

## Audit of epidural anaesthesia services at a district hospital in Nigeria

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### Abstract

**Background:** Epidural anaesthesia and analgesia is considered the 'gold standard' analgesic technique for major surgery. However, its practice is limited in most hospitals in Nigeria. The objective of this review was to determine the rate of administration of epidural anaesthesia and to review the challenges affecting its routine use in a District Hospital.

**Methods:** This was a retrospective study of all patients who received anaesthesia in the hospital between 2010 and 2011. Data extracted from the hospital record included the age and sex of the patients, type of surgery, types of anaesthesia used, outcomes of anaesthesia and the grade of anaesthetists involved.

**Results:** A total of 2,828 anaesthetic procedures were carried out during the study period with 1,288 and 1,540 administered in 2010 and 2011 respectively. Three (0.2%) of the anaesthetic procedures were epidural in 2010 and 18

(1.2%) in 2011, giving a 500% increase in rate of its administration. Epidural anaesthesia constituted 0.74% (21/2,828) of all anaesthetic procedures. Of these, 16 (76%) were performed on females and 5 (24%) were males. Five Nurse Anaesthetists and one Consultant Anaesthetist provided anaesthesia services. There was no record of morbidity or mortality related to epidural anaesthesia.

**Conclusion:** Epidural anaesthesia is safe but its utilization is very low at this clinical setting. More physician anaesthetists need to be trained in order to increase the practice of epidural anaesthesia.

**Keywords:** Anaesthesia, Epidural, Maitama Hospital, Physician anaesthetist

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### Introduction

Epidural anaesthesia and analgesia is regarded as 'gold standard' in anaesthesia for major surgery today<sup>1</sup>. It involves the injection of a local anaesthetic agent with or without adjuncts into the epidural space. It provides excellent anaesthesia for surgery and profound analgesia for up to 72 hours post operatively<sup>2</sup>. Either epidural or subarachnoid procedure may require skin infiltration<sup>3</sup>. Epidural anaesthesia is more technically demanding to institute because it lacks a definitive end-point unlike subarachnoid block<sup>4</sup>. Often the two procedures may be confusing but need not be. The subarachnoid space where spinal anaesthesia is performed is defined by the flow back of cerebrospinal fluid. Epidural space is identified by the negative pressure of the space with loss of resistance to saline being the preferred means of identifying the epidural space<sup>5</sup>. Epidural anaesthesia has several advantages. It allows for the prolongation of anaesthesia by top ups through the in situ catheter<sup>6</sup> and its slow onset of

action also reduces the risk of sudden hypotension associated with subarachnoid block<sup>7</sup>. In the hands of the skilled, there is no risk of post dural puncture headache<sup>8</sup>. The catheter allows for effective postoperative pain management and it is very useful in management of labour pain<sup>9</sup>. It is associated with early mobility following surgery<sup>10</sup> and reduces blood loss thereby reducing the need for blood transfusion<sup>11</sup>. Epidural anaesthesia abolishes the stress response to surgery and improves intestinal blood flow thereby improving wound healing in intestinal surgeries<sup>12</sup>. It reduces the risk of thrombo-embolism<sup>13</sup>.

Epidural anaesthesia is a safe anaesthetic technique. The practitioner however must first acquire skill at general anaesthesia with endotracheal intubation before attempting the procedure. This is because in the event of a complication like total spinal, or cardiac arrest, the response involves a rapid intubation of the patient. Therefore it is not safe for those who have not trained and acquired the skill at intubation to attempt epidural. The numerous advantages derivable from it can justify investment to train and acquire the manpower necessary to establish it. This study aims at ascertaining the utilization of epidural anaesthesia and its outcomes in a district hospital in Nigeria.

### Materials and Methods

#### Setting

The study was conducted at the Maitama District Hospital, Abuja, Nigeria. The hospital was originally built to be a secondary level care facility for the Federal

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Capital City of Nigeria. However, by the time of the study it was serving as a tertiary hospital which received referrals from other hospitals in the Federal Capital Territory and beyond. Its bed-size is a 120 (hundred and twenty). The hospital was established in 2001 in a high brow area of the Federal Capital City of Nigeria<sup>14</sup>.

### Study Design

This was a retrospective study of all patients who underwent surgical operation in the Maitama District Hospital, Abuja, Nigeria from January 2010 to December 2011. The theatre and anaesthetic records of these patients were reviewed. All those who had surgery were included in the study. Any mortality that occurred outside 24 hours post operatively was not considered to be of anaesthetic origin and was excluded.

### Data Analysis

The data extracted from the records included the age, sex, type of surgery, type of anaesthesia, category of anaesthetists; complication related to anaesthesia. The data was analysed using descriptive statistics.

### Ethical issues

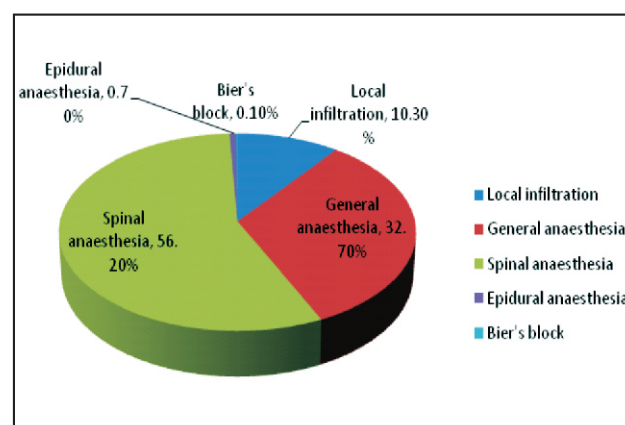
Approval for this review was granted by the Federal Capital Territory Department of Health Research and Ethics Committee.

