PRACTICE OBSERVED

Practice Research

Review of maternity patients suitable for home delivery

E A DIXON

The number of home deliveries of babies has been decreasing and now only 1.4% of deliveries take place at home. Opponents of home delivery believe that the safest place for the patient to be delivered is in hospital where expert facilities and attention¹ are immediately available for the mother and her newborn baby. Those who favour home delivery believe that the hospital environment is unfamiliar and unfriendly. They also think that the routine monitoring of the fetal heart rate, artificial rupture of membranes, oxytocin stimulation, and the widespread use of episiotomy and other procedures disrupt the family atmosphere and also cause lack of bonding between the newborn and the rest of the family.^{2,3}

There are many arguments for and against home delivery.^{4,5} and the perinatal mortality rates have been compared. Hudson,⁶ James,⁷ and Lewis⁸ et al⁹ have also discussed patients who were initially booked for delivery at home or in general practitioner obstetric units (GP units) and had to be transferred to a consultant unit in hospital.

I decided to review the complications of a low-risk group of patients who were considered to be potentially suitable for home confinement when they booked: 1015 consecutive patients who were delivered at the maternity unit of this hospital between August and November 1978.

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Patients

With the assistance of the Community Midwifery Service a list was compiled of the categories of patients who would not be suitable for home delivery:

- nullipara;
- gravidity more than four live births;
- history of threatened abortion in the present pregnancy;
- history of infertile or recurrent miscarriages;
- history of small-for-date babies;
- last live birth more than four years earlier;
- last pregnancy ending in perinatal death, premature labour, or spontaneous abortion after 16 weeks' gestation;
- previous postpartum haemorrhage or retained placenta;
- previous pregnancy affected by rhesus immunisation;
- medical disorders before or during the pregnancy: hypertension, cardiac disease, diabetes mellitus, etc;
- previous operations on the genital tract: caesarean section, repair of third-degree tear, myomectomy, pelvic floor repair;
- age over 35 years;
- previous difficult forceps delivery if a normal delivery had not occurred since then.

It was decided that the height of the patient would be a factor in deciding whether home delivery would be acceptable nor would her social class. The patient's home conditions would, however, be inspected before the booking for home confinement was confirmed. There was no information on the social class of the patients who were reviewed. None of the patients under review had epidural analgesia during labour, and those who were booked for 12 or 48 hour discharge were supervised in labour by the staff of the Community Midwifery Service.

Results

During the antenatal period 41 of the 278 patients (14.7%) had complications that made them unsuitable for home confinement (table 1). Before 38 weeks' gestation a patient was considered to be hypertensive if the diastolic blood pressure was above 90 mm Hg on at least two occasions more than four hours apart over 48 hours while resting in hospital. There were six patients in this category and three

continuous monitoring of fetal heart rate. Although routine monitoring of the fetal heart rate has been criticised,¹⁰ Dewhurst¹¹ stated that it is better than the Fernald's stethoscope, while Donald¹² stressed that anomalies in the fetal heart rate may be missed without continuous monitoring. By continuously monitoring fetal heart rate the diagnosis of fetal distress would not be made only on the basis of meconium-stained liquor as is done when the patient is at home¹³ or in GP units.¹⁴ In some cases the birth of an asphyxiated baby can be predicted and appropriate steps taken to adequately resuscitate the baby at birth. In this review 13 of 237 babies (5.5%) needed intubation for longer than two minutes. In only three cases was asphyxiation predicted, which confirms the report that a normal delivery does not preclude an infant being asphyxiated at birth.¹⁵

Of the complications in labour, 14 (42.7%) occurred in the third stage. Placental retention or postpartum haemorrhage, or both, may occur without any warning and, like asphyxiation of the baby, may carry serious consequences if not treated immediately.

Those who favour home delivery have recognised that there are dangers accompanying childbirth and they are willing to take the risks, especially when there is a good flying squad service available. James⁷ has stated that transfer to hospital late in pregnancy or in labour is undesirable from the mother's point of view for psychological reasons, while Adamson and Gare⁴ report that the delay associated in the transfer may result in a poor outcome for the infant and that even a five-minute delay may be fatal. Hudson⁶ showed in his review that the perinatal mortality rate rose for patients who were transferred in labour and in his experience the delay was commonly more than one hour.

