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Forefoot amputation in rheumatoid arthritis

Jørgen Arreskov Andersen and Kaj Erik Kløborg

Five patients with long-standing rheumatoid arthritis underwent transmetatarsal amputation. Operative indications were severe pain on walking, marked deformity of the forefoot, and no effect of conservative treatment. After a median follow-up time of 7 (1–12) years, 4 patients had no pain, all patients could wear normal shoes, and the gait was significantly improved without imbalance.

In patients with rheumatoid arthritis, anterior metatarsalgia is caused by rheumatoid granulation tissue and synovitis of the metatarsophalangeal (MTP) joints, leading to erosions in the condyles of the metatarsal heads. In time, pain and deformity increase with the formation of hallux valgus, depression of metatarsal heads, cockup deformities of the toes, and painful plantar callosities. The normal walking sequence is replaced by a stiff and ducklike gait. Excision of the MTP joints was introduced by Hoffmann in 1912. Several modifications have later been introduced (Fowler 1959, Clayton 1960, Kates 1967). Longterm follow-up results have not been convincing (Barton 1973, Watson 1974, Craxford 1982). Amputation of all the toes has been proposed (Nissen 1953).

We report the results of transmetatarsal amputation in a small number of patients with rheumatoid arthritis.

Patients and methods

During the period 1965–1985, 14 transmetatarsal amputations were performed on 9 patients with rheumatoid arthritis at our department. At follow-up, 3 patients had died, and 1 had undergone an amputation of the ipsilateral thigh several years after the initial transmetatarsal amputation. The remaining 5 patients had had severe preoperative pain on walking, slight or moderate pain at rest, and painful callosities (Table 1). In 3 patients the amputation was the first operation on the lower extremities. One patient had had an arthroplasty of the left hip, and one had had incisions of recurrent abscess formations in the left foot. All had been treated with sanocrysine and steroids for longer periods. Provision of padded insoles and orthopedic footwear had not been beneficial. In all 5 patients the indication for the operation was severe hallux valgus, pain both at rest and on walking, marked clawing of all the toes (Figure 1), painful callosities, and chronic ulcers of the forefoot.

The operation was performed using general anesthesia. The level of amputation was just proximal to the capituli in order to achieve a sufficient length of the foot. A long plantar and a short dorsal flap were fashioned. Full use of the foot was first allowed after 14 days. The sutures were removed after 21 days. Postoperatively, normal shoes could be worn when the empty space in the front of the shoes was filled out with insoles or a piece of cotton (Figure 2).

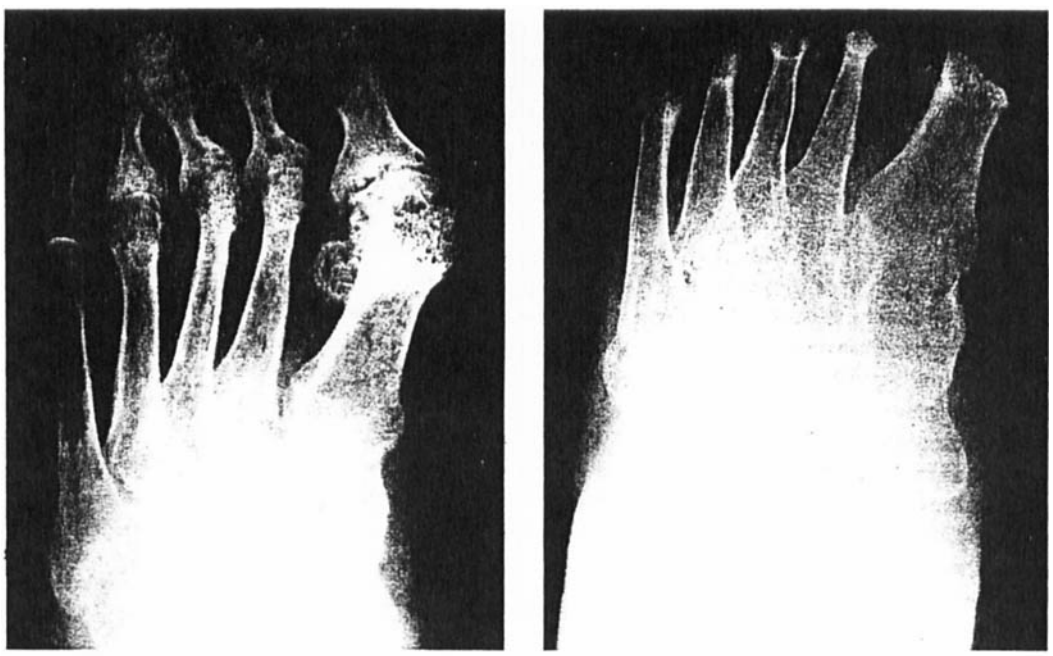
The median duration of hospitalization was 29 (21–45) days. The median follow-up time was 7 (1–12) years. The patients were examined by the authors at follow-up.

