Treatment Options for Midfoot Arthritis

Midfoot arthrosis can be the result of several problems so the treatment varies significantly from patient to patient. The causes include trauma, inflammatory arthropathy, and idiopathic arthritis. Because midfoot pain can severely limit a patient's lifestyle, treatment is often necessary whether it is surgical or nonsurgical.

For patients who have osteoarthritis of the midfoot, they may first try conservative management, such as arch supports, indepth shoes, full-length carbon foot plate, ankle foot orthoses, or casts. If surgery is needed, this could be resection arthroplasty, interpositional arthroplasty, arthrodesis in situ, arthrodesis combined with osteotomy, or arthroscopic arthrodesis.

Surgery, of course, does have the potential of complications, which include wound healing problems, infections, nonunion of the bone, neuroma and arthritic changes in adjacent structures.

Researchers have tried to understand the causes of midfoot primary osteoarthritis. One study measured the length of patients' first and second metatarsals (toes). The researchers discovered that the average length of the first metatarsal in the patients with arthritis was 77 percent of the length of the second metatarsal. The control group, however, had a first metatarsal length that was 82 percent of the second. This finding led the researchers to suggest that the metatarsal length may play a role in the mechanical function of the foot.

Inflammatory arthritis of the midfoot affects patients with rheumatoid arthritis (RA) and although there is much research on end-stage RA of the foot, not much has been reported on early identification and effective conservative management. In one study, researchers tried identify if early gait patterns could indicate the onset of arthritis. They did find that patients with early RA in the foot tended to have higher pressures about the forefoot and metatarsals, particularly the second metatarsal head. Other researchers have used motion analysis to define gait differences.

In order to reduce the pain of RA in the midfoot, conservative treatment involves palliative, noncorrective orthoses, but specialized footwear is not usually used consistently enough by the patients to make a difference. The authors of this article wrote, "Traditionally, footwear has been designed by clinicians in order to correct malalignment or improve pain with little input given by the patient. Unfortunately, this footwear often draws unwanted attention to the patient's foot, making the patient feel more self-conscious and may lead to worsened compliance."

When dealing with patients with post-traumatic arthritis of the midfoot, the authors state that the treatment of choice is usually arthrodesis. Attempts at applying high compressive and shear forces to the medial and middle columns of the foot have not been successful for the most part.

Treatment of basal fourth and fifth metatarsal arthritis has no defined or well-established method of treatment. The authors note that there are concerns about fusing these joints because this could result in nonunion, chronic overload of the rigid lateral midfoot, and possible development of stress fractures.

Researchers have attempted treating with stand-alone medial and central column fusion but no valid study findings have yet been produced. Because a big concern is to preserve the motion and avoid overload because of the fusion or the potential of stress fractures, some researchers have tried an interposition arthroplasty. Of 12 patients, nine were satisfied with the surgery but full comparison of pain and function scores were not available because of the lack of preoperative scoring. Finally, some surgeons have been working with ceramic interpositional arthroplasty, which has been successful in hand surgery.
In conclusion, the authors wrote that the gold standard for treatment of midfoot arthritis remains arthrodesis, however, the procedure can speed up development of arthrosis in the neighboring structures. Reports of success from interpositional arthroplasty of the fourth and fifth metatarsal joints is encouraging, as are the excellent results with ceramic interpositional arthroplasty.


**Update on Ankle Joint Replacement for Arthritis**

Over the last 40 years, ankle joint replacements have gone through three generations of implant design and materials. In this article, a group of orthopedic surgeons review the history of *total ankle arthroplasty* (TAA) and bring us up to date on this treatment approach for ankle arthritis.

Early designs were stable but the implants often loosened up or sank down into the bone. The first TAAs had a high failure rate and were removed from the market. Since then, many improvements have been made. Today's implants allow the patient to keep ligaments needed for stability and avoid removing so much bone.

Porous-coated titanium or chromium alloy materials allow for bone ingrowth around the implant. It's possible to hold the implant in place without cement. Various designs are in clinical trials or being considered by the FDA for use with the public. Short-term and medium-term results are available but long-term (10 to 15 years or more) studies of the newer implants are not yet possible.

Patient selection and surgeon experience seem to be two important keys to success. Although patient age doesn't seem to be a factor, the ratio of patient weight-to-implant size does make a difference. And patients with changes in soft tissue alignment and altered joint mechanics may not be good candidates for TAA.

Complications are three times more likely in cases where surgeons are doing their first 10 cases. Poor wound healing and bone fractures are common problems that decline with increased surgeon experience.

Care must be used to avoid putting too much tension on the soft tissues with self-retaining retractors during the procedure. Sutures that are too tight or a foot positioned improperly are examples of technical errors made that can be corrected with practice. Choosing the wrong size implant can also create many postoperative problems.

There's still much we don't know about ankle implants. Studies are needed to compare outcomes using different implant designs. Results of the same prosthesis but by different surgeons should be compared. Changes in design and implant materials will continue to improve bone ingrowth and prevent wear-related problems.