I agree with Adamson and Gare⁴ that the first priority must be a live and healthy mother, the second a live and healthy baby, and the third a psychologically rewarding experience for the parents and baby. This review showed that there are unexpected complications in labour in even a low-risk group of patients, confirming that pregnancy, labour, and puerperium can only be judged as normal after it has taken place.

Conclusions

From a total of 1015 patients, 278 (27.4%) were considered to be suitable for home delivery at booking. Of these, 41 (14.7%) had complications in the antenatal period which made them unsuitable candidates for home confinement. Of the remaining

MRC trials in general practice

Many general practitioners will know of the Medical Research Council's trial of treatment for mild hypertension. This trial is still in progress and most of the 176 group practices that have been brought together in this research are still participating. We hope to extend this valuable framework and carry out studies of other problems suitable for investigation in general practice. Firstly, there will be studies, such as the hypertension trial, that are particularly suitable for investigation in general practice, for both scientific and organisational reasons. We shall shortly be starting a study of the use and possible adverse consequences of hormone treatment given for the relief of menopausal symptoms; a large scale trial of treatment of hypertension in elderly people; we hope, also, to start later this year, and other studies of observational or clinical trials are being discussed. The second type of study envisaged will be concerned with the conduct and organisation of medical care in general practice. Any practice in the group is, of course, free to participate only in those studies that the partners feel are of interest.

237 patients, 33 (13.9%) had complications during labour or up to the fifth postpartum day, while 16 babies (6.8%) needed specialised paediatric care at or after birth. This review shows that 31.3% of low-risk patients who were considered to be suitable for home confinement at booking had complications that could make home delivery unsafe for the patient or her newborn infant, or both.

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had proteinuria. Antihypertensive treatment was started in all, and labour was induced at 38 weeks' gestation in five cases. The sixth patient had labour induced at 37 weeks' gestation because of increasing proteinuria. Six patients had a diastolic blood pressure above 90 mm Hg after the 38th week of pregnancy. Two had proteinuria. All were admitted and labour was induced after the blood pressure reading was verified.

TABLE 1—Complications in the antenatal period (n=41)

	No	%
Hypertension + proteinuria	12	29.3
Macrosomia	5	12.2
Postmaturity	5	12.2
Multiparity	3	7.3
Antepartum haemorrhage	3	7.3
Premature rupture of membranes	3	7.3
Others	6	14.6
Rhesus immunisation		
Intrauterine growth retardation		
Intercurrent illness		
Chlorydramin		
Cardiovascular accident		
Chlorydramin		
Temporal epilepsy		
Appendicitis		

The patients who were considered to be postmature were at least 10 days past term. Term was considered to be 40 weeks' gestation as calculated by menstrual dates and checked by sonar scans or x-ray films. The three patients who were excluded during the antenatal period because of antepartum haemorrhage did not have placenta praevia, but they continued to bleed intermittently throughout the pregnancy and labour was induced before term.

Spontaneous rupture of membranes occurred in two patients between the 32nd and 33rd weeks of pregnancy. In one patient spontaneous labour followed shortly afterwards, while the other was delivered 48 hours after the membranes had ruptured. Both deliveries were assisted by forceps and the babies were transferred to the special care baby unit.

Rhesus antibodies rose in a rhesus-negative patient who had no antibodies present when she booked. Labour was induced before term and the baby, who was not jaundiced at birth, was transferred to the special care baby unit. The patient who had a suspected subchorionic haemorrhage during the second trimester had a forceps delivery, and the patient who developed deep vein thrombosis was treated with anticoagulant drugs before and after delivery. Temporal epilepsy was noted for the first time in one patient at 36 weeks' gestation. The cause of intrauterine fetal death occurred at 32 weeks' gestation. The cause of death was not known.

Of the 237 patients who had no complications in the antenatal period, 33 (13.9%) had complications in labour or in the first five postpartum days (table 1). Ten patients were delivered by forceps,

TABLE 2—Complications in labour and early puerperium (n=33)

	No	%
Forceps delivery	10	30.3
Placental abruption	5	15.1
Postpartum haemorrhage	5	15.1
Retained placenta	3	9.1
Spontaneous rupture of membranes	3	9.1
Hypertension + proteinuria	3	9.1
Preterm labour	2	6.0
Ptychosis	2	6.0

five because fetal distress was diagnosed. The diagnosis of fetal distress was made by noting type II (late) or variable decelerations of the fetal heart rate using either the external ultrasonic Doppler or fetal scalp electrode tracings. Two of the babies, which were born alive, needed intubation at birth and two others were born with nuchal entanglement of the umbilical cord.

