Butler's operation for congenital overriding of the fifth toe

Retrospective 1–7-year study of 23 cases

Hugo De Boeck

I reviewed 17 children with overriding of the fifth toe, treated by Butler's arthroplasty; 6 underwent bilateral operation. Satisfactory results were obtained in all but 1 patient, and all could wear normal shoes.

Pediatric Orthopedic Department, Academisch Ziekenhuis V.U.B., Laarbeeklaan 101, B-1090 Brussels, Belgium
Tel +32-2 477 6021. Fax -2 477 6505
Submitted 92-03-21. Accepted 92-07-19

Overriding of the fourth toe by the fifth toe is a congenital deformity, often bilateral, in which the capsule of the metatarsophalangeal joint is retracted and the extensor tendon shortened; the fifth toe is rotated and often smaller than normal (Figure 1). There is no tendency for spontaneous correction, but the condition is often asymptomatic and causes disability in only half of the patients (Scrase 1954, Cockin 1968). If symptoms occur surgery is indicated and a variety of surgical procedures has been described.

I have reviewed the results of the Butler's arthroplasty as described by Cockin (1968).

Patients and methods

In a retrospective study, 17 patients who had undergone Butler's arthroplasty in my department were reviewed. Between 1982 and 1990, 18 patients underwent operation for an overlapping fifth toe. 17 patients attended for final review and were included in this study. Bilateral operations were performed in 6 children in a total of 23 operations. There were 12 boys and 5 girls. The mean age at operation was 8 (5–15) years. The mean follow-up time was 4 (1–7) years. All patients were personally examined. The feet were inspected for correction of the deformity, pain relief, and footwear, and the patient's opinion was recorded.

The operation

A dorsal racquet-shape incision is made to encircle the base of the fifth toe, with a dorsal handle following the extensor longus tendon. A second incision is made on the plantar aspect to allow displacement of the toe plantarward and laterally. The ligaments of the metatarsophalangeal joint of the toe are divided. Care must be taken not to damage the neurovascular bundle. The extensor tendon is divided as well as the dorsomedial part of the capsule of the metatarsophalangeal joint. The toe is then displaced in a plantarward and lateral direction, so that it occupies the position of the plantar racquet handle. The wound is closed so that it becomes the shape of a racquet with the handle now lying on the dorsum of the foot, holding the toe in the corrected position (Figures 1 and 2). Postoperative dressings for maintenance of the corrected position are applied for about 2 weeks. The sutures are removed after 2 weeks, whereafter a normal shoe may be worn.

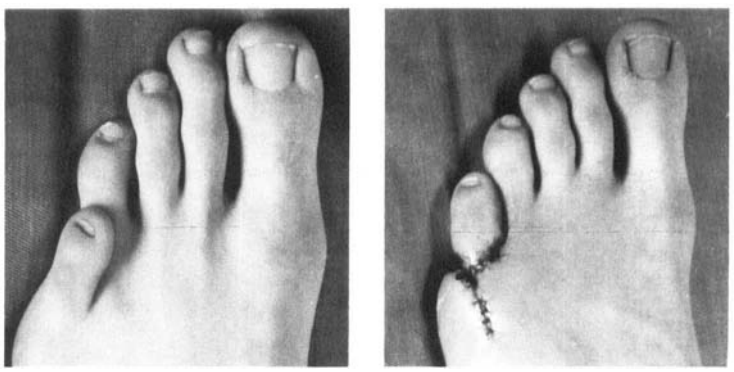
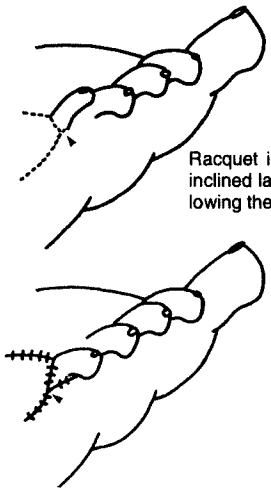


Figure 1. Typical appearance of congenital overriding of the fifth toe in a 13-year-old girl before and after correction.

Figure 2. Butler's operation.



Racquet incision with a plantar handle inclined laterally and a dorsal handle following the extensor longus tendon.

