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IMPLANT ARTHROPLASTY of the MP JOINTS. INDICATIONS for SILICONE and NON CONSTRAINED IMPLANTS

Most surgeons will agree that when the MP joints are destroyed an implant arthroplasty is the treatment of choice, as arthrodesis causes great functional impairment of finger function, particularly in rheumatoid patients. In these patients, function of the interphalangeal joints is many times affected or may become so during the course of the disease process.

Flexible silicone implants.

Silicone elastomer implants have been used, since their introduction by Alfred B. Swanson in the late sixties, which provided satisfactory results in most cases. For many years, have been manufactured by Dow Corning and were called "Silastic"® implants. Swanson implant design is now manufactured by Wright Medical under the name of "Flexspan"®. So, we should no longer use the term "Silastic" when talking about silicone implants. There are several flexible silicone implants other than the one designed by Swanson, such as "NeuFlex"® (DePuy), Avanta, Ascension, etc., which all have similar characteristics.

Flexible silicone implants offer several advantages. The lines of osteotomy of the metacarpal is not as demanding and, because of their flexibility, are easy to place into the medullary cavities of the metacarpal and proximal phalanx. They offer the added benefit of providing initial alignment and stability between the metacarpal and the proximal phalanx. The incidence of foreign body reaction to silicone particles is not a major concern, as compared to scaphoid and lunate implants, whose surfaces are worn from friction under pressure against the distal radial joint.

Although excellent MP joint mobility can be obtained with flexible joint implants in some rheumatoid patients, as well as those who follow a lengthy and vigorous postoperative therapy, in many patients mobility decreases with time, from a progressive fibrotic process around the new joint. Another drawback of the silicone implant is the possibility of rupture, mainly at the union between the distal stem and the transverse part or hinge of the implant. This complication seems to be most common in patients with great joint mobility and when there is an increased shearing force of the proximal phalanx into an anterior direction, mainly when the extensor apparatus is not well centered at the dorsum of the joint.

Two component total joint implants.

Different designs of proximal and distal components, as well as articulating systems, have been proposed. Constrained articulating systems, such as hinge and ball and socket joints, led to a high incidence of loosening of the components. Recently, implants using components which are minimally constrained, seem to provide better long term results in terms of loosening. There are two

major groups of implants as far as the materials used for the articulating surfaces: metal against UHMWP (Avanta) and pyrolytic carbon against pyrolytic carbon (Ascension Orthopedics). The trend is not to use cement (PMMA) for their fixation into bone.

Two component rigid implants offer the advantage of creating two joint surfaces with a very low coefficient of friction, minimizing strain at the hinge as well as pistoning of the stems in and out of the bones, as seen with flexible silicone implants. Their anatomical design places its axis of rotation closer to the physiological one, maintaining a better balance between flexion and extension forces.

Indications

Proper patient selection, careful surgical technique and adequate postoperative care are more important than the type of implant used. The most important predictive factor is the balancing of forces over the MP joint, mainly by placing the extensor tendon at the dorsum of the joint. This is accomplished by releasing the ulnar structures (sagittal band, extensor hood and ulnar intrinsics), as well as plicating the sagittal band and extensor hood on the radial side.

Patients with severe deformities at the MP joint, such as anterior subluxation and ulnar inclination of the proximal phalanx, are good candidates for using flexible silicone elastomer implants. The use of a two component implant in these cases is technically more demanding, and postoperative subluxations of the components are likely to occur.

Patients with destroyed joint surfaces, with little or moderate joint deformity, will benefit the most from a two component anatomical rigid implant.