemented implants used to be more common but now the cementless options are more used more widely. Next, the ball-shaped head of your femur upper thigh bone that was dislocated from the socket is removed completely. Once the head is removed, the inside of your thigh bone femur is resurfaced and an artificial piece is attached to the femur. The stem of the femoral component is then fitted with a new femur head also called a ball. There are many femoral head sizes and variations, so your surgeon will test which one fits your artificial socket the best. These are the parts that make up a total hip replacement! To read about how long a hip replacement takes and what your surgery day will look like, check out this blog. A natural hip joint is composed of two main components: During a total hip arthroplasty four parts are introduced to create a new hip. As mentioned in the above simplified description of hip replacement surgery, the four artificial components are: Acetabular component socket – The bowl shaped piece that represents your new socket. This piece is usually made of metal but is occasionally made of ceramic or a combination of plastic and metal. Acetabular liner – The plastic liner fits into the acetabular component and allows the femoral head ball to glide easier and more naturally in the socket. This piece is usually made of high-quality plastic. Femoral head ball – The ball that will fit directly into the new, plastic lined socket and is attached to the femoral stem. These are made of durable metal, plastic, ceramic, or a combination of materials. Femoral stem – The stem attaches to the ball and supports the new hip joint. Usually, this metal piece is porous, allowing for natural bone to grow and attach to this piece which replaces your femur. What materials are used in a hip replacement? Artificial replacement parts can be made of strong plastic, metal, or ceramic. In most cases, the femoral stem component is built from titanium, titanium cobalt, stainless steel, cobalt-chromium alloys, or a titanium and cobalt mixed metal. The head, liner and acetabular parts can be made of either metal, plastic or ceramic, or a combination of the above. Implant materials have to be strong but flexible in order to allow for everyday movement. The metal components can be a combination of metals like titanium, cobalt-chromium alloys, or cobalt mixed metals. The socket or acetabular liner is usually made of this plastic. In addition, other components can be made of metal and covered with plastic. When a socket is plastic and the ball is metal, this is considered MOP. Ceramic material is often used in combination with special metal components or plastic components for those allergic to metals. Although ceramic parts are durable, historically, they have been more fragile than metal components. However, this is changing. For those allergic to metals, titanium alloy is a

softer metal with very low almost untraceable amounts of nickel. When in doubt, always speak to your care team about a potential metal allergy and ask to get tested. Each of these companies make a variety of styles with different metals, plastic, and ceramic parts to cover a wide-range of patients and their specific needs. Every surgeon has a preferred brand or two and a handful of styles that they work with. Do not expect your surgeon to be well-versed in the offerings of every brand. When it comes to a replacement, you want your surgeon to be an expert in the brand and styles they work with. Here are the top brands and styles used by surgeons in the US.

Stryker Among the most popular manufacturers in the US, Stryker has been around for over 30 years. They offer a variety of femoral components and acetabular components designed to meet the needs of surgeons and patients. It works differently than the standard fixed bearing hip replacement. The acetabular liner and shell allow for motion, rather than being fixed into place. Component is made of metal alloys and polyethylene. Available for primary joint replacements not revisions.

Trident Alumina Ceramic Bearing -- A new technology ceramic socket. Ceramic components are said to be advanced when it comes to extending the lifetime of the implant.

Trident Polyethylene Bearings -- Stryker offers both mobile bearing and fixed bearing acetabular socket components made from high-quality poly plastic. Stryker also claims that their poly components showed reduced wear when compared to other polyethylene competitors.

Femoral Components Accolade II -- Fits all surgical approached posterior or anterior and bones types. A tapered wedge system that is made of metal alloys.

Anato -- A shorter stem designed for a variety of surgical approaches including direct anterior. It comes in 8 different sizes. Made of metal alloys. All made from biocompatible CP Titanium coating. A large selection of femoral heads, including ceramic available.

Accolade C -- A cemented option. Made of metal alloys, this design can accommodate a variety of femoral heads, like ceramic. This is another cemented option. Can be combined with ceramic or metal head.