Appearance of the toe in the corrected position. After incision of the extensor tendon of the fifth toe and of the dorsomedial aspect of the capsule of the metatarsophalangeal joint, the toe can be moved in the plantar handle of the incision. The toe lies now in normal alignment without tension. Interrupted skin sutures hold the fifth toe in the corrected position.

Results

There were no wound infections or ugly scar formations. No circulatory damage to the toes was noted. 16 patients (22 operations) were satisfied with the result. Full correction was obtained in 17 feet, 4 feet still showed a minor degree of hyperextension and rotation, but all these patients stated that they were satisfied with the result; they could wear normal shoes without pain and were satisfied with the cosmetic result. One patient had some degree of recurrence of the deformity; although it was not so severe as before the operation, and the patient was able to wear normal shoes, she was not satisfied.

Discussion

The significance of an overlapping fifth toe, other than its cosmetic deformity, is the occurrence of painful dorsal bursitis and consequently difficulties with wearing normal shoes. In young children the deformity usually is of little cosmetic or functional importance but it may become symptomatic in late childhood or early adolescence. If symptoms develop in childhood, one may consider stretching exercises and taping the toe in the corrected position (Jordan and Caselli 1978), but this is not effective and time consuming (Scrase 1954).

Surgery should be performed to correct cosmetic deformities and to relieve pain so that the patient can wear normal footwear. Different operations have been described to correct the congenital overriding fifth toe. Lantzounis (1940) described a transfer of the extensor tendon of the fifth toe to the neck of the fifth metatarsal. Lapidus (1942) described a method in which the divided tendon of the extensor longus is transferred to the plantar aspect of the toe and attached to the abductor digiti minimi tendon by rerouting the tendon from medial to lateral.

These are rather extensive operations, difficult to perform with the risks of morbidity and complications which may make the situation worse than the disability itself. A more simple procedure was described by Wilson (1953) using a V-Y-plasty, but it may lead to ugly scar formation (Scrase 1954). Hulman (1964) described a simple operation involving correction of the soft tissue; Morris et al. (1982) reported good results of this procedure. McFarland's (1950) procedure of syndactyly of the fourth and the fifth toe is often unacceptable to the patients. Black et al. (1985) reported their results of 36 operations following Butler's technique as described by Cockin (1968); good to excellent results were obtained in 34 operations.

The operation is essentially technically simple, but nonetheless attention to details in technique is important. The circumferential incision is necessary to obtain full correction, and carefully performed dissection is important, avoiding the neurovascular structures, to expose and divide the dorsomedial aspect of the metatarsophalangeal capsule.

References

Black G B, Grogan D P, Bobechko W P. Butler arthroplasty for correction of the adducted fifth toe: a retrospective study of 36 operations between 1968 and 1982. J Pediatr Orthop 1985; 5 (4): 439–41.

Cockin J. Butler's operation for an overriding fifth toe. J Bone Joint Surg (Br) 1968; 50 (1): 78–81.

Hulman S. Simple operations for the overlapping fifth toe. Br Med J 1964; 2: 1506–7.

Jordan R P, Caselli M A. Overlapping deformity of the digits in the pediatric patient: a conservative approach to treatment. J Am Podiatry Assoc 1978; 68 (7): 503–5.

Lantzounis L A. Comgenital subluxation of the fifth toe and its correction by a periosteocapsuloplasty and tendon transplantation. J Bone Joint Surg 1940; 22 (1): 147–50.

Lapidus P W. Transplantation of the extensor tendon for correction of the overlapping fifth toe. J Bone Joint Surg 1942; 24: 555–9.

McFarland B. Congenital deformities of the spine and limbs. In: Modern Trends in Orthopedics (Ed. Platt, H.) P B Hoeber, New York 1950: 107–8.

Morris E W, Scullion J E, Mann T S. Varus fifth toe. J Bone Joint Surg (Br) 1982; 64 (1): 99–100.

Scrase W H. The treatment of dorsal adduction deformities of the fifth toe. J Bone Joint Surg (Br) 1954; 36: 146.

Wilson J N. V-Y correction for varus deformity of the fifth toe. Br J Surg 1953; 41: 133–5.