

Long-Term Follow-Up of the Cheilectomy for Degenerative Joint Disease of the First Metatarsophalangeal Joint



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ABSTRACT

Cheilectomy is the surgical resection of 20% to 30% of the dorsal metatarsal head and proximal phalanx. The present retrospective study evaluated the long-term efficacy of aggressive cheilectomy to address degenerative joint disease of the first metatarsophalangeal joint. To our knowledge, this is the second longest duration study to date to evaluate the long-term efficacy of the cheilectomy procedure, with a mean follow-up period of 7.14 years (range 39 weeks to 14.87 years). The mean patient age was 55.71 ± 9.51 years, and 37 (65%) of the patients were female. Age, sex, foot type, and preoperative radiographic parameters of hallux rigidus were also evaluated and correlated. The mean percentage of success with this operation was 87.69%. Of the 58 patients, 51 (87.93%) experienced no limitations in their daily activities. Only 2 patients (3.33%) subsequently required subsequent arthrodesis. The results of the present study suggest that cheilectomy offers long-term satisfaction for patients with hallux rigidus and is an acceptable alternative to the joint destructive procedure of first metatarsophalangeal arthrodesis.

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Hallux rigidus is a symptomatic degeneration of the first metatarsophalangeal joint (MTPJ) (1). Symptoms will result from first MTPJ range of motion in a cartilage-denuded joint, usually in the dorsal one half to one third of the joint, with concomitant irritation of a dorsal prominence in footwear (Fig. 1) (2). These symptoms will be aggravated by activities that require first metatarsophalangeal dorsiflexion, such as squatting, wearing high heel shoes, ascending an incline, running, and cross-country skiing (3). The etiology of hallux rigidus is secondary to multiple predisposing factors, including congenital flattening or squaring of the metatarsal head, an elevated first ray, trauma, and repetitive cyclic loading of high-impact exercises, such as running or dancing (4–6). Hallux rigidus is fairly common and occurs in about 1 in 40 persons aged >60 years (7). The mean age of onset is 43 years old, and the mean age of surgical correction is 50 years (6). Although several hallux rigidus classifications are available, including Regnaud's classification and the Drago, Orloff, and Jacobs scale, Coughlin and Shurnas created a classification of hallux rigidus that correlated radiographic and

clinical parameters with a recommended surgical procedure (8–10). They concluded that grades 1 and 2 and select grade 3 cases can be treated successfully with cheilectomy and stage 4 cases with arthrodesis (10).

Treatment of hallux rigidus includes conservative and surgical options. Conservative treatment options include shoe gear modifications (rocker-bottom shoes, stiff-soled shoes, metatarsal roll bar), nonsteroidal anti-inflammatory drugs, cortisone injections, analgesics, activity modification, orthotics modified with a Morton's extension, and carbon fiber inserts (4,11). Several surgical treatments have been proposed for hallux rigidus, including excision arthroplasty (Keller osteotomy), interpositional arthroplasty, decompression osteotomies, cheilectomy, and arthrodesis (2).

The cheilectomy procedure has several advantages, including resection of 20% to 30% of the dorsal metatarsal head. The surgery provides the patient with an alternative to joint destructive procedures, and the postoperative joint can easily be converted to arthrodesis at any time without "burning any bridges" (2,6). Cheilectomy will preserve and restore the first MTPJ's range of motion, unlike arthroplasty or arthrodesis (6,12). After cheilectomy, the first MTPJ passive range of motion has been reported to have increased from 17° to 46° (3). The procedure also preserves the length of the first ray and respects the sesamoid apparatus and intrinsic pedal musculature, maintaining the stability of the first MTPJ (13). The

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Fig. 1. Lateral view of a foot with hallux rigidus. Note the dorsal prominence to the first metatarsophalangeal joint.

Valenti procedure is a type of cheilectomy technique named after the Italian surgeon Valente Valenti, who initially used the procedure in 1976 (13). The Valenti procedure resects the metatarsal head and proximal phalanx at an angle of 80°, creating a V resection of the dorsal two thirds of the joint, preserving the joint space (13).

Controversy exists regarding which hallux rigidus grade is an indication for a cheilectomy procedure, although arthrodesis remains the reference standard for advanced disease (6). Some investigators have stated that cheilectomy should be reserved for the lower hallux rigidus grades (1,3,7,14), and others have reported high patient satisfaction with the higher hallux rigidus grades (15–18). Although the severity of degenerative arthritis is the most important consideration in determining the correct procedure for the patient, choosing a procedure should be determined by many



Fig. 3. Approximately one to two thirds of the head of the first metatarsal head was removed with a saw blade in an angular fashion, consistent with a Valenti procedure. An osteotome marked the level of the metatarsal head, which was resected.

variables, including the patient's age, activity level, expectations, and treatment history (6). The clinical variables that influence procedure choice in the Coughlin and Shurnas classification include first MTPJ dorsiflexion limitation and pain with range of motion



Fig. 2. Anteroposterior view of the dorsal osteophyte formation at the first metatarsal head.

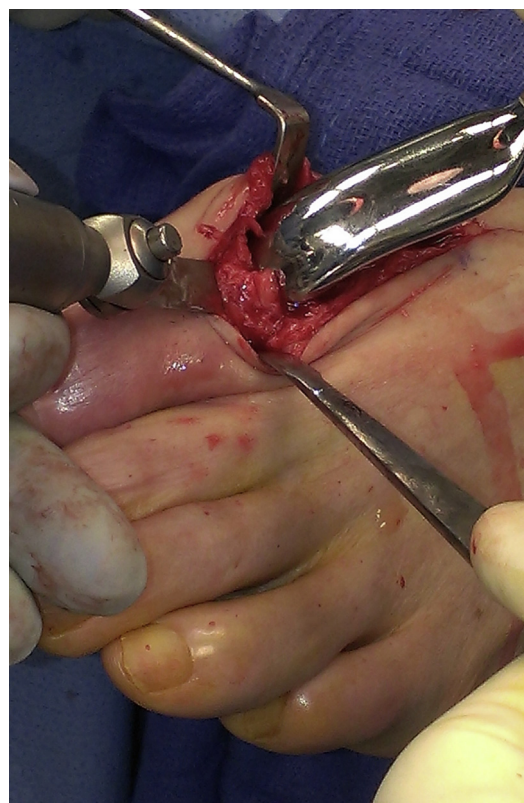


Fig. 4. A McGlamry elevator was used to protect the first metatarsophalangeal head as a saw blade was used to remove a reciprocating cut off the base of the proximal phalanx.

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