Zimmer, now called **Zimmer Biomet**, is the most popular manufacturer of knee replacements. They also produce a lot of commonly used hip replacement components. This implant can be fitted with a variety of poly liners.

Trilogy Acetabular Hip System -- An improved version of a widely used traditional cup design. This implant can be fitted with numerous sizes and thicknesses of poly that are said to be long-lasting without compromising movement. Designed with different styles to accommodate men, women, older patients, hip fracture patients etc. In total, DePuy has more than products used for joint replacement surgery. They have porous coating options that allow for non-cemented, fixed-fit application that encourages stable bone attachment. Available in cementless and cement options. There are a variety of sizes and styles. Geared to offer greater stability, while preserving more natural bone. Suitable for primary and revision hip replacements. Designed for easy surgical installation, and to prevent thigh pain. Knowledge is power, so the more you know about replacement types and styles, the deeper the conversation you can have with your care team about the best implant for you. In saying this, nothing is more important to your surgical outcome than working with a surgeon you trust and doing all you can to prepare yourself before surgery. Keep up the great research!

3: Dr Yaser Metwally Medford | Advanced Joint Replacement Center Oregon

Advanced Concepts in Total Hip Replacement | Thursday 1 June | Some of the most well-known specialists in total hip replacement in Europe will present their most updated facts.

Every time we go to the bank, or even walk to the kitchen, we use our hip joint. Hip pain can affect people of all ages and it may keep you from activities that you enjoy. A painful hip may even prevent you from keeping up with your daily activities. Causes of hip pain may be: These X-rays depict the difference between a normal hip left and an arthritic hip. Advantages and Benefits of Hip Replacement Surgery A total hip replacement can greatly reduce hip pain. After the pain from surgery goes away, many patients are pain-free The strength of your leg will improve. It is a ball and socket type joint- the ball consists of the femoral head and the socket is also known as the acetabulum. This type of joint offers some stability and a large range of motion. Parts of the Hip Bones: The femoral head is a ball at the top end of the femur, or thigh bone. This articulates, or forms a joint, with the acetabulum which is the socket of the hip bone Cartilage: This is a soft, smooth tissue that covers the ball of the femur and lines the socket of the hip bone. This cartilage functions as a shock absorber and is a smooth lubricated surface that reduces friction when the joint moves Muscles: Muscles, such as the gluteal muscles muscles of the buttocks , provide power to the hip and leg and allow us to walk, run and stand. These muscles also provide support and stability for the hip joint Tendons: These attach the muscles to the bones Ligaments: These soft tissue structures around the hip joint provide stability to the joint. X-Rays X-rays, or radiographs, are taken to allow the surgeon to see if there is a problem with the bony structure of the hip joint. An x-ray may show abnormalities in the size, shape, and position of the joint. Important signs of arthritic changes are joint space narrowing, osteophyte bone spur formation, which is a growth of bone in areas where there is arthritis. It may also show cyst formation or sclerosis. These signs are commonly seen when the cartilage wears away and the bones grind against each other eburnate. X-rays are also used to help the surgeon plan the hip replacement surgery. Total Hip Replacement restores movement lost by joint damage Indications for a Total Hip Replacement When the bony parts of the hip are damaged, movement becomes very painful. The joint may not move easily and the muscles surrounding it stiffen. As time goes on, the cartilage on the joint surface starts to wear away. When parts of the cartilage completely wear away, the bones that make up the joint rub together. This can cause severe pain and stiffness and lead to further damage. This can cause the surrounding muscles to stiffen and occasionally spasm. Some Causes of Hip Joint Damage: As we get older, normal wear and tear can cause damage to the cartilage. As the cartilage continues to wear away, the bones rub together and damage the joint Inflammatory Arthritis: Diseases such as rheumatoid arthritis or gout can cause swelling and inflammation in the joint lining. A traumatic fall on the hip can fracture the femoral neck the area of the thigh bone just below the femoral head. If this fracture is not treated correctly or does not heal properly, the bone will lose its blood supply, thus leading to osteonecrosis and subsequent arthritis of the hip Avascular Necrosis: This is a process in which the bone cells actually die and this leads to joint destruction. This is also known as osteonecrosis, ischemic necrosis, and aseptic necrosis. Total Hip Replacement Components for Traditional Total Hip Replacement The goals of total hip replacement or arthroplasty are to provide relief of pain and discomfort, improve function, and enhance joint stability. In a total hip replacement, the joint surgeon implants a combination of metal and plastic that forms a new ball and socket joint that will glide smoothly. There are currently several methods used for attaching the prosthesis to the bone and providing stable fixation: Bone Cement polymethyl methacrylate: This material acts like glue or a grouting material Press Fit: This depends on a very tight fit of the device into the bone Biological Ingrowth: No cement is used in this procedure. The metal prosthesis is fabricated with a porous coating, which allows the bone to actually grow into the prosthesis. The type of prosthesis used for your surgery is usually determined by the surgeon and is based on a number of factors such as your height, weight, age, and bony structure. To find out more about the technologies available and what these prosthesis look like, click on Hip Prosthesis. The Surgical Procedure Once you are taken into the operating room, you will be given anesthesia. If it is general anesthesia, you will sleep through the surgery. If it is spinal anesthesia, however, you will not be able to feel

