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A Review of Manual Vacuum Aspiration in a Tertiary Hospital in Northwestern Nigeria

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Abstract **Review Article**

Introduction: Abortion is an important social and public health issue, complications from unsafe abortion is one of the leading causes of maternal mortality.

It is a serious health problem. WHO estimates that 14% of maternal deaths which occur every year in the countries of South Africa and Bangladesh are due to abortion. Studies show Manual Vacuum Aspiration (MVA) procedure is safe and effective in incomplete abortion.

Very few clinical trials were carried out to assess the safety and effectiveness of MVA in managing incomplete abortion.

Objectives: To determine the indications and complications associated with the use of MVA in Federal Teaching Hospital (FTH) Katsina, Northwestern Nigeria. Methodology. A retrospective survey of MVAs performed over a periods of 5 years was analyzed. A total of 824 patients had MVA for various conditions, 682 case folders were retrieved, giving a retrieval rate of 94.90%, however 612 case folders were analyzed due to paucity of data captured in 70 of the case folders.

Result: Major indication for the use of MVA was incomplete abortion which accounted for 74.67% of the cases. Thirteen patients had complications and the most frequent complication was incomplete evacuation which accounted for 53.85% of the complications. Resident Doctors performed most of the procedure.

Conclusion: Incomplete abortion was the commonest indication for MVA in this study. MVA is a fairly safe procedure in our hospital as it is associated with a low complication rate.

Keywords: Manual Vacuum Aspiration, incomplete abortion, maternal mortality, abortion complications, Federal Teaching Hospital Katsina, Nigeria, public health, retrospective study, abortion safety, maternal health.

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INTRODUCTION

Manual Vacuum Aspiration (MVA) is a safe and effective method of termination of pregnancy that involves evacuation of the uterine contents by the use of a hand-held plastic aspirator.

It is appropriate for the treatment of incomplete miscarriage for uterine size up to 12 weeks from the last menstrual period including removal of retained products from induced miscarriage, first trimester and endometrial biopsy.

Compared to the sharp curettage method, use of MVA requires less cervical dilatation and it is associated with less blood loss, shorter hospital stay and a reduced need for anaesthetic drugs.

Vacuum aspiration methods are recommended over sharp curettage by World Health Organization.

LITERATURE REVIEW

The Manual Vacuum Aspiration equipment was the novel work of Dr Harvey Karman, Carol Downer and Lorraine Rotherman[1-3]. It consists of a 60cc syringe and a locking valve, plastic cannula and adaptors of various sizes. The variability in the cannula size allows access to the uterine cavity without dilating the cervix. Anesthesia is not usually required. Where cervical dilatation is needed pain control using Para cervical block is usually adequate[4-6].

Dilatation and curettage (D&C) was the standard modality for treating cases of incomplete abortions in many developing countries[7]. However, this requires hospital admission with the presence of a trained physicians,

operating theatre and often general anesthesia[8]. Oftentimes, this is not feasible in most developing countries due to poor resources. Where the facilities are available, massive patient traffic prolongs commencement of management with worsening complication[9]. Hospital stay and anesthesia increases cost of treatment both to the patient and the health institution.

On the other hand, MVA does not require a theatre, overnight hospital stay or anesthesia and can be performed by a wide range of trained medical personnel, not necessarily doctors[10]. This significantly reduces the rate of complication and cost of intervention. This method of treatment of abortion complication is ideal for developing countries such as ours where adequate manpower is lacking, power supply is erratic and chronic poverty has made hospital service charges not affordable. Wide spread use of this instrument will reduce the menace of abortion complication. It is most suitable for developing countries such as Nigeria where electricity and manpower are lacking. This however, is not the case since MVA training is not inculcated in the undergraduate medical training. Usually, only Doctors who passed through the Residency training or who had some refresher course on MVA are conversant with the equipment[11].

The use of MVA for the treatment of abortion should be linked with post abortion care services. Patients should receive adequate counseling on abortion and its complications. They should also be linked to additional sexual and reproductive health services available such as family planning services, testing and treatment for sexually transmitted diseases (STIs), including HIV/AIDS, preconception care where pregnancy is desired, and referral to well woman checkups that provides cancer screening such as routine Pap smears and mammogram where available[3].

