

An Audit Of Incidences Of Failed Spinal In Caeserian Sections And Analysis Of Associated Factors

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Abstract:

Background: A retrospective study was done in the anaesthesia department of Lautech Teaching Hospital Osogbo. The records of the obstetric cases done between 2008 and 2012 were analysed to determine the incidence of failed spinal, conversion to general anaesthesia and the associated factors.

Methods: After ethical approval, the anaesthesia records in the labour ward theatre were analysed and the case files for all caesarian section done were retrieved from the record department. The total number of caesarean section in the study period were recorded as well as the type and size of the needle used. The calibre of the anaesthetist that handled the cases was also noted as well as the type and volume of the local anaesthetic agents used. The number of attempts before the failed spinal and need for conversion to general anaesthesia was also recorded.

Results: The total number of failure of spinal anaesthesia within the period of study was thirty out of which six were converted to general anaesthesia while twenty four six cases were supplemented with analgesics. Out of the thirty cases of failed spinal, five (3.3%) were done by anaesthetist nurses, twenty four (80%) by the registrars while one (3.3%) actually involved a senior registrar. Most of the failed spinal occurred in patients age range 31-40 and body mass index (BMI) 30-35. The fetal outcome were satisfactory in 70% of the failed spinal while in 20% the babies were transferred to the special care baby unit (SCBU).

Key Words: Obstetrics, caesarian section, failed spinal, general anaesthesia

I. Introduction

Spinal anaesthesia is commonly used to provide regional anaesthesia for caesarean section¹; It is generally regarded as one of the most reliable of the regional block method. It provides good postoperative analgesia and also avoids problems associated with general anaesthesia.^{2,4} However with the advantages of spinal anaesthesia sometimes some patients still feels pain due to inadequate block necessitating analgesic supplementation or at times conversion to general anaesthesia. This study aims at studying incidences of this inadequate block with spinal anaesthesia and the associated factors surrounding it in LAUTECH Teaching Hospital between 2008 and 2012. The identification of these risk factors for the block failure could help anaesthetist to develop strategies to overcome this problem. LAUTECH Teaching Hospital is a tertiary health facility located within Osogbo Osun State South-West Nigeria. The hospital is a training centre for students and also residents in anaesthesia, obstetrics and gynaecology, surgery, medicine and others. The anaesthesia department provide anaesthesia services for obstetrics and gynaecology department as well as surgery and other units of the hospital. There is a theatre dedicated to obstetric patients only, with its separate anaesthetist and perioperative nurses.

II. Methods

After ethical approval was obtained from the institution ethical committee, the labour ward anaesthesia record was reviewed. The records of all caesarian section started with spinal anaesthesia between 2008 and 2012 were analysed. Records of patients that were intentionally planned for general anaesthesia were excluded from the study. The patients' population were analysed with respect to age, physical status, diagnosis, the planned surgical procedures, the urgency and the body mass index. The technique variables included patients' position, needle gauge, local anaesthetic agent used, the volume injected. Other variable included the cadre of anaesthetist and the vital signs intraoperatively as well as the duration of anaesthesia taken as the time of the first attempted spinal anaesthesia and the completion of surgery. The variables were analysed with SPSS version 16.

III. Results

In the years of reference a total of four hundred and eighty seven caesarean sections were done out of which the number of cases in which spinal failed was thirty representing 6.2% of the total cases. In the analysis, of the thirty cases, twenty – four (80%) of the failed spinal required analgesic supplementation while six (20%) required convention to general anaesthesia (figure 2). Most of the spinal failures were in patients in the age ranges of 25-40 years (56.7%) (Table 1). In terms of BMI most of the failed spinal occurred in the ranges between 30-35(Table 2). All the patients had the spinal anaesthesia in sitting position and (2.5mls) hyperbaric 0.5% bupivacaine was used as the anaesthetic agent in all the cases. In terms of needle size most of the failed spinal occurred using spinal needle more than size 25(70%) (Table 3). Fifty percent of the cases were handled by registrars while 46.7% were done by anaesthetist nurses and 3.3% done by senior registrar, all done alone without supervision. (Table 4 and figure1)