anything from the waist down. You will also receive some type of sedation with the spinal anesthesia.

Prosthetic Hip Joint Then an incision about 10 inches long is made down the side of your hip. Some of the soft tissue is cut to expose the hip joint. The damaged femoral head is then removed and the surface of the old socket is reamed smoothed. The prosthetic socket is then placed in the pelvis, or hip bone. The prosthetic stem is placed into the femur thigh bone and the new ball and socket joint are articulated, or joined. Once the prosthesis is in place, the muscles and soft tissue are re-approximated with sutures and the skin is closed with staples.

Complications As with any type of surgical procedure, there are certain risks or complications associated with a total hip replacement. We are continually striving to provide the optimum environment for your surgery and recovery, minimizing any potential complications. Possible problems include, but are not limited to, reactions to anesthesia, blood clots, dislocation, injury to a nerve or blood vessel, fracture, infection, and swelling. It is our primary goal to help you through your total joint replacement procedure with minimal complications and maximum recovery. Therefore, we will instruct you in measures that will aid you in having a rapid recovery. Patients in this category have significant disease in both hips. Others will require revision surgery due to a previously failed hip implant. Because of the more extensive nature of these surgeries, special devices may be needed to monitor your status more closely during and after surgery. If you are having bilateral hip surgery, your surgeon will typically replace the more symptomatic joint first. If the surgeon and the anesthesiologist are satisfied with your stability, the second joint will be replaced. If only one joint is able to be replaced, the other joint can usually be replaced after about one month. After bilateral hip replacement, your progress may or may not be slower, depending on many factors such as age or your physical condition prior to surgery. Patients requiring revision surgery will have a more restricted physical therapy program, both at the hospital and at home. Your program will be tailored to give you optimal function within the parameters your surgeon has set so that you will get optimal results from your surgery.

4: Hip replacement - Mayo Clinic

Advanced Certification for Total Hip and Total Knee Replacement Core/Advanced Comparison Grid. limit variation using concepts of High Reliability.