### Results

One thousand two hundred and eighty eight (1,288) anaesthetics were administered in 2010 and 1,540 in 2011, giving a total of 2,828. Three (0.2%) of the anaesthetic procedures were epidural in 2010 and 18 (1.2%) in 2011, with a 500% increase in rate (Table 1). Total epidural for the two years was 21 (0.7% of all anaesthetics) as shown in Figure 1. Of these, 16 (76%) were on females and 5 (24%) were on males. All epidural procedures were done by the Consultant Anaesthetist. There was no record of epidural anaesthesia in the hospital prior to 2010. In 2010, one (33%) of the epidural was for a major orthopaedic surgery whereas two (67%) were done for major gynaecological procedures. In 2011, 13 (72%) of the epidural were for gynaecological procedures, two (11%) for general surgery and three (17%) for orthopaedics. No mortality was recorded for epidural anaesthesia during the period under review. Epidural catheter was inadvertently pulled out of the back of patient during transfer from operating room to the ward in two cases (9.5%).

**Table 1: Distribution of epidural anaesthesia given per specialty of surgeries conducted at the Maitama District Hospital, Abuja between 2010 and 2011**

Specialty	Total Anaesthetics Given	Epidural Given	Percentage of total anaesthetics given
Year 2010			
General surgery	486	0	0
Orthopaedics	93	1	1.1
Obstetrics	598	0	0
Gynaecology	111	2	1.8
Total	1288	3	0.2
Year 2011			
General surgery	528	2	0.4
Orthopaedics	108	3	2.8
Obstetrics	788	0	0
Gynaecology	116	13	11.2
Total	1540	18	1.2



**Figure 1: Types of anaesthesia carried out during surgeries conducted at the Maitama District Hospital, Abuja between 2010 and 2011**

### Discussion

The epidural utilization rate in our study was 0.7% of all anaesthetics given in the hospital. This figure is abysmally low. In the United Kingdom, according to Eldridge<sup>6</sup>, 24% of all parturients used epidural analgesia during labour as far back as 1997-1998. In a review of vaginal deliveries in 28 states of the United States for the year 2008, the epidural rate was 61% on average<sup>21</sup>. In our study, no parturient received epidural for labour, as the few epidurals given were for surgical procedures.

Epidural has become the 'gold standard' of care in surgical analgesia<sup>1</sup>. The absence of this valuable skill amongst anaesthetic practitioners portends a grave danger to the ability of the hospital to properly manage pain in patients. Epidural technique of pain management has a wide application. It is used in surgical anaesthesia for lower limb surgeries, intra-pelvic surgeries, intra-abdominal and intra-thoracic surgeries<sup>20</sup>. It is the standard of care in labour analgesia<sup>1</sup>. It has a pride of place in palliative care for the administration of opioids. Expanding techniques in surgical manoeuvres will be greatly hampered where there is no commensurate development of anaesthetic skills like epidurals.

One Consultant Anaesthetist provided the service and this is a reflection of the dearth of physician anaesthetists in Sub-Saharan Africa<sup>16</sup>. According to studies by Eguma<sup>17</sup> and Onyeka<sup>18</sup>, the problem of scarcity of specialists in anaesthesia is persisting and needs urgent action. As a stop-gap arrangement, non-physician anaesthetic training programme was set up which trains nurses for an eighteen month period in Nigeria. Although the products of this programme were to work under the supervision of physician anaesthetists, the index hospital had no such physician supervision. The Israel Medical Association (IMA) and the Israel Society of Anaesthesiologists (ISA) disagree with the option of replacing physicians with technicians or nurses<sup>19</sup>. Part of their reason is that there will be deterioration in the level of practice and patient safety. The finding in this study agrees with this position as the non-physician Anaesthetists in this study had no skill in epidural anaesthesia. Epidural anaesthesia and analgesia which has become the global 'gold standard' of surgical analgesia was not practiced in the hospital for nine years of its existence despite the fact that it is located in the centre of the capital of Nigeria. The epidural catheter was pulled out of the back of some of the patients indicating that enough awareness was not created about epidural anaesthesia among the non-medical personnel of the hospital.

The limitations of this study include the fact that there was no electronic retrieval system in the record keeping unit. All records were manually kept and retrieved. The record did not differentiate between general anaesthesia with endotracheal intubation, total intravenous anaesthesia and inhalational anaesthesia. So such techniques were counted as general anaesthesia.

Despite its numerous advantages as an anaesthetic technique, the rate of use of epidural is very low in the hospital under review. The findings in this study should serve as a wake-up call to health planners and administrators to set the right priorities. Manpower training and development in anaesthesia should be given priority of place. There is an urgent need to train manpower in anaesthesia to upgrade the standard of

care given to patients as well as the need to increase awareness among health workers about this anaesthetic technique.

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