

Two knots in the umbilical cord

M. A. WELLER, F.R.C.G.P.

General Practitioner, Thaxted, Essex

SUMMARY. A case of two true knots occurring in an umbilical cord is reported because of its relative rarity. The literature is reviewed. The cause of this potentially dangerous phenomenon is discussed, and a recommendation for further study made.

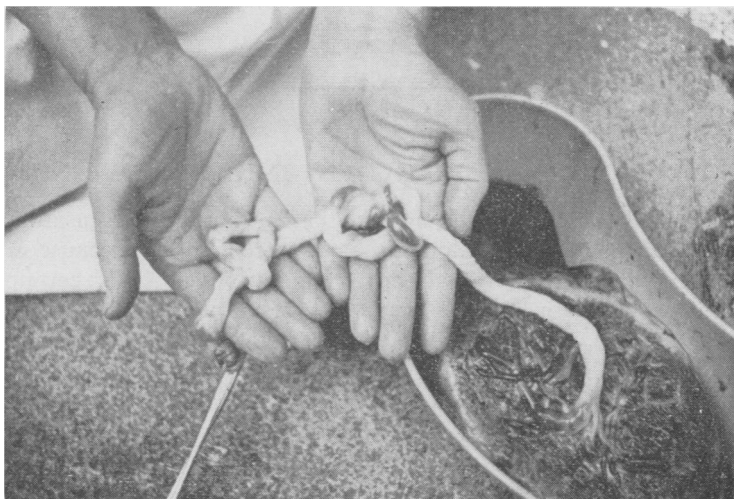
Report

Mrs M. B., aged 26, chose to have her third baby at home, in a modernised country cottage. Her first child had been born when she was aged 22, a male, weighing 2·61 kg (5 lb. 12 oz.) and was delivered by forceps in hospital after premature labour at 37 weeks. Two years later her second son was born normally at home, weighing 3·06 kg (6 lb. 12 oz.). This birth occurred at 39 weeks by her dates.

This pregnancy was uneventful. Her last normal menstruation was on 13.5.74 and her estimated date of delivery was 20.2.75. Her maternal grandmother was one of twins. She was group O, Rhesus positive, weighing on her first attendance at 12 weeks 59·85 kg (9 st. 6 lb.) Her height was 166·4 cm (5 ft. 5 in.) and she was seen nine times during the pregnancy. No illness and no abnormality was observed.

On 4 February 1975 labour started spontaneously, at 38 weeks, both by dates and clinical estimation. Progress was rapid. In four hours she naturally delivered a living male, birth weight 3·06 kg (6 lb. 12 oz.). There was no excess liquor, no meconium staining, and minimal blood loss. The Apgar score was ten at one minute. The placenta appeared normal. The cord, however, had two knots, as shown in the photograph: one, a true figure-of-eight near the centre, and the other a single knot nearer the baby. The cord measured 63·5 cm (25 in.) when knotted, and 73·7 cm (29 in.) when undone.

‡ The infant has thrived and is progressing normally.



Figure

Two knots in the umbilical cord

Discussion

The phenomenon of a single knot in the cord is quite common. Spellacey *et al.* (1966) in a survey of 17,190 consecutive births in and around Minneapolis found an incidence of 180 knots (1.05 per cent). These authors also record that the one-minute Apgar scores are lower in cases with cord complications, and that true cord knots increase the incidence of stillbirths.

They also found that male infants have longer umbilical cords than female. No relationship was shown between cord complications and maternal age. Peterson (1952) records a case of death *in utero* due to a single knot in the cord, and Browne (1925) carried out experiments to demonstrate that knots in the cord were potentially fatal. Swain (1954) quotes the common incidence of true knots in the cord in mono-amniotic twins at the high rate of 53.2 per cent. The average length of the cord is 50.8 cm (20 in.) (Shaw, 1947).

It appears there are four main causes of cord knots:

- (1) Long cords,
- (2) Excess of amniotic fluid,
- (3) Small infants,
- (4) Mono-amniotic twins.

The incidence of multiple knots in the umbilical cord is not known. Hennessy (1944) discussed the time of formation of knots, and reviewed earlier literature. He suggested that the formation of knots was most likely to occur between the ninth and the twelfth weeks when the fetus is small and the movements free, owing to the relatively large amount of liquor amnii. This probably occurred with my patient, and with the premature labour and relatively light weights of the baby and his siblings, suggests that this mother produces abnormal placentae, and that placental insufficiency stimulated the extraordinary gyrations of the fetus *in utero* necessary for these knots to have been tied.

Because of the potential danger to the fetus, hormone studies designed to detect placental abnormality should perhaps be carried out in the subsequent pregnancies of those mothers who have had babies with knots in their umbilical cords.

REFERENCES

- Browne, F. J. (1925). *Journal of Obstetrics and Gynaecology of the British Empire*, **32**, 17–48.
 Hennessy, J. P. (1944). *American Journal of Obstetrics and Gynaecology*, **48**, 528–536.
 Peterson, W. F. (1952). *Journal of the American Medical Association*, **150**, 1009–1010.
 Shaw, W. (1947). *Textbook of Midwifery*. p. 506. London: J. & A. Churchill Ltd.
 Spellacey, W. N., Gravem, H. & Fisch, R. O. (1966). *American Journal of Obstetrics and Gynaecology*, **94**, 1136–1142.
 Swain, F. M. (1954). *American Journal of Obstetrics and Gynaecology*, **68**, 720–721.

Acknowledgements

I would like to record my thanks for help in the preparation of this report to Mrs Susan Barnes, Assistant Librarian at The Royal College of General Practitioners, and to Mrs Joan Bassett for secretarial assistance.

INCREASING INCIDENCE OF ENDOMETRIAL CANCER IN THE UNITED STATES

Data from eight areas in the United States served by population-based cancer reporting systems indicate that, after many years of relative stability, incidence rates of endometrial cancer have risen sharply in the 1970s. In some areas the amount of the increase has exceeded ten per cent per year. The authors conclude that the increase is likely to be due to the increased use of oestrogens for menopausal symptoms.

REFERENCE

- Weiss, N. S., Szekely, D. R. & Austin, D. F. (1976). *New England Journal of Medicine*, **294**, 1259–1262.