Print Overview During hip replacement, a surgeon removes the damaged sections of your hip joint and replaces them with parts usually constructed of metal, ceramic and very hard plastic. This artificial joint prosthesis helps reduce pain and improve function. Arthritis damage is the most common reason to need hip replacement. Commonly known as wear-and-tear arthritis, osteoarthritis damages the slick cartilage that covers the ends of bones and helps joints move smoothly. Caused by an overactive immune system, rheumatoid arthritis produces a type of inflammation that can erode cartilage and occasionally underlying bone, resulting in damaged and deformed joints. If there is inadequate blood supply to the ball portion of the hip joint, the bone may collapse and deform. Persists, despite pain medication Worsens with walking, even with a cane or walker Interferes with your sleep Affects your ability to go up or down stairs Makes it difficult to rise from a seated position Risks Risks associated with hip replacement surgery may include: Clots can form in your leg veins after surgery. This can be dangerous because a piece of a clot can break off and travel to your lung, heart or rarely your brain. Your doctor may prescribe blood-thinning medications to reduce this risk. Infections can occur at the site of your incision and in the deeper tissue near your new hip. Most infections are treated with antibiotics, but a major infection near your prosthesis may require surgery to remove and replace the prosthesis. During surgery, healthy portions of your hip joint may fracture. Sometimes the fractures are so small that they heal on their own, but larger fractures may need to be corrected with wires, pins, and possibly a metal plate or bone grafts. Certain positions can cause the ball of your new joint to become dislodged, particularly in the first few months after surgery. If the hip dislocates, your doctor may fit you with a brace to keep the hip in the correct position. If your hip keeps dislocating, surgery is often required to stabilize it. Change in leg length. Your surgeon takes steps to avoid the problem, but occasionally a new hip makes one leg longer or shorter than the other. Sometimes this is caused by a contracture of muscles surrounding the hip. In this case, progressively strengthening and stretching those muscles may help. Although this complication is rare with newer implants, your new joint may not become solidly fixed to your bone or may loosen over time, causing pain in your hip. Surgery might be needed to fix the problem. However, new materials are making implants last longer, so a second replacement may not be needed. Some older types of prostheses used mainly in the last decade use a metal cup liner, which may last longer but can cause other problems. Metal-on-metal prostheses are more likely to release metal ions into your bloodstream, which can cause inflammation and bone erosion. Because of these concerns, metal-on-metal prostheses are now rarely used. Be sure to find out which medications you should avoid or continue to take in the week before surgery. What you can expect Artificial hip Artificial hip Hip prostheses are designed to mimic the ball-and-socket action of your hip joint. During hip replacement surgery, your surgeon removes the diseased or damaged parts of your hip joint and inserts the artificial joint. During the procedure To perform a hip replacement, your surgeon: Makes an incision over the front or side of your hip, through the layers of tissue Removes diseased and damaged bone and cartilage, leaving healthy bone intact Implants the prosthetic socket into your pelvic bone, to replace the damaged socket Replaces the round ball on the top of your femur with the prosthetic ball, which is attached to a stem that fits into your thighbone Techniques for hip replacement are evolving. As surgeons continue to develop less invasive surgical techniques, these techniques might reduce recovery time and pain. Medical staff will monitor your blood pressure, pulse, alertness, pain or comfort level, and your need for medications. Possible measures to prevent this complication include: This will likely happen the same day as your surgery or on the following day. Both during and after surgery, you may wear elastic compression stockings or inflatable air sleeves similar to a blood pressure cuff on your lower legs. The pressure exerted by the inflated sleeves helps keep blood from pooling in the leg veins, reducing the chance that clots will form. Your surgeon may prescribe an injected or oral blood thinner after surgery. Depending on how soon you walk, how active you are and your overall risk of blood clots, you may need blood thinners for several more weeks

after surgery. **Physical therapy** A physical therapist may help you with some exercises that you can do in the hospital and at home to speed recovery. Activity and exercise must be a regular part of your day to regain the use of your joint and muscles. Your physical therapist will recommend strengthening and mobility exercises and will help you learn how to use a walking aid, such as a walker, a cane or crutches. **Home recovery and follow-up care** Before you leave the hospital, you and your caregivers will get tips on caring for your new hip. **For a smooth transition:** If recovery is progressing well, most people resume their normal activities by this time – even if in a limited fashion. Further recovery with improving strength will often occur for six to 12 months. **Results** Expect your new hip joint to reduce the pain you felt before your surgery and increase the range of motion in your joint. **High-impact activities** – such as running or playing basketball – may be too stressful on your artificial joint. But in time, you may be able to swim, play golf, hike or ride a bike comfortably. **Clinical trials** Explore Mayo Clinic studies testing new treatments, interventions and tests as a means to prevent, detect, treat or manage this disease.

5: Total Hip Replacement | Advanced Orthopaedic Specialists

Advanced Concepts in Total Knee Replacement: afternoon session A panel of recognised European experts with an in-depth experience in total hip and knee replacement will share their knowledge of key issues with a focus on day-to-day practice in both primary and revision surgery.

