Nigerian Journal of Clinical Practice
June 2001, Vol.4 (1);15–18

TRENDS IN REGIONAL ANAESTHESIA FOR CAESAREAN SECTION AT UNIVERSITY OF BENIN TEACHING HOSPITAL

C. O. Imarengiaye*, A. B. Ande, M. O. Obiaya**
*Departments of *Anaesthesiology and **Obstetrics and Gynaecology,*
University of Benin Teaching Hospital, Benin City, Nigeria.

ABSTRACT

This study was undertaken to evaluate the trend of practice of regional anaesthesia for caesarean section in a tertiary hospital.

The obstetric operating room records were reviewed for a fourteen-year period: January 1986 to December 1999. The anaesthetic techniques for caesarean section were noted as well as the level of training of the attending anaesthetist. A total of 3,451 patients were delivered by caesarean section in the University of Benin Teaching Hospital during the 14-year period under review. 93.4% (n=3,224) had caesarean section under general anaesthesia and 6.6% (n=227) had regional anaesthesia. Subarachnoid block accounted for 5.6% (n=193) of the patients and 1.0% (n=34) had their caesarean section under epidural block. 18.1% (n=41) of the regional technique was in the first half of the study period and 81.9% (n=186) were carried out in the later seven years of the period demonstrating an increasing trend of regional technique for caesarean section ($p<0.01$). Majority of the epidural blocks were conducted by anaesthetists of 4 years and beyond in practice while the subarachniod blocks were administered by anaesthetists in their second year and beyond in training.

There is an overall low incidence of regional anaesthetic caesarean section. A trend towards increasing administration of regional technique for caesarean section is demonstrated. A dedicated period for hand on the job workshop in regional blocks may enhance early and prompt acquisition of relevant skills in regional anaesthesia for caesarean delivery.

INTRODUCTION

Though general anaesthesia was previously the favoured technique for caesarean section, there has been a move in favour of regional technique in recent years. Most centres in Western Europe and United States of America consider regional anaesthesia as the preferred method of anaesthesia for caesarean section because of its safety and advantages[1,2]. This changing trend is not unconnected with the hazards of general anaesthesia especially for caesarean section. The difficult failed intubation, regurgitation/aspiration pneumonitis, and hypoxaemia remain major causes of anaesthetic maternal deaths[1,3]. The effects of anaesthetic drug on the foetus[4] and the desire of parents to be present (and conscious) at their child's delivery[5], however it occurs, may be enough reasons for the anaesthetist to have a rethink about his technique of anaesthesia for caesarean section.

In addition, regional technique particularly subarachnoid block is more cost effective and logical option for caesarean section in our environment[6]. This would have meant greater utilization of regional anaesthesia for caesarean delivery especially in resource poor countries where the cost of healthcare could be high and sometimes unaffordable. A study of the types and patterns of anaesthesia used for caesarean sections in tertiary obstetric units in Nigeria[7], showed that regional technique was poorly employed for caesarean delivery. Nevertheless, there has been a steady rise in caesarean section rate in Nigeria[8,9], and thus a consequent rise in the number of parturients requiring anaesthetic services, in spite of this rising rate of caesarean section and high rate of general anaesthestic caesarean section, it has not been shown if there has been a change in pattern of anaesthetic technique for caesarean section as is the case in developed countries. This study was conducted therefore to determine the trend of regional anaesthesia for caesarean section in a tertiary health institution in a developing country.

*Correspondence: Dr. C. O. Imarengiaye

PATIENTS AND METHOD

The University of Benin Teaching Hospital is one of the accredited centres for postgraduate training in anaesthesia in Nigeria. Obstetric anaesthesia is administered by consultants and trainee anaesthetists in our hospital. The departmental regulation requires the presence of at least two anaesthetists and preferably one of them should be a senior resident or a consultant staff. The Obstetric unit has a 24 – hour coverage by anaesthetists. The hospital is a referral centre for at least three neighbouring states.

