Anesthetic Techniques for Gynecological Surgeries in Benue State University Teaching Hospital (BSUTH), Makurdi, Nigeria

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Abstract — Background: Gynecological surgery refers to surgery on the female reproductive system usually performed by gynecologists. It includes procedures for benign conditions, cancer, infertility and incontinence. Gynecological conditions are seen in the non-pregnant and early pregnant state up to 20 weeks gestation. Just like every other surgery, they require anesthesia for the elimination of surgical pain and the surgical methods to a great extent, determine the choice of anesthesia employed. Anesthesia is usually in the form of regional, especially the neuroaxial type, or general anesthesia. This study was conducted to ascertain the anesthetic techniques employed for gynecological surgeries in the Benue State University Hospital (BSUTH), Makurdi, Nigeria and complications arising there from.

Methodology: A retrospective and descriptive study of case files of patients that underwent gynecological surgeries between January 2016 and December 2018 in BSUTH, Makurdi was carried out. A total of 156 case files of eligible patients were retrieved from the records department of BSUTH after approval from relevant authorities. Relevant information were extracted from the patients’ folders and transferred into a prepared proforma. The data collected were analyzed using SPSS version 25 using simple statistics.

Result: A total of 156 cases were evaluated. The age bracket with the most number is that between 21 and 30 years which recorded 54 (34.6%). This was followed by the age group between 31 and 40 years which were 51, making up 32.7% of the study population. Uterine fibroid was the most recorded diagnosis with 36 cases accounting for 23.1% of the study population. This was followed by ruptured ectopic gestation which was observed 23, representing 14.7% of the study group. Cancer (Ca) of the cervix recorded 22, amounting to 14.1% of the study group. Exploratory laparotomy was carried out 44 times accounting for 28.2% of the procedures. This was followed by myomectomy and examination under anesthesia (EUA) with 26, representing 14.7% of the variables each. Of the 156 anesthetic procedures undertaken, 56 (35.9%) were sub-arachnoid block (SAB). This was followed closely by general anesthesia with endotracheal intubation (GA/ETT) with 55 (35.3%). General anesthesia with face mask (GA/FM) came third with 35 (22.4%). Twenty-four episodes of complications were observed out of which pain occurred 10 times accounting for 41.7% of the variables. Hypotension occurred 8 times representing 33.3% of the variables. This was followed by IV administration of pentazocine that was done 5 times accounting for 20.9% of the variables.

Conclusion: As a result of the vast array of gynecological diseases observed in this study, GA with tracheal intubation and GA with face mask together make up the anesthetic technique of choice for gynecological surgeries. The prominence of SAB as an anesthetic technique is not unexpected because many gynecological lesions are sub-umbilical in location, thus making them amenable to the technique which also possesses a lot of advantages. In addition, complications observed were few and included mainly pain and hypotension, none of which was life-threatening.

Index Terms — Anesthetic techniques; complications; gynecological surgeries.

I. INTRODUCTION

Gynecological surgery refers to surgery on the female reproductive system usually performed by gynecologists. It includes procedures for benign conditions, cancer, infertility and incontinence [1]. Gynecological conditions are seen in the non-pregnant and early pregnant state up to 20 weeks gestation. Gynecological operations may be undertaken on day case or in-patient basis. They may be endoscopic or open and may be undertaken as emergencies or as electives. The surgeries may also be undertaken for cosmetic purposes. Just like every other surgery, they require anesthesia for the elimination of surgical pain and the surgical methods to a great extent, determine the choice of anesthesia employed. Anesthesia is usually in the form of regional, especially the neuroaxial type, or general anesthesia. Neuroaxial anesthesia (NA) refers to the use of local anesthetics in the vicinity of the spinal cord in order to abolish the perception of painful stimuli [2]. General anesthesia (GA), on the other hand, refers to the use of drugs that lead to loss of consciousness and, consequently, to the abolition of the perception of painful stimuli [2].

Most of the emergencies present at odd hours [3] when less experienced personnel are on ground and patients are not optimally prepared for the operations as such, the outcome is poor with resultant increased morbidity and mortality [4]. Elective operations, on the other hand, are scheduled operations where patients are well prepared prior to surgery and as such have better outcome when compared to emergency operations where morbidity and mortality are higher [5].

Other factors that influence choice of anesthesia include the expertise of the anesthetist, patient’s preference, surgeons request, duration of the procedure and availability

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of equipment, life-saving drugs and anesthetic agents [6], [7], [8].

At present, anesthesia methods like general anesthesia, continuous epidural anesthesia general anesthesia combined with continuous epidural anesthesia have been used in gynecologic laparoscopic surgery [9].

Complications related to anesthesia cover a wide spectrum of severity from mildly distressing with no long term sequelae to permanent disability or death [10]. The development of safer anesthetic agents means of delivery and improvement in patient monitoring and pain control over the past decades have greatly reduced anesthetic risk [10].

This study was conducted to ascertain the anesthetic techniques employed for gynecological surgeries in the Benue State University Hospital (BSUTH), Makurdi, Nigeria and complications arising there from.

