This guide provides an overview of finger joint replacement surgery and illustrates the anatomy of the hand. It also outlines the need for surgery, what to expect both before and after surgery and how to adjust to your daily activities once you are home from the hospital.

Note: The following information is provided for reference purposes only. Your surgeon may change any or all aspects of your treatment as discussed in this guide based on his/her experience, preferences and your particular situation.
Finger Joint Anatomy

Each finger has three bones: the proximal phalanx, the middle phalanx and the distal phalanx. Each finger also has three joints (Figure 1). The first joint, the metacarpal phalangeal joint (MCP), is formed where the finger joins the hand and where the bones that form the palm of the hand, the metacarpals, join with the first bone of the finger. The second joint is the proximal interphalangeal (PIP) joint. The last joint of the finger is called the distal interphalangeal joint (DIP). Each of these joints is covered with articular cartilage, the smooth spongy material covering the end of the bones that form a joint. The cartilage allows the bones to slide easily against one another as the joint moves through its range of motion.

When Joint Problems Arise

When you think about how much you rely on the use of your hands, it is easy to understand the importance of the finger joints. Arthritic finger joints can lead to difficulty in daily activities due to pain and deformity, which may require surgical treatment as the arthritis progresses.
The term degenerative arthritis describes a condition where a joint wears out, usually over a period of many years (Figure 2). You may also hear the term degenerative arthrosis used. Some doctors believe that degenerative arthritis isn’t a true arthritis, and the term can cause confusion. These doctors use the term arthrosis to describe the condition of a worn-out joint; they use the term arthritis to describe the true inflammatory conditions such as gout, infection and rheumatoid arthritis.

![Arthritic finger joints](image)

Injury to a joint, such as a sprain or fracture, can damage the cartilage. An injury to any of the joints of the fingers, even if it does not injure the cartilage directly, can alter how the joint functions. After a fracture, the bone fragments may heal in a position slightly different from the way they were before the injury.

Similar to a piece of machinery, if a mechanism is out of balance, it wears faster. Over the years, this imbalance in the joint mechanics can lead to cartilage damage. When the joint is unable to compensate for the increasing damage, pain occurs. The damage made to the cartilage happens well before the pain begins.
Arthritis Symptoms

Pain is the main symptom of arthritis. This pain first occurs during activity. Usually, once the activity begins the pain is tolerable, but after resting for several minutes the pain and stiffness may increase. Later, when the condition worsens, pain may be present even at rest. In rheumatoid arthritis, the fingers also become deformed as the disease progresses. At the MCP joint, the joints begin to point sideways toward the thumb, pointing fingers towards the little fingers. This is commonly referred to as “ulnar drift.” Ulnar drift can cause weakness as well as pain and make daily activities difficult.

Diagnosis

The diagnosis of arthritis of the finger joints begins with a history of the problem. Details about any injuries that may have occurred to the hand are important and may suggest other reasons why the condition exists.

Following the history, a physical examination of the hand, and possibly other joints in the body, will be performed. It will be important for your doctor to see how the motion of each finger joint has been affected.

X-rays will be taken to identify the severity of the joint damage (Figure 3). This is usually the most important test to determine the extent of the degenerative arthritis (Figure 4). The amount of articular cartilage left in the joint can be estimated using X-rays.

Figure 3

Figure 4
The NeuFlex™ MCP and PIP Finger Joint Implants

Hand surgeons use artificial joints to replace the MCP and PIP joints. The implant, or “prosthesis” (prosthesis meaning artificial body part), acts as a spacer to fill the gap created when the arthritic surfaces of the MCP or PIP joint are removed.

Components of Finger Joint Replacement

Your surgeon has chosen to use the NeuFlex™ MCP and/or PIP Finger Joint Implant. It is made by DePuy, a Johnson & Johnson company, of Warsaw, Indiana. The design is based on numerous research studies of the structure and mechanics of the MCP/PIP joint.

The implant is made of medical grade silicone. This prosthesis is inserted into metacarpals or the phalanx, by settling the implant into place against the cut bone (Figure 5).

![NeuFlex MCP Implant](image)

**Figure 5**
Before Your Operation

**General Medical Health**

All patients need to see their family physician or an internist for a thorough physical and past medical history evaluation at least one week prior to hospital admission. This will ensure that any medical condition such as urinary tract infection, cardiac disease or high blood pressure can be detected, treated and controlled prior to surgery - minimizing the possibility of your finger surgery being rescheduled. Your orthopaedic surgeon will need to obtain a report from your physician regarding your general medical health and copies of test results. Some common tests that may be required include a complete blood count, blood clotting times, blood chemistries and urinalysis.

