A Review of Obstetric Epidural Anaesthesia, British Military Hospital, Rinteln 1980 – 1985

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SUMMARY: A retrospective study was undertaken of all epidurals inserted on the labour ward in BMH Rinteln from 1980 to 1985 inclusive, during which time both obstetricians and anaesthetists participated in providing an epidural service.

It was impossible to show any difference between the expertise of anaesthetists and obstetricians in siting epidurals, when the incidence of complications or failed analgesia was compared. However, epidurals inserted by obstetricians were more likely to be converted to general anaesthetics for operative procedures than those inserted by anaesthetists, although no adequate explanation for this could be found.

Given increasing patient demand for a 24-hour epidural service, and the logistic difficulties in Service hospitals of providing sufficient anaesthetic staff for this, obstetricians can be trained to help provide such a service.

Introduction

It is over 20 years since the first major publication of the complications of epidural anaesthesia(1). Nevertheless, it is the most effective method of total pain relief in labour(2) and an increasing number of labouring women choose it in preference to other methods of analgesia. The safety of the technique is well established(3) but requires adequate training of anaesthetic and midwifery staff. Furthermore, it is logistically difficult to provide a 24-hour obstetric epidural service when there are less than 2500 deliveries per year in a maternity unit. Increasingly, obstetricians in small units have learnt the technique of lumbar epidural insertion and appear to provide a safe service(4,5). This is particularly relevant for Service hospitals, where deliveries usually number less than 1000 per year, and staffing levels do not provide sufficient anaesthetists for a 24-hour obstetric epidural service.

This paper reports six years experience of an epidural service provided by both anaesthetists and obstetricians in a Service hospital with approximately 1200 deliveries per year.

Methods

Data were obtained from the delivery books at BMH Rinteln which recorded all epidurals from 1980–1985 inclusive. The case notes were then reviewed.

The techniques employed by anaesthetists and obstetricians for the insertion of the epidurals were broadly similar. All the patients had intravenous infusions running and were preloaded with a bolus of crystalloid solution, although the volume varied from 250 to 750mls. The epidural space was found using loss of resistance to either air or saline. A 16-gauge Tuohy needle was used for insertion of the epidural catheter to which a Millipore filter was attached. The local anaesthetic was usually bupivacaine 0.25%–0.5%, 6–12ml, and patients were nursed on their sides or sitting

upright. Midwives gave top-up doses, and all patients had continuous electronic fetal monitoring in labour.

Complications fell into three main groups: hypotension, “bloody taps” and “dural taps”. Hypotension was defined as a systolic blood pressure of less than 100 mm Hg. and was treated by rapidly infusing Hartmann’s solution and or by the administration of ephedrine. A “bloody tap” was defined as the aspiration of blood from the Tuohy needle, after puncture of an epidural vein or actual cannulation of a vein with the catheter. Piercing of the dura mater and release of cerebro-spinal fluid was defined as a “dural tap”.

Failure was defined as maternal perception of inadequate analgesia.

Results

From 1980–85, 252 epidurals were inserted and medical notes obtained in 245 cases (97%). No formal epidural record was introduced until 1985, and the standard of note keeping was variable and often inadequate by today’s requirements. The nursing Kardex proved the most valuable in the description of complications.

The insertion rate varied from 2% of all deliveries in 1980 to 4% in 1985 (Table 1). Of 245 epidurals, 164 (66%) were inserted by obstetricians, and 81 (34%) were inserted by anaesthetists. The mean age and weight of patients was 24 years (range 17–40) and 74 kg. (range 53–132) respectively.

Between 1980–82, the commonest indication for epidural analgesia was breech delivery (Table 2), but by 1984–85, the commonest indication was pain relief following induction of labour by artificial rupture of the membranes and syntocinon infusion. Twenty to thirty per cent of all epidurals were inserted for elective Caesarian sections, but virtually none for emergency Caesarian sections.

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Table 1
Number of deliveries, epidurals, failure and complication rates

Year	1980	81	82	83	84	85	Total
Deliveries	1292	1258	1296	1231	1313	1299	7689
Epidurals	34 (2%)	25 (1%)	31 (2%)	41 (3%)	61 (4%)	60 (4%)	252 (3%)
Inserted by:	(Notes retrieved 245)						
Obstetrician	20	13	20	28	45	38	164 (66%)
Anaesthetist	14	12	10	11	15	19	81 (34%)
Failure Rate							
Obstetrician	0	2	2	3	3	4	14 (8%)
Anaesthetist	1	2	1	1	2	2	9 (11%)
Hypotension							
Obstetrician	2	2	0	1	2	2	9 (5%)
Anaesthetist	1	0	1	0	1	1	4 (4%)
Bloody Taps							
Obstetrician	2	0	1	1	0	3	7 (4%)
Anaesthetist	0	1	2	1	0	1	5 (6%)
Dural Taps							
Obstetrician	2	0	1	0	1	2	6 (3%)
Anaesthetist	0	2	0	1	0	2	5 (6%)
Conversions: Epidurals to General Anaesthetics							
Obstetrician	1	2	6	2	8	7	26 (15%)
Anaesthetist	4	2	2	2	1	3	14 (17%)
No Reason							
Obstetrician	1	2	5	1	5	7	21/26 (80%)
Anaesthetist	2	1	1	1	0	0	5/14 (35%)

Table 2
Indications for epidural analgesia (%)

Year	1980	81	82	83	84	85
Breech	50*	32*	24*	15	7	25
Twins	17	20	13	10	3	11
Induction of Labour	15	4	13	28*	41*	30*
BP Control	6	4	7	3	3	7
Analgesia	3	8	20	18	16	8
Elective LSCS	6	32*	23	23	20	14
Emergency LSCS	0	0	0	0	2	0
Forceps	3	0	0	3	8	5

*Denotes commonest indication

Of 164 epidurals inserted by obstetricians 8% were deemed to have failed, compared with 11% for insertions by anaesthetists (Table 1).