Editor who approved publication: Surgical treatment for late stage post-collapse osteonecrosis of the femoral head is controversial. In these situations, the outcome of joint preservation procedures is poor. There are several arthroplasty options for late-stage disease. The clinical outcomes of hemiarthroplasty and hemiresurfacing are unpredictable because of progressive acetabular cartilage degeneration. Total hip resurfacing may be associated with further vascular insult to the femoral head and early failure of the implant. Total hip replacement with metal-on-conventional polyethylene bearing surfaces has been the gold standard, but implant survivorship is limited in young active patients due to wear and osteolysis. Newer alternative bearing surfaces may have improved wear characteristics, but their durability must be confirmed in longer-term studies. In approximately 1970, Cruveilhier depicted morphologic changes of the femoral head secondary to interruption of blood flow. Although alcoholism, steroid use, and hip trauma remain the most common causes, several other etiologies resulting in osteonecrosis have been identified. ONFH is a debilitating disease that usually leads to osteoarthritis of the hip joint in relatively young adults mean age at presentation 38 years. The disease prevalence is unknown, but estimates indicate that 10,000–20,000 new cases are diagnosed in the United States each year. Once collapse occurs, optimum treatment is controversial. The outcome of joint preservation procedures in this late stage of disease is poor. Stage III cases demonstrate clinical signs of pain and stiffness, and radiographs show the crescent sign and eventual cortical collapse. Survivorship was reported to be 50% at 10 years. Once the femoral head collapses or arthritis occurs on the acetabular side, the treatment of choice is reconstructive hip replacement. Various types of hip replacement, such as bipolar hemi-arthroplasty, hemiresurfacing, total resurfacing, and total hip arthroplasty, have been used in this population. Limited femoral head resurfacing Because the acetabulum is relatively normal in Ficat stage III, the concept of hemiarthroplasty is appealing. Hemiresurfacing of the femoral head with cement fixation was developed and first performed in the early 1970s in young active patients to preserve femoral bone stock and permit later conversion to a total hip arthroplasty with less morbidity. However, there are limited indications for femoral resurfacing, including: Table 1 Evidence for limited resurfacing in osteonecrosis of the femoral head Abbreviation: Squire et al 30 reported a high overall failure rate of up to 50% at 10 years. The main causes of failure were unpredictable groin pain, further osteonecrosis, and fracture of the neck of femur. The difficulty of performing total hip arthroplasty after limited resurfacing was almost equivalent to primary cases, because there was no loss of bone stock and the medullary canal of the femur was intact. The cases did not require femoral bone grafting, and no fractures or femoral loosening occurred. However, the results of hemiresurfacing are uncertain for several reasons, including unpredictable groin pain, further collapse of the head, and fracture of the femoral neck. Bipolar hemiarthroplasty The results of hemiarthroplasty involving the use of a fixed-head prosthesis have not been found to be acceptable for treatment of osteonecrosis. Bipolar prostheses have been used to prevent erosion of the acetabulum and proximal implant migration, which frequently occur with monopolar Moore-type prostheses. These implants were initially developed by Charnley but popularized by Bateman 37 and Giliberty 38 in 1970. The purpose of the bipolar prosthesis is to decrease shear stress and impact loads on the acetabular cartilage, thereby reducing wear, and a big outer moving acetabular component is used to reduce dislocation and stem loosening. However, bipolar arthroplasty has disadvantages due to the requirement for resection of the femoral neck, engagement of the femoral canal, and use of a polyethylene-bearing surface which will generate wear debris and potentially compromise the longevity of the implant. Moreover, conversion arthroplasty to total hip replacement may need a very complex reconstruction, such as a roof ring, reconstruction cage, or other special implant due to bone loss, and may require another revision later. Factors leading to early implant failure include persistent groin pain, proximal migration of the implant, and stem loosening. Groin pain after bipolar arthroplasty may be caused by degeneration of the