II. METHODOLOGY

A. Study setting

This was a three year retrospective study carried out in BSUTH, Makurdi, a 360 bed hospital situated in the capital city of Benue State, North Central of Nigeria.

B. Ethical considerations

The approval of the BSUTH research and ethical committee was sought and obtained.

C. Inclusion criteria

All gynecological surgeries carried out in the BSUTH theatres between January 2016 and December 2018 whose records were found complete, were evaluated.

D. Exclusion criteria

All non-gynecological surgery cases and gynecological cases whose records were incomplete, were excluded.

E. Procedure

A retrospective and descriptive study of case files of patients that underwent gynecological surgeries between January 2016 and December 2018 in BSUH, Makurdi was carried out.

A total of 156 case files of eligible patients were retrieved from the records department of BSUTH. Relevant information were extracted from the patients’ folders and transferred into a prepared proforma. The data collected included age, sex, ASA classification, pre-operative diagnosis, surgical procedure undertaken, anesthetic technique used, complications of the technique and the management of such complication. The data collected were analyzed using SPSS version 25 using simple statistics. Results were presented as tables showing frequency and percentages of variables. Other results were presented as histogram and bar chart depicting frequency of variables.

III. RESULTS

Information in respect of a total of 156 patients were evaluated.

A. Age distribution

The age bracket with the most number is that between 21 and 30 years which recorded 54 accounting for 34.6% of the study population. This was followed by the age group between 31 and 40 years which were 51, making up 32.7% of the study population. The third highest group is the one between 41 and 50 years with 25, representing 16.0% of the study population. While the age group between 51 and 60 years recorded 14 (9.0%), the age group from 11 to 20 years as well as that from 61 to 70 years recorded 6 amounting to 3.8% of the study population each. (Fig 1).

B. Diagnoses

Uterine fibroid was the most recorded diagnosis with 36 cases accounting for 23.1% of the study population. This was followed by ruptured ectopic gestation with 23, representing 14.7% of the study group. Cancer (Ca) of the cervix recorded 22, amounting to 14.1% of the study group. Ovarian mass, infertility, and molar gestation recorded 14 (9.0%), 10 (6.4%) and 6 (3.8%) respectively. Utero-vaginal (UV) prolapse, pelvic abscess and uterine synaechia accounted for 5 cases each representing 3.2% of the variables. Furthermore, while vesico-vaginal fistula (VVF) occurred 4 (2.6%) times, dysfunctional uterine bleeding (DUB), acquired gynetresia, low-grade squamous intraepithelial lesion (LGSIL) and Bartholin’s cyst were diagnosed 3 times each accounting for 1.9% of the study population. Also, while vulvar cancer occurred twice representing 1.3% of the variables, a combination of 12 other cases made up 7.6% of the variables (Table I).

C. ASA classification

Fifty-six patients belonged to the American Society of Anesthesiologists physical status classification (ASA) II, making up 35.9% of the study population. ASA III patients came second with 37 representing 23.7% of the group, while ASA I patients recorded 43, accounting for 21.8% of the study population. Furthermore, while ASA III, IIE and IVE recorded 12(7.7%), 11 (7.1%) and 4 (2.6%) respectively, ASA IV recorded the least number with 2 amounting to 1.3% of the study group (Table II).
D. Surgical procedures

Exploratory laparotomy was carried out 44 times accounting for 28.2% of all the procedures carried out. This was followed by myomectomy and examination under anesthesia (EUA) which were undertaken 26 times, representing 16.7% of the surgical procedures each. Total abdominal hysterectomy (TAH) was done 20 times amounting to 12.8% of the variables. Also, suction evacuation was carried out 6 times (3.8%). Endoscopic procedures and adhesiolysis recorded 5 (3.2%) each. While VVF repair took place 4 (2.6%) times, both marsupialization and vaginoplasty were performed 3 (1.9%) times each. A combination of 14 other procedures amounted to 9.0% of the procedures (Table III).

E. Anesthetic techniques

Of the 156 anesthetic procedures undertaken, 56 (35.9%) were sub-arachnoid block (SAB). This was followed closely by general anesthesia with endotracheal intubation (GA/ETT) with 55 (35.3%). General anesthesia with face mask (GA/FM) came third with 35 (22.4%). Furthermore, combined epidural spinal (CSE), epidural block, and sedation were carried out in 4 (2.6%), 3 (1.9%) and 3 (1.9%) patients each (Fig 2).

F. Complications of anesthetic procedures

A total of 24 episodes of complications were observed. Out of these, pain occurred 10 times accounting for 41.7% of the variables. Hypotension occurred 8 times representing 33.3% of the variables. Also, failed spinal and delayed recovery were observed 4 (16.7%) and 2 (8.3%) times respectively.