For some patients, typically those over 40, a chest X-ray and an electrocardiogram (EKG) may need to be performed. If any test result is abnormal or outdated, it may need to be repeated upon arrival at the hospital to help ensure the safest possible operation.

In some cases, you may be asked to lose weight. If you smoke, it is important to stop two weeks before surgery and to consider quitting all together.

**Medications**

If you are taking any anti-inflammatory medications, your surgeon may advise you to stop taking them one week prior to surgery to help minimize bleeding during your operation. Anti-inflammatory medications include any form of aspirin, including coated or buffered aspirin, or other brand name products containing aspirin. Do not change or stop taking any medications unless instructed to do so by your internist, family physician or surgeon.
Admission
Check with your surgeon’s office to determine when you should plan to arrive at the hospital. Most patients are admitted the day of surgery.

Note: You cannot eat or drink anything after midnight the night before surgery.

Preparing for Finger Joint Replacement
The night before surgery may be a restless night for you as you prepare mentally for the surgery. This is to be expected, so do not be alarmed. Be sure to take all of your normal medications unless the doctor has instructed you not to take certain medications.

You can eat solid food until midnight the night before surgery. After midnight, you should not eat or drink anything (no coffee, no water, no ice chips) unless your doctor has told you otherwise.

Make sure you have everything you’ll need at the hospital, that all of your questions are answered and that you have your advanced directives available if you wish.

What to Bring to the Hospital
- A robe, slippers and toiletries
- Your own nightgown or pajamas to wear after surgery (otherwise, a hospital gown will be provided for you).
- Books, magazines, stationery and hobbies
- Give any medications that you take on a regular basis to the nursing staff upon admission.
- Containers and solutions for contact lenses, dentures and plates (these items cannot be worn in the operating room).
What to Expect Prior to Surgery

1. Depending on when you are admitted to the hospital or surgery center, you may speak to and be examined by a member of the department of anesthesia. This person will ask you questions, explain the anesthetic procedure, and in some cases, allow you to choose the type of anesthesia used.

2. The nursing staff will take your temperature and check your pulse, respiration and blood pressure.

3. You will be visited by a member of the surgical team who will again perform a complete history and physical examination and be available to answer any of your questions.

4. Your family may come with you to the Admissions Department of the hospital or surgery center. They should keep the staff at the nurses’ desk informed of their location during surgery.

5. Before going to the operating room:
   a. Your hand area will be scrubbed and prepped.
   b. You may brush your teeth and rinse your mouth, but do not swallow water.
   c. You will be asked to empty your bladder.
   d. To receive medications, an intravenous (IV) line will be started by the nurse or a member of the anesthesiology staff.
   e. Medications may be given about one hour before surgery to help you relax and dry your mouth and sinuses.
   f. You will be transferred to the holding area and from there to a stretcher prior to going to the operating room.

6. In the operating room, you will be transferred from the stretcher to a special operating room table. The room is equipped with overhead surgical lights and anesthetic equipment.
Finger Joint Replacement Procedure

To perform an artificial joint replacement of the MCP or PIP joint, the surgeon first makes an incision in the back of the hand over the joints (Figure 6) or between the first and middle finger and between the ring and little finger (Figure 7) if all four MCP joints are being treated.

Each joint that needs to be replaced is then opened so that the surgeon can see the joint surfaces. The cartilage is removed from both joint surfaces to leave two surfaces of bone (Figure 8).
Next, a small cutting tool called a burr is used to make holes in the bones of the finger joint (Figure 9). Surgical instruments called broaches are used to make room for the stems of the implant. The artificial finger joint has a stem on each side that is inserted into the canals created in the bone of the finger and the metacarpal or proximal interphalangeal joint (Figure 10).

The surgeon then completes the operation by using the tendons and ligaments around the joint to form a tight sack to hold the implant in place. The skin is sutured together and a splint is applied. You will probably be in a splint, brace or cast for six weeks.
The Recovery Room
Following the procedure, your surgeon will contact your family and friends to update them on your surgery. You will awaken after surgery in the post-anesthesia recovery room, probably feeling as though you were away from your hospital room for only a few minutes. You will remain there for an hour or so, until you have recovered from the anesthesia, are breathing well and your blood pressure and pulse are stable. If you have pain, a nurse will administer medication. Your hand will be in a splint so you will not be able to move it.

What to Expect After Surgery
1. Your arm will be elevated and immobilized in a splint, so you will not be able to move your hand. Frequently, blood will be visible on the dressing and should not be cause for alarm. This is common and usually stops after a few hours. The first day after surgery, you will probably be allowed to get out of bed, sit in a chair and, on occasion, begin physical therapy.