DATA COLLECTION

The obstetric operating room records of the University of Benin Teaching Hospital, Benin City, were reviewed for a fourteen – year period (January 1986 to December 1999). All records of patients who had obstetric anaesthesia during the study period were reviewed. The records were systematically analysed to determine the technique of anaesthesia administered. The records of patients who had regional anaesthesia were subjected to further scrutiny. The type of regional anaesthesia employed was noted as well as the level of training of the anaesthetists or the most senior anaesthetist in the team.

RESULTS

A total of 3,451 parturients were delivered by caesarean section in the period under review (Table 1). 93.4% (n=3,224) had caesarean section under general anaesthesia and 6.6% (n=227) had regional anaesthesia. Suharachnoid block (SAB) was the favoured regional technique accounting for 5.6% (n=193) of the caesarean sections and 1.0% (n=34) had epidural block (EB) for caesarean section. Figure 1 graphically illustrates the techniques of anaesthesia used for caesarean section during the study period.

Table 2 shows the trend of regional anaesthesia for two periods of seven years each. 18.1% (n=41) of the regional technique was conducted in the first half of the study period and 81.9% (n=186) were carried out in the later seven years of the period under review; demonstrating an increasing trend of regional technique for caesarean section ($p<0.01$).

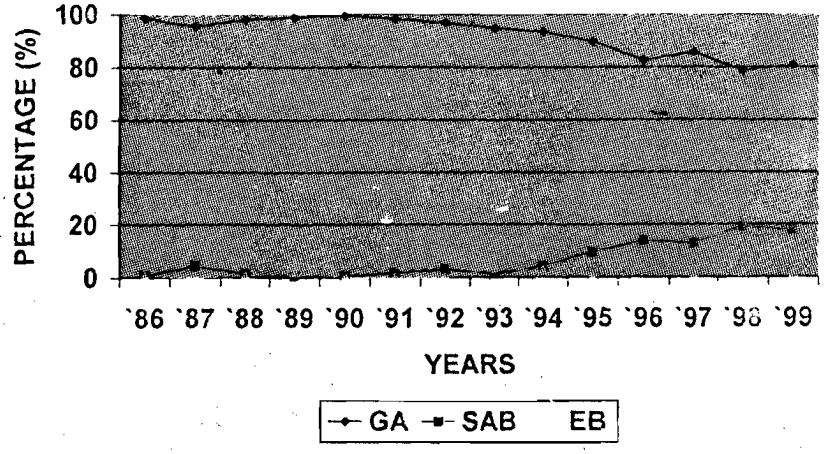
Table 3 shows the level of training of the anaesthetic personnel who administered regional anaesthesia for caesarean section. All the epidural blocks were administered by anaesthetists of over three years and above in practice while the subarachnoid blocks were conducted by anaesthetists of at least two years in

Table 1: **Technique of Anaesthesia for Caesarean Section in UBTH**

(1986 – 1999)

Year	GA		SAB		EB		Total	
	n	(%)	n	(%)	n	(%)	n	(%)
1986	297	(98.6)	2	(0.7)	2	(0.7)	301	(8.7)
1987	261	(95.6)	12	(4.4)	0		273	(7.9)
1988	255	(98.1)	4	(1.5)	1	(0.4)	260	(7.5)
1989	286	(99.0)	1	(0.3)	2	(0.7)	289	(8.4)
1990	264	(99.6)	1	(0.4)	0		265	(7.7)
1991	281	(98.3)	5	(1.7)	0		286	(8.3)
1992	343	(96.9)	11	(3.1)	0		354	(10.3)
1993	211	(95.0)	3	(1.4)	8	(3.6)	222	(6.4)
1994	198	(93.4)	9	(4.2)	5	(2.4)	212	(6.1)
1995	201	(89.7)	22	(9.8)	1	(0.5)	224	(6.5)
1996	119	(8.26)	20	(13.9)	5	(3.5)	144	(4.2)
1997	184	(85.6)	28	(13.0)	3	(1.4)	215	(6.2)
1998	164	(78.8)	40	(19.2)	4	(1.9)	208	(6.0)
1999	160	(80.8)	35	(17.7)	3	(1.5)	198	(5.7)
TOTAL	**3,224**	**(93.4)**	**193**	**(5.6)**	**34**	**(1.0)**	**3,451**	**(100)**

FIGURE 1: **Technique of Anaesthesia for Caesarean Section in UBTH (1986-1999)**



the department.