G. Management of complications

A total of 24 modalities were employed for the management of complications of anesthetic techniques. Of these, IV administration of ephedrine was done 8 times representing 33.3% of the variables. This was followed by IV administration of pentazocine which was done 5 times accounting for 20.9% of the variables. Also, 4 patients who had failed SAB, had their technique converted to GA. Furthermore, while 3 (12.5%) and 2 (2.8%) had IV administration of fentanyl and paracetamol respectively, 2 (8.3%) were transferred to the intensive care unit (ICU) on account of delayed recovery.

IV. DISCUSSION

The age bracket with the highest number, 54 (34.6%) was 21 to 30 years. This was followed by the age between 31 and 40 years with 51, making up 32.7% of the study population. A summation of the cases seen in ages 50 years and below were 136 (87.1%). This is an indication that gynecological diseases reside largely amongst women of reproductive age. It is noteworthy, however, that a significant number were less than 20 years of age as well as some presenting between ages 51 years and 70 years.

Minimum age was 12 years while the maximum age was 70 years giving a range of 58 and mean age was 35.7 ±11.50 years giving a range of 58 and mean age was 35.7 ±11.50.
Cancer (Ca) of the cervix followed with 22, amounting to 14.1% of the study group. This result is in consonance with results from several other studies:

“Uterine fibroids (also known as myomas or leiomyomomas) are the most common benign solid tumors found in the female genital tract. Incidence ranges from 30% to 80% depending on the age of the patient” [11]. They occur in 20–25% of women of reproductive age causing 3–5% of gynecology consultations [6], [12]. In Nigeria, it is the most common tumor in the female population, probably occurring in over 80% of women over the age of 25 years even if only of the size of a seedling [13].

A summation of ASA I and II patients (excluding emergencies) were 90 (57.6%). This is more than half of the patients evaluated. This is not unexpected since the majority of the indications for surgery (uterine fibroid), in this study, mostly fall into the category of patients who were either healthy or had mild systemic diseases. Patients with Ca cervix may fall into the category of ASA III and IV. A summation of the emergency ASA classifications accounted for 7.4% of the cases. This could be understood from the point of view that patients with the next commonest indication of surgery which is ruptured ectopic gestation, invariably present as emergencies.

The dominance of exploratory laparotomy as a surgical procedure was as a result of indications such as ruptured ectopic gestation, ovarian tumor, pelvic abscess and some infertility procedures that would regularly require opening the abdomen for their surgical management. Similarly, myomectomy and EUA that came joint second are the procedures of choice for the highest and third highest indications for surgery (i.e. uterine fibroid and Ca cervix). In addition, both of these diseases may also account for why TAH as a surgical procedure accounted for 12.8% of the surgeries since both could be amenable to the procedure.

The prominence of SAB is understandable from the point of view of the fact that a good number of gynecological procedures involve incisions below the umbilicus thus making them amenable to this anesthetic procedure as it provides regional block for operations in the region. Globally there is a trend towards the increasing use of Central Neuraxial Regional anesthesia (RA) (Spinal, epidural, combined/epidural) for procedures that are amenable to RA including Fibroid operations [8]. In comparison, an overwhelming majority of obstetrics surgical procedures are carried out under sub-arachnoidal block (SAB) with 92% [14] and 94.06% in another study [15], largely due to its benefit and ease of performance.

However, GA with tracheal intubation is the technique of choice for diseases such as rupture ectopic gestation because patients usually present with haemodynamic instability and SAB is thus contraindicated. In addition, short procedures such as EUA are mostly undertaken using GA with face mask. This accounts for the high figure of GA either with tracheal intubation or face mask thus making GA the most common technique employed in this study (with both GA techniques amounting to 57.7% of the anesthetic techniques.)

With regards to complications of the 24 anesthetic techniques employed. Pain occurred 10 times accounting for 41.7% of the variables Hypotension occurred 8 times representing 33.3% of the variables. Both of these occur with SAB. Hypotension arises because of the sympathetic block below the level of block. This results in unopposed parasympathetic action leading to pooling of blood in the lower extremities. This in turn results in reduced venous return giving rise to reduced cardiac output. The overall effect is thus, a reduced blood pressure. Pain comes up probably as a result of poor block or prolongation of surgery beyond the duration of effective action of the anesthetic agent used [14].

Other common problems associated with anesthetic techniques and medications include nausea and vomiting, surgical pain, sore throat, headache, drowsiness, dizziness, dental injuries, superficial vascular thrombosis, peripheral nerve injuries and awareness [16], [17]. We did not encounter most of these complications in our study.

Management of complications of anesthetic procedures were tailored towards amelioration of the complications. This was why intravenous (IV) administration of ephedrine was done to treat the episodes of hypotension. Patients that experienced pain had IV pentazocine, IV fentanyl and IV paracetamol administered to them for the purpose of pain relief.

V. CONCLUSION

As a result of the vast array of gynecological diseases observed in this study, GA with tracheal intubation and GA with face mask together make up the anesthetic technique of choice for gynecological surgeries. The prominence of SAB as an anesthetic technique is not unexpected because many gynecological lesions are sub-umbilical in location, thus making them amenable to the technique which also possesses a lot of advantages. In addition, complications observed were few and included mainly pain and hypotension, none of which was life-threatening.

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