2. To prevent nausea immediately after surgery, you will be given only ice chips or sips of water and soft drinks. The day after surgery, you will be allowed to have regular meals.

3. Usually, an IV will remain in your arm for one or two days to administer antibiotics and fluids. This helps prevent infection and gives you proper nourishment until you are eating and drinking normally. It is normal to feel pain and discomfort after surgery. Be sure to inform your nurse of pain so medication can be ordered. When the IV is discontinued, you will begin taking oral pain medication, but pain medication is frequently not necessary after the first day since the finger is immobilized with a splint.
4. Two days after surgery, the splint will be removed to begin gentle range of motion exercises and then reapplied. The physical therapist will instruct you on the appropriate exercises.

At Home
Until you see your surgeon for your first follow-up visit, make certain that your wound stays dry and is not draining. If you do notice any drainage or foul odor from your incision, please contact your surgeon. Also, if your temperature rises above 100.4 degrees or you notice any increased swelling or tenderness, notify your surgeon. Take time to adjust your home environment - it’s okay to take it easy. You may need help with your daily activities, so it is a good idea to have family and friends prepare to help you. It is normal to feel frustrated about needing assistance, but as you recover, this should improve.

Contact Your Family Doctor If...
You develop a cold, fever, sore throat, pulmonary (breathing) problems, cardiovascular (heart or circulation) problems or other general physical difficulties that cause you concern.

Contact Your Surgeon If...
You develop an increase in pain, swelling, drainage, temperature or have any problems controlling joint motion.

Medication/Pain Control
It is normal for you to have some discomfort after surgery. You will receive a prescription for pain medication before you leave the hospital. If a refill is needed, please call your surgeon’s office at least two or three days prior to when you will need more pills.
Special Instructions
Normally, you will be seen by the surgeon six weeks and three months after surgery. A six-month exam is also usually scheduled for new X-rays and an assessment of your progress.

Note for the Future
You should always tell your dentist or physician that you have an artificial joint. If you are having dental work performed, notify your dentist so he/she can prescribe antibiotics for the day before and the day after your dental care. Antibiotics must be used before and after any medical or dental procedure. This precaution must be taken for the rest of your life.

Any infection must be treated promptly with proper antibiotics since infection can spread from one area to others through the bloodstream. Every effort must be made to prevent infection in your artificial joint. Your surgeon can give you instructions on the use of special antibiotics.

Important
This essential product information does not include all of the information necessary for selection and use of a device. Please see full labeling for all necessary information.

Indications
The NeuFlex MCP and PIP Finger Joint Implants are indicated for cementless replacement of the metacarpophalangeal (MCP) and interphalangeal (PIP) joints, respectively, where disabled by rheumatoid, degenerative or traumatic arthritis.

Contraindications
The NeuFlex MCP and PIP Finger Joint Implants are contraindicated in the following:
1. Active or local systemic infection
2. Destruction of the metacarpal or phalanx or poor bone quality which prevents adequate fixation of the implant
3. Loss of musculature, neuromuscular compromise or vascular deficiency in the affected finger
4. Growing patients with open epiphyses
5. Patients with high activity levels
6. Patients unwilling or unable to comply with the physician's instructions

Warnings and Precautions
The following conditions, singularly or concurrently, tend to place excessive loads on a finger joint implant and thereby, place the patient at higher risk for failure of finger joint replacement:
1. Excessive activity of the affected joint
2. Uncorrected or recurrent deformity
3. Incorrect sizing of the implant
4. Inadequate soft tissue or bony support
5. Implant malposition
If excessive loading of the affected finger cannot be prevented, a finger joint implant should not be used. Benefits of finger joint replacement may not meet patient's expectation or may deteriorate over time. Pain, swelling, instability and/or deformity may persist or return after finger joint replacement.

Adverse Events
The following are generally the most frequent adverse events or complications encountered in finger joint replacement:
1. Failure of the implant due to fatigue, wear or over-loading
2. Early or late infection
3. Wear particles caused by the movement and wear of a silicone rubber implant may cause or exacerbate synovitis or bone cyst formation.
4. There have been reports in the literature which suggest that some individuals may have an immunological reaction to silicone implants, resulting in connective tissue and/or autoimmune disease. If these conditions are suspected, removal of the silicone device should be considered.

For more information about DePuy products, visit our web site at www.jointreplacement.com or www.neuflex.com. For more information about arthritis, visit www.allaboutarthritis.com.