

In a joint replacement, the abnormal structures of the joint are removed and replaced. These structures are bone, cartilage, and synovium. Removing these tissues removes the painful, worn bone surfaces and makes room for new artificial parts, called implants, that are inserted into the prepared bones. Implants are special types of metal or plastic, or specific kinds of carbon-coated materials. The new parts allow the bones to move with little or no pain.

Replacements can be inserted into the middle joints in the finger (called proximal interphalangeal or abbreviated PIP, see Figure 1). They can also be placed at the knuckle joints (called metacarpophalangeal or abbreviated MP) at the base of the finger where it meets the hand. The exception is the thumb, where the lateral forces are so high, that implants fail quickly. Thus, the thumb MP joint is fused when painful. Implants can also be placed into the wrist at the distal radius and into the carpus, being placed solely into the distal ulna. At the elbow, a total elbow replacement can be performed, replacing the proximal ulna and distal humerus, or just the radial head can be replaced. Fingertip joints are too small to receive implants, so they are often fused if arthritis is too painful.

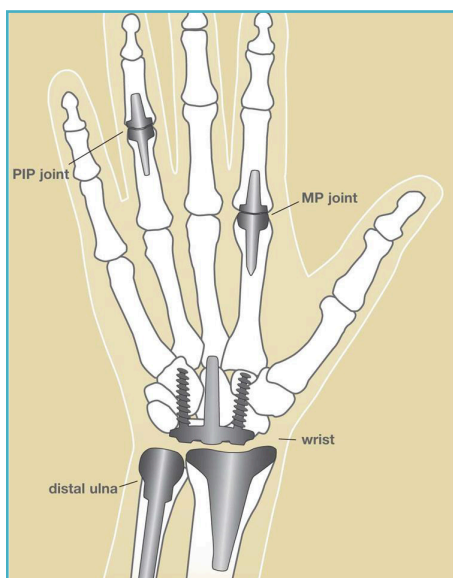


Figure 1: Finger joint replacement implants

Artificial joints in the hand may help:

1. Reduce joint pain
2. Restore or maintain joint motion
3. Improve the look and alignment of the joint(s)
4. Improve overall hand function

Causes

In a normal joint, bones have a smooth surface. This is made from articular cartilage. It is on the end of the bones. It allows one bone to glide against another. A thin layer of fluid (synovial fluid) greases the joints. The fluid acts like oil in an engine to keep parts gliding smoothly. When the articular cartilage wears out, problems develop, and a joint replacement may be needed. This could be due to damage or abnormal joint fluid. Joints may become stiff and painful. This is arthritis, the end result of these changes. Arthritis can occur from genetic risk in combination with each person's life and lifestyle. This is "wear and tear" osteoarthritis. Arthritis can also occur af-

ter a fracture or ligament sprain where the joint is chronically unstable. It can also occur from inflammatory conditions such as rheumatoid arthritis and or gout in hands.

Treatment

Surgery is performed by opening the injured joint and removing the worn tissues as described above. Soft tissues are preserved or repaired when lax or non-functional. Each joint has unique characteristics. There may be several different styles of implants available. Each implant may be made of a different material and may be secured within the bone in different ways. Some implants are soft and flexible and simply rest within the bone, and have some intended motion between the implant and the bone. Other implants are solid and rigid and may be pressed tightly into bone where motion between implant and bone is not intended. Other rigid implants may be cemented into bone to gain stability. Each implant style has unique advantages and disadvantages that your surgeon will describe so they can select the implant that is best suited for you.

Implants can fail over time by breaking, loosening, or having the bone around them resorb or fracture. Some total joints can dislocate. They can often be revised or redone. If there is severe bone loss or infection, a new implant may not be advised. In that case, a fusion where the two bones are linked together to heal can relieve pain, but this removes all joint motion. Another alternative may be removal of the implant without placing a new one.

Recovery

Hand therapy supervised by a trained hand therapist is almost always required after any joint replacement surgery, usually for several weeks to months. Special splints are generally used depending on which joint was replaced and how the surgery was done (Figure 2).

To ensure the best results after surgery, follow your surgeon and therapists' directions. Call your surgeon if you experience a sudden increase in pain or swelling or change in function, or if you have specific questions about your new joint(s).

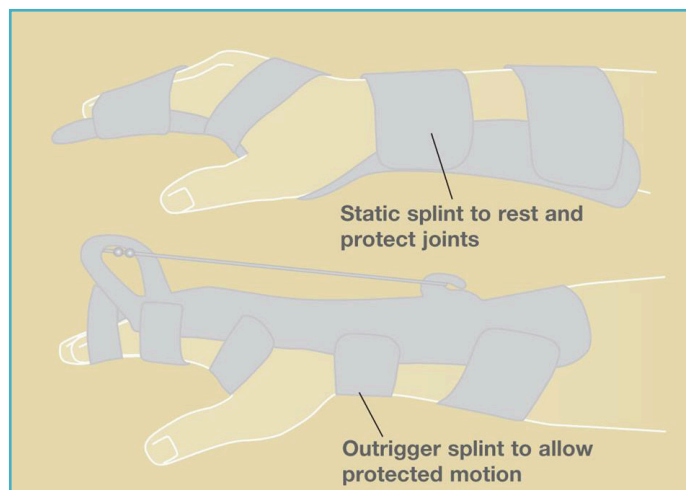


Figure 2: Common types of splints used for hand therapy after a finger joint replacement or other joint replacement surgery