Summary: The purpose of this prospective, randomized, multi-centered study is to compare the opening-wedge osteotomy of the proximal first metatarsal to the proximal chevron osteotomy in the treatment of moderate to severe hallux valgus with increased intermetatarsal angle. Outcomes will be assessed using patient functional scores (SF-36), American Orthopaedic Foot and Ankle Society (AOFAS) forefoot metatarsophalangeal interphalangeal score and Visual Analogue Scale (VAS) for pain, activity & patient satisfaction, are assessed prior to surgery and 3, 6, 12 and 24 months. Surgeon preference is being evaluated based on a questionnaire and actual surgical times. Radiologic measurements (intermetatarsal angle correction, hallux valgus angle correction, sagital talus-first metatarsal (Meary's) angle, metatarsal length and union) will also be assessed. Results demonstrate that patients who undergo the opening-wedge osteotomy have less pain at 3 months (ave.VAS pain reduction 2.9, SE±1.0) than those with the chevron (ave.VAS pain reduction 2.4, SE±1.2). VAS for activity demonstrates greater improvements with the chevron osteotomy at 3 months (0.8, SE±0.8) versus the opening-wedge (0.1, SE±1.0). AOFAS scores improve on average 18.3 (SE±8.6) with the opening wedge compared to 20.8 (SE±7.4) with the chevron at 3 months. Average hallux valgus angle correction for opening-wedge and chevron osteotomies are 11.0 degrees (SE±2.5) and 19.0 degrees (SE±3.1) respectfully. Average intermetatarsal angle correction for opening-wedge and chevron osteotomies are 6.5 (SE±1.3) and 4.3 (SE±1.7) respectfully. Both procedures are effective at maintaining metatarsal length. The opening-wedge osteotomy takes on average 60.9 minutes (SE±3.9) to complete compared to 69.1 minutes (SE±5.1) for the chevron osteotomy. Surgeon response to the new opening-wedge osteotomy is favorable. Opening-wedge and proximal chevron osteotomies have comparable pain, function and radiographic outcomes.

Introduction: For patients with moderate to severe hallux valgus with increased intermetatarsal angle, correction with a proximal first metatarsal osteotomy is indicated. The purpose of this study is to compare the opening-wedge osteotomy of the proximal first metatarsal the proximal chevron osteotomy in the treatment of moderate to severe hallux valgus with increased intermetatarsal angle.

Methods: This prospective, randomized, multi-centered study is being conducted at three centers in Canada. Approximately 75 adult patients with hallux valgus are to be randomized to either the proximal metatarsal opening-wedge osteotomy with plate fixation or the proximal chevron osteotomy. Patient functional scores using the SF-36, American Orthopaedic Foot and Ankle Society (AOFAS) forefoot metatarsophalangeal interphalangeal score and Visual Analogue Scale (VAS) for pain, activity & patient satisfaction, are assessed prior to surgery and 3, 6, 12 and 24 months. Surgeon preference is being evaluated based on a questionnaire and actual surgical times. Radiologic measurements (intermetatarsal angle correction, hallux valgus angle correction, sagital talus-first metatarsal (Meary’s) angle, metatarsal length and union) will also be assessed.

Results: Early results demonstrate that patients who undergo the opening-wedge osteotomy have less pain at 3 months (ave.VAS pain reduction 2.9, SE±1.0) than those with the chevron (ave.VAS pain reduction 2.4, SE±1.2). VAS for activity demonstrates greater improvements with the chevron osteotomy at 3 months (0.8, SE±0.8) versus the opening-wedge (0.1, SE±1.0). AOFAS scores improve on average 18.3 (SE±8.6) with the opening wedge compared to 20.8 (SE±7.4) with the chevron at 3 months. Average hallux valgus angle correction for opening-wedge and chevron osteotomies are 11.0 degrees (SE±2.5) and 19.0 degrees (SE±3.1) respectfully. Average intermetatarsal angle correction for opening-wedge and chevron osteotomies are 6.5 (SE±1.3) and 4.3 (SE±1.7) respectfully. Both procedures are effective at maintaining metatarsal length. The opening-wedge osteotomy takes on average 60.9 minutes (SE±3.9) to complete compared to 69.1 minutes (SE±5.1) for the chevron osteotomy. Surgeon response to the new opening-wedge osteotomy is favorable.

Discussion and Conclusion: Opening-wedge and proximal chevron osteotomies have comparable pain, function and radiographic outcomes.