Table 1-Age Distribution

AGE	FREQUENCY	PERCENTAGE
18-24	5	16.7
25-40	17	73.7
40-60	8	26.6
TOTAL	30	100

Table 2-Bmi Distribution

BMI	FREQUENCY	PERCENTAGE
25-29.9	2	6.7
30-34.9	17	56.7
35-39.9	7	23.3
>4	4	13.3
TOTAL	30	100

Table 3-Needle Type Used

NEEDLE SIZE	FREQUENCY	PERCENTAGE
22-25	10	33.3
25-26	20	66.7
TOTAL	30	100

Table 4- Cadre Of Anaesthetist

CADRE OF ANAESTH	FREQUENCY	PERCENTAGE
SENIOR REG.	1	3.3
REGISTRA	24	80
ANAESTHE NURSES	5	16.7
TOTAL	30	100

Table 5-Intervenrntion

INTERVENTION	FREQUENCY	PERCENTAGE
GENERAL ANAESTHESIA	6	20
ANALGESIC SUPPLEMENTATION	24	80
TOTAL	30	100

Table 6-Fetal Outcome

FETAL OUTCOME	FREQUENCY	PERCENTAGE
BABY WELL	21	70
SCBU	6	20
DEMISE	3	10
TOTAL	30	100

Figure I

CADRES OF ANAESTHETIST

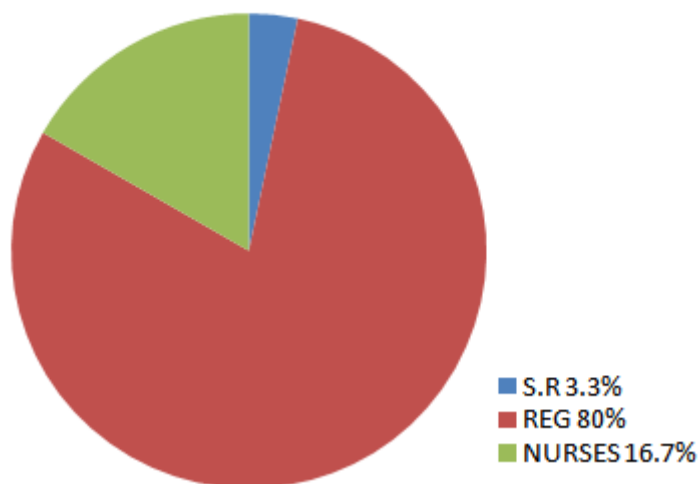
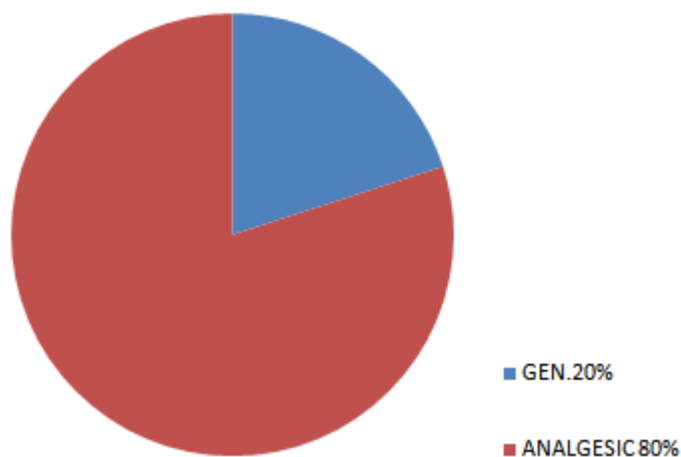


