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RECONSTRUCTION OF A TUBERCULOUS THUMB BY FREE BONE GRAFTING

A Case Report

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Tuberculosis with secondary staphylococcal infection destroyed the right thumb and index phalanges of a 24-year-old farmer. Four months after starting antibiotic therapy the index finger was amputated, and the thumb reconstructed by excising the disorganized phalanges and transferring the index metacarpal as a free graft to replace them. No previous report of this technique has been traced. A concurrent infection of the patient's left tarsus was treated by triple arthrodesis.

Key words: tuberculous thumb; reconstruction; index metacarpal; free graft

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CASE REPORT

T.Ch., a 24-year-old farmer, developed a painful swelling of his left foot in November 1971, and 1 month later his right thumb, index finger, and the adjacent part of the hand became similarly affected. One month later still a sinus developed on his left instep and at that stage a biopsy of the foot and hand showed tuberculous osteitis with secondary infection by *Staphylococcus aureus.* Chemotherapy with Streptomycin, Myanbutol and Rifampicin was started, but 2 months later, although his general condition was considered improved, his hand and foot remained unchanged.

The state of his right hand at that time is shown in Figure 1. The middle phalanx of the index finger and proximal phalanx of the thumb were completely disorganized, and the bases of both distal phalanges, and the head of the proximal index phalanx were destroyed by the infection. Multiple sinuses were present.

His general condition was good, and there were no signs of tuberculosis elsewhere but his erythrocyte sedimentation rate (Westergren) was 125 millimetres in the first hour.

Chemotherapy was continued and the affected hand immobilized in a plaster cast. Two months later all sinuses were healed and his sedimentation rate fell to 25.

Because of the extensive phalangeal destruction and consequent instability of the right thumb and index finger it was decided to sacrifice the latter and reconstruct the thumb, the operation being carried out on June 7th, 1972, some 6 months after the first hand symptoms. Under general anaesthesia and pneumatic tourniquet a racket incision was made, encircling the base of the index finger, with its handle extending proximally along

Figure 1. The hand 4 months after the onset of symptoms.

Figure 2. Four months postoperatively showing rapid recovery of function.

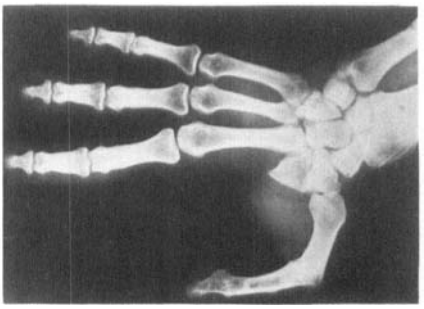

Figure 3. Four years after operation showing incorporation of graft.

the radial side of the second metacarpal to its base. The finger was disarticulated at its metacarpo-phalangeal joint, and the distal four-fifths of its metacarpal removed subperiosteally. Through a longitudinal incision on the ulnar side of the thumb the remains of the proximal phalanx, the base of the distal phalanx, and the head of the first metacarpal were excised. The freed index metacarpal was trimmed by removing the distal part of its head to make a tight fit between the cut ends of the thumb metacarpal and distal phalanx. It was inserted with its original distal (broad) end facing proximally, and no internal fixation was required.

The forearm, wrist and reconstructed thumb were immobilized in a plaster cast for 3 weeks, whereafter mobilizing exercises were started. Three months later excellent function was present with good opposition and pinch (Figure 2.). The patient was last seen 4 years postoperatively when he was doing his normal farm work without significant disability. X-ray at this time showed complete incorporation of the graft (Figure 3).

COMMENT

Pollicization using the index finger, or part of the index ray, is well established for replacing the amputated or congenitally absent thumb, but the free graft reconstruction described here as a method of replacing necrotic bone does not appear to have been recorded previously.

It is applicable only in cases of bone destruction with intact soft tissues, and biologically it is comparable with the use of free rib grafts to fill the gap between healthy vertebral bodies after anterior debridement of the tuberculous spine.

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