A Viable Osteochondral Allograft for Articular Cartilage Replacement of 1st Metatarsal Head – A Case Report

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Purpose/Literature Review
Cryopreserved, viable, osteochondral allograft (CVOCA) has been proven to retain viable chondrocytes, chondrogenic growth factors, and extracellular matrix proteins within a natural laminar architecture of cartilage (1), and has proven to be an effective choice for articular cartilage repair for lesions involving lateral and medial femoral condyles, patellas, trochleas, and tibial plateaus (2), as well as talar domes (3-4). However, to date, no article has presented findings involving use of CVOCA of the 1st metatarsal phalangeal joint. Currently, a variety of different joint destructive procedures, as well as joint preserving procedures, have been described and proven for the treatment of 1st metatarsal phalangeal joint articular cartilage damage; yet, each have their own indications, complications, and limitations (5-6) leaving the door open for exploration of other surgical options. The purpose of this case is to present a novel treatment option, namely utilization of CVOCA in a joint preserving procedure, for end stage 1st metatarsal phalangeal joint cartilage damage.

Case Study
A case is presented of a 50-year-old female with significant, progressing pain and limited range of motion of 1st metatarsal articular cartilage damage; yet, each have their own indications, complications, and limitations (5-6) leaving the door open for exploration of other surgical options. The purpose of this case is to present a novel treatment option, namely utilization of CVOCA in a joint preserving procedure, for end stage 1st metatarsal phalangeal joint cartilage damage.

Results
Radiographic results show increased 1st metatarsal joint space from 2.60mm, 1.50mm, and 1.20mm from lateral to medial on DP view preoperatively, to 3.10mm, 3.00mm, and 2.90mm respectively on DP view 8 months postoperatively. On lateral radiographs, 1st metatarsal joint space increased from 1.80mm to 3.47mm 8 months postoperatively.

Discussion
This case study details our technique and use of cryopreserved, viable osteochondral allograft as a complete 1st metatarsal head cartilage replacement, addressing significant pain in 1st metatarsal phalangeal joint in a joint preserving procedure with radiographically and clinically good results. This points to use of CVOCA as a viable, surgical option for 1st metatarsal phalangeal joint cartilage damage in the future.

References