acetabular cartilage. The treatment of intractable groin pain in patients with bipolar arthroplasty is conversion to total hip replacement. However, groin pain may not resolve after conversion. The second cause of failure of bipolar prostheses is radiographic stem subsidence. In conclusion, bipolar arthroplasty for osteonecrosis has a high failure rate and unpredictable results. Furthermore, the use of bipolar arthroplasty violates the femoral canal and maintains a polyethylene-bearing surface, which will generate wear debris and potentially compromise the longevity of the implant. Conversion to total hip replacement may require complex reconstruction and another revision later on. Resurfacing hip arthroplasty Limited resurfacing may be an option in young patients without evidence of acetabular disease Ficat stage III , but the outcome is guarded. Pain relief is not predictable, especially when there is evidence of articular cartilage involvement. In this setting, total hip resurfacing may be a better option. The advantages of total resurfacing are a low wear rate, preservation of bone stock for further revision, use of a large diameter head to reduce dislocation rate, improved function as a consequence of the retained femoral head and neck, more precise biomechanical restoration, and decreased morbidity at the time of revision arthroplasty. The combination of a large-diameter metal-on-metal bearing surface has shown a low wear rate after several decades of use. Moreover, patients with advanced osteonecrosis often have associated risk factors, such as continued alcohol abuse or corticosteroid use, which compromise bone quality and the surface area available for implant fixation, resulting in continued femoral head collapse. According to the US Food and Drug Administration protocol, Seyler et al 60 have developed a guideline algorithm for decision-making to proceed to resurfacing or total hip replacement. The algorithm has been based on gender, age, and etiology of disease. They reported survivorship of Corin resurfacing implants to be When compared with osteoarthritis, Mont et al 62 and Aulakh et al 64 found no significant difference in survivorship or outcome between osteonecrosis and a matched cohort of patients with osteoarthritis. However, serious complications after total or hemiresurfacing leading to early unexpected failure of the implant may occur, and include progressive osteonecrosis collapse and femoral neck fracture. In Australia, the most common reason for revision of resurfacing has been femoral neck fracture. There is evidence that mechanical risk factors, such as notching of the superior part of the femoral neck during implantation, incomplete seating or varus alignment, and postoperative lengthening of the femoral neck are commonly associated with subsequent femoral fracture. Histologic analysis showed empty lacunae in a large proportion of both groups. They found four hips 3. In osteonecrosis, the femoral head has already had a vascular insult, so the question is how to prevent further vascular damage during the surgical procedure. The extraosseous blood supply of the femoral head from the medial circumflex artery can be destroyed during the posterior approach. In the standard posterior approach, the medial circumflex artery is divided, decreasing blood flow to the head. Other procedures performed using the posterior approach, such as tenotomies of the short external rotators and dissection of the capsule distal to the piriformis, are likely to damage the branches of the medial femoral circumflex artery and potentially render the femoral head avascular. The surgical dislocation approach described by Ganz et al 73 anterior surgical dislocation and trochanteric flip has been developed to preserve vascularity of the femoral head. Amarasekera et al 71 used laser Doppler flowmetry to measure the effect on blood flow to the femoral head-neck junction of two surgical approaches during resurfacing arthroplasty and found that the main reduction in blood flow occurred during exposure and capsulotomy in both groups. Reaming the femoral head is another procedure that can damage blood flow to the femoral head. They concluded that the cylindrical reamer substantially compromised blood flow to the femoral head by encompassing the whole circumference of the femoral head-neck junction, potentially disrupting all of the retinacular vessels. To preserve the blood supply while reaming, one must direct the cylindrical reamer superolaterally, staying as close as possible to the inferomedial neck. The final step that can be harmful to the viability of the femoral head is cement preparation. Campbell et al 75 retrieved failed metal-on-metal resurfacings from femoral neck fracture or loosening and compared these cases with other causes of failure. The temperature was high enough to produce thermal necrosis of the femoral head. Because of this, excessive cement penetration may result in necrosis of bone secondary to the heat of polymerization and may cause early failure of the implant. In conclusion, the short-term to mid-term outcome of total resurfacing in ONFH has been reported to be excellent in young patients. However, total resurfacing in