The complication rate was equally divided between obstetricians and anaesthetists. Bloody taps, dural taps

and hypotension occurred in 4%, 3% and 5% respectively of epidurals inserted by obstetricians, compared with 6%, 6% and 4% respectively of epidurals inserted by anaesthetists (Table 1). It did not appear from the notes that hypotension was directly responsible for any case of fetal bradycardia which required emergency Caesarean section.

Forty epidurals (16%) were converted to general anaesthetics for the purposes of forceps delivery, Caesarean section or manual removal of the placenta. Twenty six of these (65%) had been inserted by obstetricians and in 21 cases (80%) no reason could be found from perusal of the notes for the anaesthetic decision to convert to general anaesthesia. The remainder were inserted by anaesthetists and in 35% of cases no reason could be found from the notes (Table 1).

Discussion

Epidural analgesia provides the most effective pain relief for labour(2) and is chosen preferentially by

increasing numbers of labouring women. It is positively indicated in the management of breech delivery(6), multiple pregnancy(7), preterm labour(8), pre-eclampsia(9) and incoordinate uterine activity(10). Unlike pethidine, it has no adverse effects in the fetus(9), and unlike general anaesthesia no maternal deaths have been associated with its use for Caesarean section(11).

The complications associated with epidural analgesia include hypotension in 4–5% of patients(12), bloody taps in 2.8%(1), accidental spinal blockage in 1:2000 blocks(12) and dural puncture in 2–3% of blocks. This latter complication may be as high as 20% with beginners and as low as 0.2% with very experienced anaesthetists(13). Nevertheless, epidurals are basically safe and in the late Dr J S Crawford's series of over 27,000 consecutive lumbar epidurals used for the relief of pain in labour, there were only 9 potentially life threatening complications(3). Of these, 6 occurred at the time of the first injection of local anaesthetic so that there was a doctor present, and the other 3 during a top-up by a midwife. In all cases immediate resuscitative measures were performed, namely the administration of oxygen, placing the patient in a full lateral position, increasing the rate of the intravenous infusion and summoning aid. All the mothers concerned made a full recovery.

It is logistically difficult to provide a 24-hour obstetric epidural service in units with less than 2500 deliveries per year. However, the Obstetric Anaesthetists Association has recommended one consultant session for every 400 annual deliveries(14). This is impossible to provide in most hospitals, particularly Service hospitals where there may be less than 1000 deliveries per year. To this end, it has become accepted practice for obstetricians to provide an epidural service, and this has been shown by others to be efficient and safe(4,5).

This retrospective series from a Service hospital with 1200 deliveries per year shows that an epidural service can be shared between anaesthetists and obstetricians, with no life-threatening complications. Acceptable analgesia was achieved in 90% of cases, which is to be expected when using bupivacaine as first choice anaesthetic(12). The incidence of hypotension and bloody taps is consistent with the findings of others(4,12) and the higher rate of dural taps may be a reflection of the small number inserted during those years.

It is interesting to note the change in indications for epidural insertion over the 6-year period. Initially the commonest indications were purely obstetric (breech delivery and multiple pregnancy) but by 1985 over 50% of the epidurals were inserted for analgesic purposes, either as part of induction of labour or for elective Caesarean section. This presumably reflects greater consumer demand. Only 3 emergency Caesarean sections were performed under epidural during those years. The reason for this is not clear from the case notes; it could be postulated that in the case of fetal

distress there was insufficient time to establish a satisfactory epidural block. However, 16% of all epidurals were converted to general anaesthesia, in the main for the purpose of emergency Caesarean section. This happened even though it is well recognised that the height and quality of an epidural block can be improved relatively quickly when an epidural catheter is already in situ(15). In two thirds of cases conversion was necessary because of inadequate analgesia or maternal request. In the remaining cases, no adequate reason for conversion was given in the notes; nevertheless it is significant that when the epidural had been inserted by an obstetrician, conversion to general anaesthetic occurred in 80% of cases compared with only 35% when inserted by an anaesthetist. Since the proportion of complications and failed epidurals were divided equally between obstetricians and anaesthetists, one can only surmise that the anaesthetists called upon to perform an emergency Caesarean section was less likely to trust an epidural inserted by an obstetric colleague than one by an anaesthetic colleague or himself.

The benefits of epidural anaesthesia for Caesarean section are well recognised and include safety for the mother and fetus(9,11), decreased blood loss(12) and greater parental involvement in the birth. In this respect the situation at BMH Rinteln in 1989 was a 21% epidural rate, provided entirely by anaesthetists; 58% of all elective and 35% of all Caesarean sections were performed under epidural block (personal observation). However, given the conflicting demands of patient request and staff shortages, it may not always be possible to provide such a service.

This study has shown that obstetricians can be trained to insert epidural catheters safely, without an unacceptable incidence of complications. The minimum requirements are that a specialist anaesthetist can be obtained within ten minutes of a request, and that the medical staff present on the delivery suite are competent in resuscitation and endotracheal intubation. Should staff levels in Service hospitals result in a shortage of anaesthetists able to provide an obstetric epidural service, then obstetricians after suitable training can safely take on this role.

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