CONGENITAL POSTURAL DEFORMITY OF THE WRIST

A REPORT OF TWO CASES

M. G. H. SMITH

From the Royal Hospital for Sick Children, Yorkhill, Glasgow

Two girls with congenital postural deformity of the wrist associated with deformity of the feet are reported. Fetal position *in utero* is discussed as a likely cause, and treatment by simple manipulation is recommended.

Although congenital postural deformity of the ankle and foot (usually calcaneo-valgus) is common, postural deformity of the otherwise normal wrist at birth has received little or no attention. Standard textbooks of orthopaedic surgery and paediatric medicine do not refer to such wrist deformity and Peretti and Surace (1976), in reviewing club foot and associated conditions, mention club hand without bony deformities but do not describe this as a postural defect. No other English language reference to the condition has been found. This paper reports two babies born with this type of wrist deformity, in each case associated with postural talipes calcaneo-valgus

CASE REPORTS

Case 1. In 1979 a first-born, full-term baby girl was delivered by forceps because of little progress in the second stage of labour. Her birth weight was 2.76 kg and she was well but had moderately severe, postural calcaneo-valgus deformities of both ankles and feet (Figs 1 and 2). There were also deformities in both wrists, especially the left; both were acutely flexed with the palmar aspects of the fingers in contact with the volar aspect of the forearm (Fig. 3). Initially the wrists could be corrected to the neutral position by gentle manipulation. There was no evidence of any proximal injury to the arms nor of radial nerve damage, nor any other abnormality.

The mother, a nurse, was taught appropriate corrective manipulation to be performed frequently on the baby's feet and ankles, as well as progressive manipulation of the wrists and fingers into extension. Splintage was not used. There was rapid improvement in the baby's deformities, and after six weeks the feet, ankles and wrists were normal and have remained so.

Case 2. In 1984 another first-born baby girl, possibly two weeks post-term, was delivered by caesarean section performed as an emergency procedure after 17 hours in the first stage of labour. The birth weight was 4.12 kg. After resuscitation the baby was well but had moderately severe, bilateral postural calcaneo-valgus deformities of the ankles and feet (Figs 4 and 5). In addition the right wrist was acutely flexed (Fig. 6) but could be extended to a neutral position by moderate manipulation. The rest of the right arm was normal and there was no evidence of radial nerve damage. No other abnormalities were found.

As the mother was unwell and unable to carry out corrective manipulation at this time, a simple cock-up splint was applied (Figs 7 and 8) and changed daily. On the fifth day the mother was taught appropriate corrective manipulation for the feet and ankles: she was also taught to manipulate the right wrist and fingers into extension frequently during the day. At night the mother applied the splint to maintain the corrected position. Improvement was a little slower than in Case 1 but after nine weeks the feet and the affected wrist were normal and treatment was stopped. The limbs have since remained normal.

When six weeks old the baby was admitted with indurated areas of subcutaneous tissue across the back of the neck and shoulders; these areas were reddened and nodular. A dermatologist's diagnosis was of subcutaneous fat necrosis, possibly due to local pressure at birth. Without treatment, over the following weeks, the condition resolved and thereafter the baby remained well.

DISCUSSION

Congenital postural calcaneo-valgus deformity of the ankle and foot has a probable incidence of 1-3:1000. The lower figure, published by Wynne-Davies (1964), may reflect under-reporting of this condition while the higher figure (Alberman 1965) may include some minor deformities of doubtful significance. Both authors recorded a significantly higher incidence in girls and in first-born

M. G. H. Smith, FRCSEd, Consultant Orthopaedic Surgeon
Royal Hospital for Sick Children, Yorkhill, Glasgow G3 8SJ, Scotland.
© 1986 British Editorial Society of Bone and Joint Surgery
0301 620X 86 2064 \$2.00

Fig. 1

Fig. 2

Fig. 3

Case 1. At birth. Figure 1—The right foot. Figure 2—The left foot. Figure 3—The left wrist.

Fig. 4

Fig. 5

Fig. 6

Fig. 7

Fig. 8

Case 2. Figure 4—The right foot at birth. Figure 5—The left foot at birth. Figure 6—The right wrist after a splint had been strapped on for 24 hours; note the marks on the skin. Figure 7—A simple splint made from a wooden spatula bound at one end with elastic strapping. Figure 8—The right hand is held in a partially corrected position on the splint.

babies. The cause of this postural deformity is generally accepted as being the baby's position *in utero*, perpetuated by the high tone of the abdominal and uterine muscles of a primigravida, or by oligohydramnios.

Both our patients were first-born girls. The mother of the baby in Case 1 commented that she had had a small "neat" abdomen during late pregnancy. Case 2 was a large baby, 21% above the average weight for a female full-term baby (Tanner and Thomson 1970). These features suggest the possibility of uterine compression but, as ultrasonic examination was not repeated after the routine early scan at 12 weeks' gestation, no conclusive evidence of oligohydramnios or uterine compression was available in either case.

The development of subcutaneous fat necrosis across the neck and shoulders in Case 2 is of uncertain significance: while indicating the possible application of local pressure, it seems more likely to be due to difficulties in delivery than to the baby's position *in utero* or to oligohydramnios.

The flexed position of the wrists was far more acute than that of the drop wrist seen in radial nerve palsy (usually caused by a birth fracture of the humerus). In neither case was there any local evidence of a radial nerve lesion. Acute wrist flexion is what might be expected if the hand had been confined *in utero*; the stiffness and moderate resistance to correction at birth suggest that, in

both babies, the hand had been held in this position for some time.

In both babies the response to treatment by simple manipulation of the wrist (with or without part-time splintage) was prompt, and there has been no relapse. This is the response to be expected in the common postural foot deformity which these girls also had. It seems clear that such simple treatment is sufficient.

It is surprising that, compared with the common occurrence of postural foot deformity, there has been so little comment on a similar deformity of the wrist. It seems possible that the condition is genuinely less common since the smaller, more mobile fetal hand may offer less of a lever for pressure from the uterine wall. It is also possible that some cases have been so mild as to pass unrecorded, or may have been thought to result from a radial nerve palsy and been treated by splintage as in Case 2.

REFERENCES

- Alberman ED. The causes of congenital club foot. *Arch Dis Child* 1965; **40**:548-54.
- Peretti G, Surace A. Club foot, classification, etiology and pathogenesis. *Ital J Orthop Traumatol* 1976; Suppl Sept (2):11-37.
- Tanner JM, Thomson AM. Standards for birthweight at gestation periods from 32 to 42 weeks, allowing for maternal height and weight. *Arch Dis Child* 1970; **45**:566-9.
- Wynne-Davies R. Family studies and the cause of congenital club foot: talipes equinovarus, talipes calcaneo-valgus and metatarsus varus. *J Bone Joint Surg [Br]* 1964; **46 B**:445-63.