the osteonecrotic femoral head has some issues for concern. Patient selection is crucial, and femoral heads with extensive necrosis that would require shortening or downsizing to resect dead bone may be better served by total hip replacement. Long-term outcome and the prevalence of unexpected failure in the patient with osteonecrosis should be monitored closely. Total hip replacement Total hip arthroplasty is indicated in advanced stage osteonecrosis once the femoral head has collapsed and the hip joint has degenerated. However, the longevity of total hip arthroplasty for treatment of osteonecrosis is less when compared with other indications. On the other hand, the prevalence of acetabular wear did not differ between younger and older patients who had osteoarthritis. They concluded that the quality of trabecular bone available for fixation of the component was an important factor. In osteonecrotic bone, the common histomorphometric profile is reduction of trabecular bone volume, thickness of the osteoid seams, and calcification. The framework of cancellous bone in osteonecrosis is apparently weak. Defective cancellous bone might not support the interdigitation of cement and subsequent loading. The etiology of osteonecrosis is another factor influencing the outcome of total hip replacement. Osteonecrosis encompasses a heterogeneous group of disease entities, with a spectrum of severity that makes treatment particularly challenging. Post-traumatic osteonecrosis refers to the onset of the condition after experiencing significant trauma. Nontraumatic osteonecrosis refers to conditions unrelated to trauma, such as alcoholism, smoking, blood clotting disorders, kidney disease, connective tissue disease, and corticosteroid use. Often the condition has no known causes, and is referred to as idiopathic osteonecrosis. The functional outcome and mortality rate of post-traumatic osteonecrosis and idiopathic osteonecrosis is usually better than alcohol-induced and steroid-induced osteonecrosis or osteonecrosis with systemic disease. Patients on steroids also have a high incidence of infection, poorer quality soft tissues, and impaired wound healing. In patients with steroid-induced osteonecrosis treated with cementless total hip replacement, the reliability of bone ingrowth may be reduced. With cemented implants, the effect of corticosteroids may lead to trabecular weakness, resulting in progressive radiolucency at the bone cement interface. Osteonecrosis of the femoral head in renal transplant patients occurs as a result of use of corticosteroids and other medications. Cemented total hip replacement seems to be a better option in these patients because of poor bone stock. Table 4 Evidence for the outcome of total hip replacement in post-renal transplant patients Goffin et al reported a large series of 63 renal transplant patients who had However, the survival rate dropped to Factors such as the type of dialysis prior to transplantation hemodialysis versus peritoneal , persistence of post-transplant hyperparathyroidism, incidence of acute rejection episodes in the first post-transplant months indicative of administration of higher steroid doses appeared to affect the outcome. Diminished parathyroid hormone levels after transplantation, as well as accompanying steroid use, further decrease osteoblastic activity. Interestingly, the long-term results of cementless implants in transplant patients have not been reported. There are some short-term studies that demonstrate similar outcomes and survival rates between cementless and cemented implants in steroid-taking versus nonsteroid-taking age-matched patients with renal disease, but complications in the former group of patients, such as dislocation rate, are still higher They concluded that the early results of porous-coated implants were satisfactory. During the last decade, the number of short-stem arthroplasties is increasing, although there are no reports on the outcome of short-stem arthroplasties in patients with ONFH.