The other five forceps deliveries were performed because the second stage of labour was considered to be prolonged and the maternal effort was poor. In all cases the second stage lasted longer than 50 minutes and in two cases it was more than 60 minutes. There was deep transverse arrest in one case.

Three patients had a caesarean section as an emergency procedure. One had prolapse of the umbilical cord after spontaneous rupture of membranes and the others had failed to progress after 12 hours in the first stage of labour. Two patients went into spontaneous labour before 38 weeks' gestation. The babies who were born to these patients developed respiratory distress syndrome and were transferred to the special care baby unit. Nine patients had retained placentas, which were removed manually under general anaesthesia.

Four patients had postpartum haemorrhage and all needed blood transfusion. A fifth patient received a transfusion on the second postpartum day because her haemoglobin concentration was 8.4 g/dl. Three patients were hypertensive, noted for the first time in two in labour. Both had diastolic blood pressures greater than 100 mm Hg, and one had proteinuria when a catheter specimen of urine was tested. The third patient became hypertensive immediately after delivery. There was no postpartum haemorrhage in any of these patients, and all three patients were normotensive on the third postpartum day. One patient developed peritonitis on the day after delivery and was treated conservatively.

Sixteen babies (6.8%) needed specialised paediatric care. Thirteen of them had to be intubated at or soon after birth. Intubation was performed if the diastolic blood pressure was above 90 mm Hg on at least two occasions more than four hours apart over 48 hours while resting in hospital. In all cases intubation was continued for longer than two minutes. Two of these babies were delivered by forceps because of fetal distress and one was delivered by caesarean section because of prolapse of the umbilical cord.

Two babies who were born at 38 weeks' gestation developed the respiratory distress syndrome and were transferred to the special care baby unit. One further baby was jaundiced because of blood group ABO incompatibility between mother and baby.

No perinatal deaths were recorded for the patients who were still suitable for home delivery after the antenatal period.

Discussion

Of the patients who were thought to be suitable at booking for home delivery, 31.3% had complications in the antenatal period, during labour, or in the first five days of the puerperium, or their baby needed specialised paediatric care during the first few hours of life. In the antenatal period 14.7% of the patients were found to be unsuitable for home delivery. Hudson⁶ rebooked 11.2% of multiparae women before labour, and Cox et al⁹ transferred 11.1% for hospital care. Lewis et al⁹ found an increasing number of patients who were being transferred from home to consultant units and said that this was due to a greater awareness among general practitioners of antenatal problems.

Of the patients who were suitable for home delivery after the antenatal period, 30 (12.7%) had complications in labour. Hudson⁶ and James⁷ reported that 4.1% and 7.3% of multiparae were transferred in labour from home and GP units respectively, while Mehl et al⁹ have shown that at least 10% of women who are expected to deliver at home will require transfer to hospital for an unexpected complication in labour.

The first stage of labour was prolonged in two cases—more than 12 hours—in my review. James⁷ stated that patients were transferred to hospital after being 36 hours in the first stage. Although there is no agreement on when labour becomes prolonged in the first stage, more than 18 hours in multiparae must be considered outside normal limits. In this series assistance was not given before 50 minutes in the second stage of labour; James⁷, however, transferred multiparae to a consultant unit after 45 minutes. Like prolonged labour in the first stage, there is no agreement about when the second stage is prolonged. The median duration of the second stage is 20 minutes,^{11,12} and the 95th percentile value is 1.1 hours.¹³ Donald¹² stated that after 20 minutes the patient should be reviewed so that an early decision may be made about giving assistance. Since there are so many opinions on when labour becomes prolonged, the condition of the patient or the fetus, or both, must therefore be the deciding factor about giving assistance in both the first and second stages of labour.

Forceps were used in five cases of fetal distress diagnosed by

A Family Practice

Six generations in Wiltshire

DICK MAURICE

It was in 1792 that my great-great-grandfather, Thelwall Maurice, MD, settled in Marlborough. A graduate of St Thomas's Hospital, he was 25 when he joined Dr Pinckney, who had himself been in practice in the town since 1769. Thelwall's descendants, in practice in the town since 1769, have been in practice in the town since 1769. Thelwall's descendants, in practice in the town since 1769, have been in practice in the town since 1769.