Table 4 shows the yearly trend of general anaesthesia and regional anaesthesia for caesarean section. There has been a decline in the administration of general anaesthesia for caesarean section.

Figure 2 shows the trend of regional anaesthesia for caesarean section. There is an increase in the administration of regional anaesthesia for caesarean section.

DISCUSSION

Table 2: **Trend of Regional Anaesthesia for Caesarean Section in UBTH for period 1986-1992 and 1993-1999**

Period	RA		GA	
	n	(%)	n	(%)
1986 – 1992	41	(18.1)	1987	(61.6)
1992 – 1999	186	(81.9)	1237	(38.4)
TOTAL	**227**		**3224**	

* P<0.01

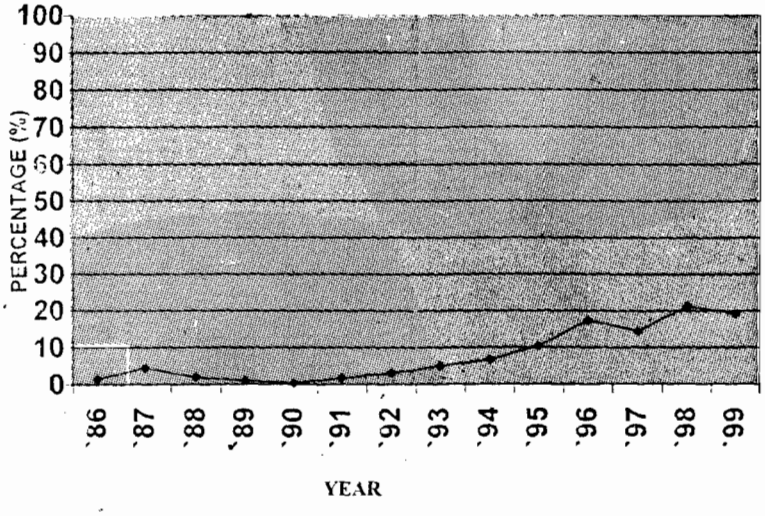
Table 3: **Level of Personnel who Administered Regional Anaesthesia in UBTH (1986 – 1999)**

Level of Training	Subarachnoid Block (SB)	Epidural Block (EB)
1st Year	0	0
2nd Year	15	0
3rd Year	47	3
4th Year	78	11
Beyond 4th Year	53	20

Table 4: **Yearly Trend of GA vs RA for Caesarean Section**

Year	GA (%)	RA (%)
1986	98.6	1.4
1987	95.6	4.4
1988	98.1	1.9
1989	99.0	1.0
1990	99.6	0.4
1991	98.3	1.7
1992	96.9	3.1
1993	95.0	5.0
1994	93.4	6.6
1995	89.7	10.3
1996	82.6	17.4
1997	85.6	14.4
1998	78.8	21.2
1999	80.8	19.2

Figure 2: **Yearly Trend of Regional Anaesthesia for Caesarean Section**



This study shows an overall low incidence of regional anaesthesia for caesarean section. The low incidence of regional technique (6.6%) found in this study, is similar to that reported by Aniata[7] in some Nigerian tertiary obstetric units. However, the long period covered by our survey makes it more representative of the likely prevalence of regional anaesthetic caesarean sections in similar Nigerian tertiary health institutions. His study did not show homogeneity of physician anaesthetists as care giver, as was the case in our hospital. It is important to state that the scope of anaesthetic coverage may be affected by the availability of trained personnel.

Though there is a low incidence of regional anaesthetic caesarean section, there is a trend towards increasing use of regional technique for caesarean section in our study. This shift from general anaesthesia to regional for caesarean section is also a common event elsewhere[2,10,11]. In an Australian hospital, the proportion of general anaesthesia for caesarean section decreased from 85% in 1979 to 44% in 1989[10] and may have decreased further. This worldwide trend is due to the perceived advantages of maternal safety and foetal well being at birth. Regional anaesthesia has been suggested unequivocally as a safer and the preferred technique for caesarean section[10,12]. Several, reasons may be responsible for the low utilization of regional anaesthesia for caesarean section as seen by us. The depression of the national economy and the consequent depletion of the consultant staff may have led to failure to impact the relevant skills in regional techniques. Similarly, the various unfavourable fiscal polices and reduced budgetary allocation to health occasioned by the depressed economy, resulted in hospital's inability to provide consumable items like spinal needles. The net effect is the repeated administration of general anaesthesia and thus convenience with conduct of caesarean section under general anaesthesia.

