HALLUX VARUS

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We reviewed 12 patients with congenital hallux varus who had had operations on 20 feet to enable them to wear normal shoes and to improve the appearance. After an average follow-up of 12.7 years the results of soft tissue procedures were satisfactory in 12 of 17 feet. Arthrodesis of the first metatarsophalangeal joint, performed primarily in one foot and secondarily in two others was also satisfactory, but metatarsal osteotomy in two feet gave unsatisfactory results leading to local amputation. The unsatisfactory results were generally due to the appearance of shortness of the first metatarsal and rarely because of symptoms or recurrent deformity.

Congenital hallux varus is rare and we could find no report of the long-term results of surgical treatment. We have reviewed 35 years' experience at the Royal Children's Hospital, Melbourne.

PATIENTS AND METHODS

From 1952 to 1983, a total of 16 patients with hallux varus were treated surgically. Of these, 12 were available for follow-up at an average of 12.7 years (range four to 35 years). The evaluation (by JAM) included an interview and examination, standing anteroposterior radiographs, and clinical photographs. The original clinical notes, photographs and radiographs were reviewed.

The result was defined as satisfactory when there was only occasional or no ache or pain, minor or no difficulty with footwear, no significant deformity, and an appearance acceptable to both the patient and the reviewer. The result was unsatisfactory when any one of these criteria failed to apply. The need for secondary surgery did not preclude classification of the result as satisfactory; the management of this complex of abnormalities may require more than one operation.

Of the 12 patients reviewed, eight were male and four female. The mean age of the patients at the time of operation was 2.8 years (range three months to eight years). Ten of the 12 patients had bilateral hallux varus,

so there were 22 feet for review. Seven of the patients had hallux varus as an isolated congenital abnormality and were otherwise normal, but five had other congenital anomalies (Table I).

In all patients the main anomaly was medial deviation of the hallux at the metatarsophalangeal joint with an associated increase in the width of the first web space. There were also a number of associated features (Table II) (McElvenny 1941; Thomson 1960; Joseph, Jacob and Chacko 1984). Any accessory hallux (sometimes termed a prehallux) was poorly formed with little bony content and arose from the medial border of the foot at the level of the metatarsophalangeal joint. Two patients require special mention though neither are included in our review: one was lost to follow-up, and the other had surgery too recently. The first had two halluces, but, since the more medial was better formed, the lateral was amputated. The second had a very broad hallux consisting of fused pre-hallux and hallux; this was treated by excision of a central wedge and side-to-side suture.

SURGICAL MANAGEMENT

The indications for operation were to enable normal shoes to be worn and to improve appearance. The procedures are listed in Table I.

McElvenny (1941) describes the removal of any accessory bone or digit and the release of the medial aspect of the first metatarsophalangeal joint. The joint is then maintained in the corrected position by a distally based lateral capsular flap reinforced by the extensor hallucis brevis tendon. Syndactylism is created between the great and second toes and a temporary wire is placed across the joint to give immediate postoperative stability.

Farmer's technique (1958) involves repositioning

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the hallux on the first metatarsal after release of the medial joint capsule and removal of any accessory bone. The medial skin defect is closed by a rotation flap of skin and subcutaneous tissue raised from either the dorsal or plantar surface of the first web space.

RESULTS

Two feet with only mild deformity had no operation, so 20 feet were reviewed after surgical treatment. Of these 13 feet were rated as satisfactory (Figs 1, 2 and 3). Seven feet were unsatisfactory, including two patients (four feet) who considered that their feet were cosmetically unacceptable and requested further procedures to increase the length of short first rays. One of these patients also had problems both with shoe fitting and rate of wear.

Footwear and discomfort. There were no or minimal problems with footwear in 16 feet, the remaining four required broad flat shoes. Fifteen feet were painless and five ached only occasionally.

Movement at the metatarsophalangeal joint. Excluding feet with arthrodesed or amputated toes, 16 feet were assessed for range of movement at the first metatarsophalangeal joint. Ten joints had a total range greater than 90° ; two had less than 30° centred about the anatomical position.

Appearance. No foot could be described as cosmetically normal, but to be satisfactory, the appearance had to be acceptable to both the patient and the reviewing clinician. Of the seven feet regarded as unsatisfactory, three were so rated because the clinician regarded the appearance as unacceptable even though the patients were satisfied.

One of these (Case 3) had a short first ray with the hallux in 30° of valgus and 30° of external rotation. The second patient (Case 11) was grossly mentally retarded and had undergone metatarsal osteotomy and capsular release at the age of eight years. The residual deformity produced significant footwear problems that needed amputation of the hallux at the age of 20. Subsequent varus deformity of the second and later of the third toes led to amputation of these digits also. The third patient (Case 12) was the younger brother of the previous patient and was also severely mentally retarded. Metatarsal osteotomy and medial capsular release had been performed on the right foot at the age of 5.5 years, but the shortening of the first ray caused footwear problems with the second and third toes, and amputations through the proximal interphalangeal joints were needed at age 19. At review, the hallux was in 30° of valgus but in other respects the foot was satisfactory.