Department of Orthopedics, University Hospital, Odense, Denmark

Correspondence: Dr. Andersen, Kløvervænget 22 B, Dk-5000 Odense C, Denmark

Table 1. Five women with forefoot amputations for chronic rheumatoid arthritis

Case	Age	Duration (yr)	Side	Walking distance (m)		Follow-up time (yr)	Outcome
				Preop.	Postop.		
1	50	13	R, L	<100	>1000	7	painless
2	48	33	R, L	<100	<100	8	pain in scar neuroma
3	53	10	R, L	<200	>1000	12	painless
4	59	18	R	<50	>500	1	painless
5	62	35	L	<500	>1000	5	painless



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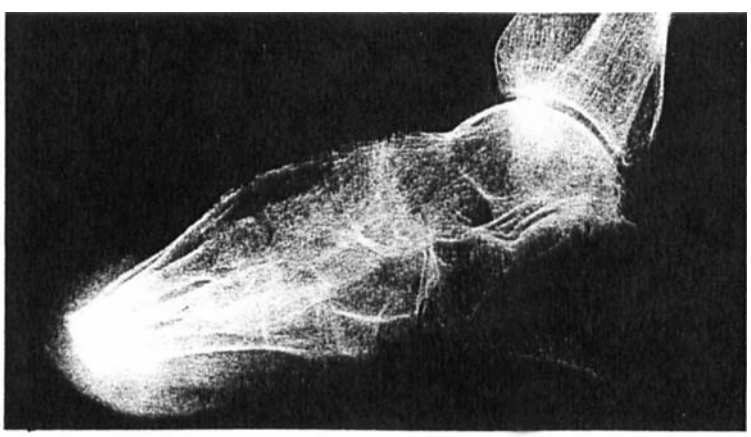

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Figure 1. Case 1. A 50-year-old woman with a painful right forefoot.
A. Arthritic destruction and subluxations of the MTP joints.
B. After amputation of the forefoot. Note the distal level of the amputation. The patient was free of pain at rest and on walking, and ordinary footware could be worn.

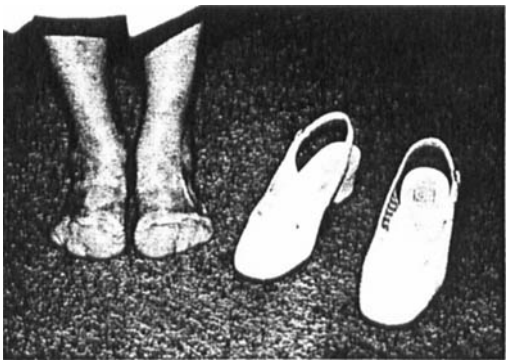

Figure 2. Case 1. A 58-year-old woman 7 years after bilateral amputation of the forefeet. Normal shoes worn.

Results

Except for two superficial sore defects, which healed within a few weeks after discharge from the hospital, primary healing was obtained in all the patients, and no other complications occurred. Four patients achieved complete relief of pain both at rest and on walking. The walking distance increased in all the patients except one (Table 1). This latter patient had a severe affection of both knee and hip joints, and was for shorter periods of time confined to a wheelchair. Further, she complained of slight phantom pain at rest and moderate pain in the scar on walking, and at examination a neuroma in the scar was demonstrated. All the patients could wear ordinary shoes, and in contrast to the preoperative platform gait, they achieved almost normal heel-toe gait. None complained of imbalance at follow-up. In two patients a painless plantar hyperkeratosis was found. Two patients found the cosmetic result unsatisfactory even when compared with the deformed forefoot prior to operation.

Pain relief was excellent in all the patients, and two of them felt that they should have been offered the operation earlier.

Discussion

Different variations of Hoffmann's (1912) forefoot arthroplasty have initially provided good pain relief. The majority may become painless during the first year, but 5 years later only half of the patients remain painless (Watson 1974, Vahvanen 1980, Craxford et al. 1982). In our material four out of the 5 patients were free of pain after a median follow-up time of 7 years. A similar observation was made in the only previously reported series dealing with forefoot amputation in chronic rheumatoid arthritis (Flint & Sweetnam 1960). Nine out of 12 patients were painless after 8 years. After a forefoot arthroplasty, the toes will have no function, and merely fill out the front of the shoes. In time, increasing deformity recurs because the arthroplasty weakens the lateral palisade of the foot, thereby increasing the hallux valgus and displacing the toes dorsally and laterally (Watson 1974). The arthroplasty will not solve the cosmetic problem (Vahvanen 1980).

Imbalance is avoided by performing the amputation just proximal to the capituli, thereby assuring a sufficient length of the foot. Several of our patients were frightened when amputation was proposed. However, only 2 patients were dissatisfied with the cosmetic results, but could nevertheless accept it considering the benefits of pain relief and better gait function.

We have not found any collective data concerning the rates of resection arthroplasty versus amputation in chronic rheumatoid arthritis, but arthroplasty definitely seems to be the established treatment of choice. However, no significant difference in long-term results between conservative treatment and forefoot arthroplasty has been demonstrated (Craxford 1982).

In most patients modifications of foot wear will be sufficient. In a small number of patients, forefoot amputation will be indicated, for the reduced walking ability, pain, and deformity will progress in spite of conservative treatment. In these patients, amputation of the forefoot should be considered as an alternative to resection arthroplasty.

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