6: Total Hip Replacement - What You Need to Know

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What do I need to know about total hip replacement? Total hip replacement THR is surgery to replace your hip joint damaged by wear, injury, or osteoarthritis. It is also called total hip arthroplasty. The hip joint is where the top of your femur thigh bone sits in the socket of your pelvic bone. The joint is held together by ligaments and muscles. The top of your femur is shaped like a ball and covered with cartilage. Cartilage is a tissue that helps joints move. How do I prepare for THR? Your healthcare provider will check your overall health. He or she will ask about your current hip pain or stiffness. Tell your provider how pain or stiffness affects your daily activities or ability to play sports. He or she may also ask about fatigue, anxiety, or depression you may have. Some medicines will need to be stopped weeks before surgery. These medicines include blood thinning medicine, such as aspirin and ibuprofen. It also includes some antirheumatic medicines. Make sure your healthcare provider knows all medicines you are taking. Also ask how long before surgery to stop taking them. The week before surgery: Ask a family member or friend to drive you home when you are discharged from the hospital. Ask someone to stay with you for 1 to 2 weeks after surgery, in case you need help. You may need to move furniture around to make room for assistive devices that will be used after surgery. You may need a cane or a walker to get around safely. Keep all self-care items and most commonly used items within your reach. After surgery, you will need to avoid bending down or reaching over your head. You will not be able to sit or get up from low seating after surgery. Check to see if your chairs and toilet seats are too low. Ask your healthcare provider about other things you can do to make your home safer. Your healthcare provider may tell you not to eat or drink anything after midnight on the day of your surgery. He or she will tell you what medicines to take or not take on the day of your surgery. What will happen during THR? You may be given general anesthesia to keep you asleep and free from pain during surgery. You may instead be given regional anesthesia, such as spinal or epidural anesthesia, or a peripheral nerve block. Regional anesthesia keeps you numb from the waist down, but you will be awake during surgery. Your healthcare provider will talk to you about which of the following procedures is right for you: The conventional hip replacement involves 1 incision. Your healthcare provider will make the incision along the front, side, or back of your hip. The minimally invasive hip replacement surgery involves a smaller incision that is about 4 to 8 inches in length. Your healthcare provider may make an incision along the front, side, or back of your hip. He or she will use fluoroscopy a type of x-ray as a guide during the surgery. The ball of your femur and the socket of your pelvis will be removed. A hip implant will replace the bones that were removed. Your healthcare provider may use medical cement to secure the implant parts. He or she may use an implant that has a porous surface. This surface allows your own bone to grow and fill the pores of the implant. Your healthcare provider may use both cement to hold the ball in place, and a porous socket implant. A drain may be placed to remove extra blood and fluids from the surgery area. Your incision will be closed with stitches or staples and covered with a bandage. What will happen after THR? It is normal to have increased stiffness and pain after surgery. Your pain and stiffness should get better with exercise. Do not get out of bed until your healthcare provider says it is okay. Healthcare providers will teach you how to sit up and move without causing damage to your hip. A physical therapist will help you walk after your surgery. When you walk the same day after surgery, it helps decrease pain and improves the function of your hip. You may use crutches or a walker. You may be in the hospital for up to 5 days, or you may go home shortly after surgery. Your healthcare provider may talk to you about rehabilitation you can do at home. A physical therapist can teach you exercises to help strengthen your hip and prevent stiffness. You may also need occupational therapy to teach you the best ways to bathe and dress. What are the risks of THR? You may have more hip pain, or your hip joint may become stiff or numb. Your joint movement may not be as stable as it was before your surgery. You may have bone loss, or the bones near the implant area may break or crack. You may bleed more than expected or get an infection.

Your nerves, blood vessels, ligaments, or muscles may be damaged during surgery. Your implant may become loose or move out of place. If this happens, you may need another surgery to replace the implant. You may need surgery to remove your implant if you have an allergic reaction to the materials. You may get a blood clot in your limb. This may become life-threatening. Care Agreement You have the right to help plan your care. Learn about your health condition and how it may be treated. Discuss treatment options with your healthcare providers to decide what care you want to receive. You always have the right to refuse treatment. The above information is an educational aid only. It is not intended as medical advice for individual conditions or treatments. Talk to your doctor, nurse or pharmacist before following any medical regimen to see if it is safe and effective for you.

7: Hip Fracture & Broken Hip | Cleveland Clinic

Huiskes R. Failed innovation in total hip replacement. Diagnosis and proposals for a cure. Acta Orthop Scand. ;

8: Full Day on Total Hip and Total Knee Replacement - EFORT Congress Lisbon - EFORT

Total hip replacement (THR) is surgery to replace your hip joint damaged by wear, injury, or osteoarthritis. It is also called total hip arthroplasty. The hip joint is where the top of your femur (thigh bone) sits in the socket of your pelvic bone.

9: Total Joint Conference Chicago, IL - BioMedtrix

During a total hip arthroplasty four parts are introduced to create a new hip. As mentioned in the above (simplified) description of hip replacement surgery, the four artificial components are: the acetabular component, a plastic liner, a femoral head and the femoral stem.

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