Figure II

INTERVENTION



IV. Discussion

The increased use of neuroaxial anaesthesia in obstetrics has avoided the risks associated with general anaesthesia which may be associated with greater mortality. In the years audited, out of four hundred and eighty seven caesarean section, thirty of the cases had failed spinal representing 6.2% .Only 4 of the thirty failed spinals were elective representing 0.82% while twenty six were emergency representing 5.34% failure. The failure rate in the elective cases is in keeping with the royal college of anaesthetist that suggested that in keeping with the best practise, the conversion rate from neuroaxial anaesthesia to general anaesthesia should be less than 1% for elective while the value for the emergency is not in keeping with the 3% value for non-elective caesareans sections.⁵ In a study the conversion rate was found to be 0.5%⁶ while other retrospective studies done found incidence of failed spinal to be in the range of 2% and 3.1% .^{6,7}

Most of the failed spinal were done by the registrars 80% and 16. 7% by the nurses only 3.3% were done by a senior registrar. This is against finding by Tarkila PJ who found out that experience with spinal anaesthesia is of little benefit once approximately 100 spinals are performed. In his study he found out that an anaesthesiologist had a failure rate of 3.1% compared to 4.1% for a first year resident who had placed at least 100 spinals⁷.As against the finding of Tarkila all the registrar involved in the cases of failed spinal could not have done up to 100 cases as they are majorly second year residents, so experience may be a factor in the high incidence of failed spinal. Most of the failed spinal were emergencies fetal distresses and therefore the futher

help could not be sought necessitating analgesic supplementation and conversion to general anaesthesia in some cases.

In terms of the Body mass index most of the failed spinal occurred in patients with body mass index between 30-35(65%), while the incidence is low in patients with BMI less than 30(15%). This is in keeping with another study that found that found a rate of 2.9% failure in spinal anaesthesia for obese patients in which 29 out of 989 patients had failure of spinal anaesthesia.⁸ Misidentification of appropriate landmarks and anatomical distortion were implicated for the high spinal anaesthesia failure in obese patients^{9,10} Another study documented difficulty in 15% in obese patients with total failure requiring conversion to general anaesthesia as 2%.¹¹

Most of the conversion to general anaesthesia was in the emergency caesarean sections, out of the eight cases that required conversion to general anaesthesia; seven of them were emergency while only one of them was an elective. It was found that the rate of conversion to general anaesthesia for emergency and elective was 0.8% and 4.9% respectively in a study¹², which is also substantiated by the Royal College of anaesthetist that targeted rates of 1 and 3% respectively¹².

In terms of fetal outcome; in 21(70%) out of the thirty cases of failed spinal the babies were normal while in six (20%) of the cases the babies suffered asphyxia and were transferred to the special care baby unit (SCBU). The apgar scores for the babies were not documented, so the degree of asphyxia could not be ascertained and also the outcomes of the babies sent to the SCBU could not be gotten due to poor and incomplete records. Fresh stillbirth was the outcome of three cases (10%) which on further analysis was found to be emergencies with fetal distresses. The three cases of the fresh still birth were converted to general anaesthesia from the beginning though the number of times insertion of spinal needle were tried and the interval between the decision to convert to general anaesthesia and the institution of general anaesthesia was not recorded. The fetal death could not be totally linked with problems in anaesthetizing the patients because of incomplete information from the record.

Spinal needle 22 was used in 10(33.37) out of the cases of failed spinal anaesthesia while in 20 cases (66.7) needle size 25-26 was used. This is not in keeping with the finding of Somrat et al where rate of spinal anaesthesia failure between sizes 25 and 27 quinke needles were studied with a conclusion that needle sizes does not influence the success rate of spinal anaesthesia.¹³ In all the cases of failed spinal anaesthesia there is no record of any patient with spinal deformity.

Factors responsible for high conversion to general anaesthesia may be due to inadequate preparation, inability to repeat trials from pressure from obstetricians and fear of fetal demise as most of the emergencies are fetal distress. The records analysed in this study did not show the number of times the spinal needles were inserted before conversion to general anaesthesia; this would have been used to draw comparison between elective and emergency caesarian sections. Also the records analysed did show whether the time interval of 30minutes between decision of caesarian section and incision was adhered to; however there is no written rule as such in the obstetrics and gynaecology department of the hospital.

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