Secondary procedures. Two feet (Case 10) initially had operations to amputate accessory halluces and correct medial deviation of the true halluces; two years later further surgery was necessary to remove accessory bone

Fig. 1

Fig. 2

Fig. 3

Case 1. Figure 1 – Radiographs at age 18 months show the globular first metatarsals and the gross hallux varus which could not be fully corrected. Figures 2 and 3 – Radiographs and photographs of both feet at review at the age of 19 years.

Table I. Details of 12 patients treated by operation for hallux varus

Case	Sex	Associated congenital anomalies	Side	Primary procedures	Age in years	Secondary procedures	Age in years	Follow-up (years)	Results*
1	M		R	McElvenny	1.5			17.5	Satisfactory
			L	McElvenny	1.5			17.5	Satisfactory
2	F		R	McElvenny	2.0	MTP fusion	12	21.3	Satisfactory
			L	McElvenny	2.0	MTP fusion	16	21.3	Satisfactory
3	F	Gorlin's syndrome	R	McElvenny	2.9			13.0	Unsatisfactory
			L	McElvenny	2.9			13.0	Unsatisfactory
4	M		R	McElvenny	2.5			7.5	Satisfactory
			L	McElvenny	2.5			7.5	Satisfactory
5	M	Polydactyly of hands and feet. Diminished visual acuity and hearing	R	McElvenny	3.9			11.0	Satisfactory
			L	None					
6	M	Dandy Walker syndrome Cleft palate. Syndactyly of fingers	R	Farmer	3.2			9.0	Unsatisfactory
			L	Farmer	1.9			10.3	Unsatisfactory
7	M		R	None					
			L	Farmer	1.2			12.5	Satisfactory
8	M		R	Farmer	0.3			12.4	Satisfactory
9	F		R	Bilateral medial capsular release	3.8			4.0	Satisfactory
			L	syndactylisation	3.8			4.0	Satisfactory
10	F		R	Bilateral medial capsular release	0.3	Bilateral excision of accessory bone at base of first metatarsal	2.0	4.0	Satisfactory
			L	and amputation of accessory hallux	0.3		2.0	4.0	Satisfactory
11	M	Mental retardation. Flexion deformity of fingers.	L	Basal metatarsal osteotomy and medial capsular release	8	Amputation of hallux through MTP joint Amputation of second toe through MTP joint Amputation of third toe through PIP joint	20 22	35	Unsatisfactory
12	M	Mental retardation. Epilepsy. Congenital flexion contractures of fingers. Brother of Case 11	R	Basal metatarsal osteotomy and medial capsular release	5.5	Amputation of second and third toes through PIP joints	18	28.5	Unsatisfactory
			L	Arthrodesis of first MTP joint	6.0			28.0	Satisfactory

* See text for reasons for unsatisfactory results

Table II. Associated forefoot anomalies in 12 patients with congenital hallux varus

	Number
Shortened, thickened first metatarsal	20
Accessory halluces	2
Abnormal bone at various sites about the first metatarsal	4
Syndactyly	2
Hypoplastic phalanges	3
Metatarsophalangeal fusion	3

at the base of the first metatarsals to relieve pressure. Metatarsophalangeal arthrodesis successfully relieved the pain of degenerative arthritis in Case 2 following bilateral McElvenny procedures at the age of two years.

DISCUSSION

Our study indicates that standard operations can give lasting foot comfort and little difficulty with footwear. Soft tissue procedures including the McElvenny and Farmer operations and medial release plus syndactylisation gave satisfactory results in 12 of 16 feet. Unsatisfactory gradings were generally due to the patient's view of the appearance of the foot.

Nine feet in five patients had been treated by the

McElvenny technique, six were rated as satisfactory. Three feet were unsatisfactory: two in one patient had short first metatarsals and were considered cosmetically unacceptable by the patient, who requested metatarsal lengthening. This was not performed for fear of producing symptoms in asymptomatic feet. The other unsatisfactory foot was so rated because of residual valgus and external rotation deformity considered unacceptable by the clinician.

Four feet in three patients were treated by Farmer's technique. The patients with bilateral corrections complained of footwear problems and unacceptable deformity. Both patients treated by bilateral release of the medial capsular structures without the full McElvenny or Farmer procedures had satisfactory results at review, but this was at only four years postoperatively. We found no relationship between the age at surgery and the quality of the result nor are we able to give guidance as to the indications for the McElvenny versus the Farmer procedure.

Metatarsophalangeal fusion as the primary surgical procedure gave a satisfactory result in one foot, but clearly it should be reserved for the late-presenting case. It is, however, a satisfactory secondary procedure for

pain due to degenerative arthritis. Metatarsal osteotomy was unsatisfactory in both patients on whom it was performed. Amputation is disfiguring but may help overcome specific problems in selected patients. None of the operations that were employed addressed the problem of shortening of the first metatarsal; adolescents are commonly dissatisfied because of this uncorrected deformity.

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