In spite of the low incidence of regional anaesthetic caesarean section, subarachnoid block was the preferred regional technique. Subarachnoid anaesthesia has several advantages

over epidural anaesthesia. The ease of establishing subarachnoid block (SAB), the rapid onset of intense and reliable block without missed segments make SAB more attractive for caesarean section. Subarachnoid anaesthesia also exposes the parturient and foetus to smaller amounts of local anaesthetic agents [4,13]. Epidural block demands high technical skill as shown by the calibre of anaesthetic staff in our study and it could be time consuming.

Certain anaesthetists in the period of study were more inclined to the use of regional anaesthesia for caesarean section. Individual interest or bias of the anaesthetists seemed to be a major factor in the choice of anaesthetic technique for caesarean section. The incidence of regional anaesthetic caesarean section was higher among the older anaesthetists particularly for epidural block. The departmental regulation, which requires the presence of a senior anaesthetist in the obstetric unit, may be contributory. With the trend of increasing administration of regional technique for caesarean section, the young trainee is likely to acquire the desired expertise much earlier than before. As soon as the junior resident is competent to attend to the obstetric patient, exposure to regional as well as general anaesthesia should be emphasized.

CONCLUSION

A properly conducted regional anaesthesia is the preferred option for caesarean delivery. Regional anaesthesia should be practised more frequently for caesarean section when possible. Dedicated time in the training programme should be set aside for regional blocks to enhance prompt acquisition of the relevant skills in regional anaestehsia. This will bring to bear on our patients the benefits of regional anaesthetic caesarean section.

REFERENCES

1. **Carrie LES.** Epidural and spinal (Subarachnoid) anaesthesia for caesarean section. Current Anaesthesia and Critical Care 1991; 2: 78–84.

2. **Gibbs CP, Christina J, Pecklam BM, Sharp A, Kirschbaum TH.** Obstetric anaesthesia: National survey. Anaesthesiol. 1986; 65: 298–386.

3. **Adeleye JA.** Maternal mortality and caesarean section at the UCH Ibadan Nigeria. Trop. J. Obstet. Gynaecol. 1988; 32: 61–6.

4. **Hunt CO.** Spinal anaesthesia for obstetrics. International Anaesthesiology Clinics 1989; 27: 26–30.

5. **Rawal N, Schalin J, Wesstrom G.** Epidural versus combined Epidural block for caesarean section. Acta Anaesthesia Scand. 1988; 32: 61–6.

6. **Imarengiaye CO, Ande AB.** Pharmacoeconomics of subarachnoid block and general anaesthesia for caesarean section. Order of proceeding, Nigeria Society of Anaesthetists 7th Annual Conference Jos 1999; 12.

7. **Amata AO.** Anaesthesia for caesarean section in some tertiary obstetric units in Nigeria – A pilot study. Nigerian Post Graduate Medical Journal 1998; 5: 148–150.

8. **Onifade A.** Primary caesarean section in the Multipara. J. Nig. Med. Assoc. 1971; 1: 30–33.

9. **Adeleye A, Okonofua F.** Yearly trends in caesarean sections and caesarean mortality in Ile-Ife. Trop. J. Obstet. Gynaecol. 1988; 1: 31–35.

10. **Stephen ID.** ICU admissions from an obstetrical hospital. Can. J. Anaesth. 1991; 38: 677–81.

11. **Kestin IG.** Spinal anaesthesia in obstetrics. Br. J. Anaesth. 1991; 66: 596–607.

12. Report on deaths in Australia 1979–81 Canberra. Australia Government publishing service 1987.

13. **Kuhnert BR, Zuspan KJ, Kutnert PM, Syracuse CD, Brown DE.** Bupivacaine disposition in mother, foetus, and neonate after spinal anaesthesia for caesarean section. Anaesth. Analg. 1987; 66: 407–12.