From the start the practice seems to have flourished. On 26 October 1795 an advertisement appeared in the *Salisbury & Winchester Journal*: "Wanted—an APPRENTICE to a SURGEON and APOTHECARY in full practice—apply to Messrs Pinckney and Maurice—Marlborough—Wiltshire." We claim to be the oldest group practice in the country.

Centre of a widely scattered rural community, the distances that had to be covered on horseback or by carriage were far greater than—and indeed for ensuing generations—than they are today with the motor car. Reference to the practice day-books for 1794-5 and 1799-1800, which are preserved, illustrate this. Journeys might set out by the Kennet valley—a flag or article of clothing in the window of a cottage would be a signal for the doctor to call—then to Avebury, and on through the villages to Wroughton and Swindon. Half way on this journey fresh horses would be met, brought by the direct route over the downs.

Sundays do not seem to have been a rest day; what would a doctor today think of having to make up 12 repeat prescriptions as appears under Die Solis 2 Nov 1794? But as today, Monday seems to have been a bad day; opened at random there are 26 entries under Die Lunae 8 Decemb 1794, only 14 for Die Martis 9 Decemb.

Thelwall seems to have kept himself up to date. In 1824 Longmans published the fourth edition of *A Treatise on Dislocations and on Fractures of the Joints* by "Sir Astley Cooper, Bart, FRS, Surgeon to the King etc etc." Many personal comments are included. Case XV appears on pages 54 and 55. Headed "Marlborough Feb 12-1823," it tells how George Davis, aged 35, fell and dislocated his hip. The reduction is vividly described: "30 contusions of blood were first been withdrawn (Sir Astley stresses the importance of this in his preface), pulleys were applied "according to your instructions," and "suddenly, with an audible snap, it slipped into its proper cavity." The account ends: "Very respectfully, T Maurice."

Two of Thelwall's five sons adopted medicine, two the church, and one the law. The elder son, another Thelwall, went to Reading after qualifying at St Thomas's; perhaps there was no vacancy in Marlborough and it was David, the third son, who had left St Thomas's with FRCS, who joined his father in the family practice. Thelwall died in 1830 and

David, aged 28, married the same year. He acquired a good property on the south side and toward the western end of the High Street; his father had practised from the other end of the street on the north side. Thelwall's house, his house Lloran House after the ancestral home Lloran Ucha in Denbighshire; this house was to remain in the family until 1955 and an extension to the house is the practice surgery to this day: initially the surgery was a small lean-to adjoining his property.

The decade starting in 1840 was an important one for the practice. The railway from London to Bath and Bristol had just been completed and passed through Swindon, which was to grow as a railway town. Marlborough's famous Castle Inn, an important staging post for the old coaches, was acquired for the foundation of a "School for the sons of Clergy etc etc." David applied for the post of medical officer for the new school. His printed application, dated 9 March 1843, with 17 testimonials from prominent medical men (two were Fellows of the Royal Society and another, David's own brother-in-law, was to become one) together with four from local persons of importance, is still preserved; so also are the original letters from which the printed application was made. He got the job and held it for three years until the increasing size of the school made a full-time medical officer essential. It was not until 1971 that the care of the school reverted to the practice on the retirement of its fourth and last full-time medical officer.

David's work load must have been prodigious. The day-book for 1845 reveals that Mrs Letitia Codrington of Wroughton House (close to Swindon—a ride there and back by the most direct route, the track over the downs, of at least 16 miles), was visited every day including Sundays from 27 September to 7 November. During this time she received 55 medicines, tablets (less usual), or lotions. She had a further 12 visits during the following three weeks. The nature of her illness is not recorded, but Mrs Codrington's coachman was also being treated, though less frequently, over the same period. During all these time journeys of equal length were being made in the opposite direction. It is satisfactory to record that Mrs Codrington lived on until 1858.

The railway and the foundation of St Mary's hospital, so close to Paddington station, made it convenient for David's two doctor sons to do their training at the new hospital—a tradition that has continued ever since. The elder son moved to Reading and his uncle and became Hon Physician to the Royal Berks. James, the younger son, armed with FRCS like his father, joined the practice in the early 1860s. James took over the family house, which was considerably extended, and incorporated a surgery while his father built a large house, Mantion Grange, just to the west of the town beyond the college. No doubt young Jimmy had to do those tiresome night calls! The surgery had a waiting room, dispensary, and a large examination and consulting room; surgery could be carried out here but was more often done in the patient's own home. More important patients would be seen in a consulting room in the house proper. The surgery backed on to a courtyard and coach houses and stables, to which there was access through an arch.

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