Osteochondral Allograft Transplant for 1st MTPJ Hallux Rigidus

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Statement of Purpose

Osteochondral defects (OCD) at the 1st metatarsal head have perplexed foot surgeons over the years regarding surgical treatments. The condition can be attributed to trauma, metatarsal length or various arthritic conditions. Over time pain and restrictive range of motion at the 1st metatarsal phalangeal joint (MTPJ) occur. Numerous surgical procedures have been advocated for this condition. We present a novel surgical treatment of an osteochondral allograft transplant for 1st metatarsal head osteochondral pathology.

Materials and Methods

The implant used is an osteoarticular cartilage capped plug which comes in custom widths and a constant depth of 15mm. The plugs have been serologically tested, washed to remove blood elements, and gamma irradiated. The process does not compromise the biomechanical or biochemical properties of the implant.

Case Study

A 55-year-old Caucasian female presented with mild stage 2 hallux rigidus to her 1st MTPJ. For hallux limitus with focal pain to her right 1st MTPJ she was weight bearing as tolerated with passive range of motion. ROM encouraged immediately. At 12 months post surgery she had painless range of motion, painless ambulation, and increased passive range of motion.

Analysis and Discussion

Review of literature found no report of osteochondral allograft transplant for a 1st metatarsal head OCD. The procedure is reproducible with readily available materials at a relatively low cost. Our procedure eliminates autograft harvesting and donor site morbidity. This procedure also doesn’t prevent conversion to implant or fusion if necessary. Since our initial patient, 8 additional limbs have undergone the same procedure without complication. To date, our patients’ satisfaction, range of motion, and pain have improved. We believe this to be a valid treatment option for OCD of the 1st metatarsal head.

Case Study Cont.

The metatarsal head was reamed in a step-wise fashion from 8mm to 10mm and a depth of 15mm. A 10mm frozen allograft plug was inserted into the defect and tamped into place. The toe was then axially loaded and ranged until there was no crepitus felt. The 1st MTPJ demonstrated increased dorsiflexion compared to pre-operative exam. The operative site was then closed in normal fashion. Post-operatively she was weight bearing as tolerated with passive ROM encouraged immediately. At 12 months post surgery she had painless range of motion, painless ambulation, and increased passive range of motion.

References