requires intravenous sedation and exposes the child to much greater irradiation (Peterson et al 1981; Mahboubi and Horstmann 1986).

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**CURLY AND OVERLAPPING TOES IN CONGENITAL PSEUDARTHROSIS OF THE TIBIA**

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Congenital pseudarthrosis of the tibia is rare, with an incidence of approximately 1 in 250 000 live births. Most large series of tibial pseudarthrosis report an incidence, of between 50% and 90%, of at least one stigma of neurofibromatosis. During the management of a large group of patients with this condition, we noticed that many had curly or overlapping toes on the affected leg. We therefore reviewed all the available cases.

**Patients and methods.** From 1980 to 1992, we treated 44 patients with congenital pseudarthrosis of the tibia. Two legs were amputated and seven patients were not available for follow-up. The remaining 35 patients were reviewed clinically. One boy had the condition on both sides; 36 feet on affected legs and 34 feet on normal legs were therefore available for study.

There were 18 boys and 17 girls; their mean age was 9 years (1 to 29). The toes on each foot were observed non-weight-bearing and examined for fixed deformity and all patients were examined for stigmata of neurofibromatosis. A series of 35 patients with uninjured lower legs and matched for age and sex was used as a control group.

**Results.** In the affected group 23 feet (64%) had curly or overlapping toes on the same side as the tibial pseudarthrosis (Fig. 1). One patient had a curly toe on the contralateral unaffected limb (p < 0.0001). There were no abnormal toes in the control group (p < 0.0001). Among
the 31 abnormal toes, 12 were curly and 19 overlapped. The distribution is shown in Figure 2, the most common abnormality being overlapping of the second toe with the third.

Of the 35 patients, 25 (71%) had café-au-lait pigmentation or other stigmata of neurofibromatosis. There was no statistically significant association between neurofibromatosis and abnormal toes (p = 0.8), or of the age or sex distribution of patients with toe deformities.

None of the curly or overlapping toes was symptomatic, and none had required treatment. All the toe deformities could be corrected passively, although some required firm pressure to flex the metatarsophalangeal joint.

Discussion. The curly toe is a relatively common congenital deformity which is characterised by flexion, varus deviation, and lateral rotation in the digit. It is most common in the fourth and fifth toes. Overlapping usually affects the second and third digits, and is often associated with minor degrees of syndactyly and hypoplasia. Fixed deformity requiring surgical correction is rare (Fixsen 1976). Despite its frequency, there have been relatively few reports in the English literature, and we were unable to find a figure for the population incidence.

The aetiology of curly toe remains uncertain but is probably due to imbalance in the small muscles of the foot. Tethering of the tendons or muscles at the site of the pseudarthrosis seemed possible, but surgical exploration of many of our patients showed no obvious adhesions; all tendons were free-running. Toe abnormalities were observed both before and after surgery to the tibia. Despite the high incidence of neurofibromatosis in cases of congenital pseudarthrosis of the tibia, local histological abnormalities have not been shown in either the bone or the associated soft tissues (Brown, Osebold and Ponseti 1977), which might have explained the toe deformities.

We believe that the most likely cause of curly toe in tibial pseudarthrosis is an alteration in the functional length of the long tendons as a result of deformity and angulation of the limb at an early age. This is supported by the finding that the toe deformities can be passively corrected when the metatarsophalangeal joint of the affected digit is flexed (Ross and Menelaus 1984).

None of our patients had any symptoms related to their curly toes and none had requested treatment; most had forgotten the abnormality, presumably because of its trivial nature when compared with their other problems.

Trehowan (1925) suggested that curly toes should be strapped to improve their position, but Sweetnam (1958) showed that this had no effect; indeed 25% improved spontaneously. Nevertheless, strapping is still commonly used (Jordan and Caselli 1978). Turner (1987) considered that minor symptoms did not warrant strapping but more severe deformities, likely to cause symptoms in
later life, should be surgically treated in childhood. Options include open flexor tenotomy as described by Pollard and Morrison (1975); Ross and Menelaus (1984) thought that this was preferable to a flexor-to-extensor transfer.

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

REFERENCES


PYODERMA GANGRENOSUM AFFECTING THE HAND

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Pyoderma gangrenosum is an ulcerative necrotic dermatosis of unknown aetiology (Gasparini et al 1993). The disease may mimic other disorders and is usually diagnosed by exclusion (Perry 1982). It may occur at various anatomical sites (Perry and Brunsting 1957) and in association with other conditions (Holt et al 1980), but has rarely been reported in the hand. Disastrous results can occur if the condition is not treated properly. We report a case that mimicked a local infection of the hand.

Case report. A 63-year-old, right-hand-dominant woman presented with a lesion on her left index finger. She had sustained a paper cut three weeks earlier and had noticed erythema and mild swelling for one week, becoming ulcerated in the last 48 hours. She had no history of fever or gastrointestinal complaints. She was generally well except for intermittent and unexplained tinnitus, and a history of fluid retention, for which she took Aldactazide. She was married, with four children, smoked one pack of cigarettes per day, and denied alcohol or drug use. She had taken a holiday in the Caribbean three months earlier.

Her index finger showed an ulcer 1 cm × 1 cm on its dorsoradial aspect adjacent to the proximal interphalan-

geal joint. The ulcer was surrounded by a 1 cm blue-black rim, which was further encircled by a small zone of erythema. There was mild oedema and tenderness and serous fluid could be expressed. All finger movements were normal, and there was no erythematous streaking of the arm or axillary or epitrochlear adenopathy. Neurological examination of the hand was normal as was capillary refill in the fingers. A radiograph was normal.

On a diagnosis of bacterial infection, treatment was by antibiotics, immobilisation, and elevation, but after 24 hours, swelling and erythema had increased and the necrotic border of the ulcer had widened (Fig. 1). In view

![Fig 1](image-url)

of this, an operation was performed to excise the ulcerated area to apparently healthy tissue. The proximal interphalangeal joint was opened on the ulnar side of the finger to reveal normal joint surfaces and normal synovial fluid, which was also normal to microscopy.

One day later, necrotic ulceration had reappeared at the border of the lesion, extending into previously