The major drawback to the use of MVA in management of abortion complication is that it cannot be used in pregnancies of gestational age beyond 12 weeks[12]. Despite this; it is extremely effective and very safe. It is highly successful and results in fewer complications as compared to D & C[13]. Both MVA and Dilatation and Curettage are equally effective and acceptable in the management of first trimester abortion.

Manual Vacuum Aspiration is not only used for treatment of abortion complication. It is also employed in the management of molar pregnancy, removal of retained product of conception, endometrial biopsy and in menstrual regulation[14].

The use of manual vacuum Aspiration has led to the demise of Dilatation and Curettage in the management of incomplete abortion. It is safe, fast, cheap and effective.

Induced and unsafe abortion constitute 13% of the over 600000 pregnancy related deaths each year[15]. Many of these deaths occur in developing countries where there is high unmet need for family planning services[16] and where restrictive abortion laws prevent women with unwanted pregnancies from accessing safe abortion services[17].

Nigeria is among the countries of sub Saharan Africa with restrictive abortion laws and there is gross underreporting of abortion complications[18]. However, it was estimated that 610000 abortions are performed each year in the country[19].

Unsafe abortion constitute significant burden on health delivery system of developing countries[20]. Restrictive abortion laws compel abortion seekers to patronize the services of quacks with consequent high rate of complication which accounts for 40-60% of gynaecological admissions in many developing countries[12].

Women who undergo abortion are at a risk of subsequent unplanned and unwanted pregnancies. Abortion services are rarely linked to family planning services in developing countries and there is general disregard to post abortion care. These women therefore resort to clandestine abortion services[21]. Respectful treatment of abortion patients and understanding of the situation that led them to seek abortion will improve the acceptability of services. Provision of effective, accessible, affordable and culturally acceptable family planning services will prevent these unwanted pregnancies and the complication associated with them[22].

Effective management of abortion complication drastically reduces the mortality and morbidity associated with abortion complication. The use of uterotonic agents, prompt evacuation of the uterus with MVA and blood or fluid replacement reduces morbidity and mortality associated with abortion complication[23]. Suction curettage can be performed using various devises such as the Vabra aspirator, Novak metal cannula and the Karman cannula[1].

In FTH Katsina, MVA is performed in MVA room. The uterus is evacuated with IPAS MVA instruments. Strict asepsis is observed during the procedure. Patients are assessed on their analgesia needs before the procedure. Narcotic analgesic, paracervical blocks and occasionally sedatives are employed. However, patients that do not require analgesia are given verbal support during the procedure which is normally short. Tissue aspirated is examined under direct light and sent for histology.

The patient's vital signs are monitored in the gynecology emergency room till her vital signs are normalized and if she had received sedatives, till she fully recovers. The patient is discharged when bleeding and abdominal cramps have subsided. She is given a gynaecology clinic appointment before discharge. At the clinic, the histology report is discussed and she is treated accordingly.

AIMS AND OBJECTIVES:

1. To determine the indications for the use of Manual Vacuum Aspiration in FTH, Katsina.
2. To determine the complications associated with the procedure in FTH, Katsina.

MATERIALS AND METHODS:

The study was a 5-year retrospective study. The case notes of consecutive patients who had Manual Vacuum Aspiration at the Federal Teaching Hospital, Katsina from January 2018 to December 2022 were retrieved from the medical records department of the hospital. The data retrieved included the patient's age, parity, indications, age of pregnancy in weeks, type of analgesia used for the procedure, estimated blood loss, complication encountered during the procedure and the cadre of the surgeon. These were entered into a personal

computer and analyzed with Epi-info version 6.0 statistical software. Qualitative data was presented as percentages while quantitative data was presented as mean and standard deviation. Chi square test was used to determine significant association between qualitative variables. A p-value of 0.05 or less was considered significant.

A total of 612 case folders were reviewed out of the 824 patients who had MVA over a five year period. Admission for MVA accounted for 29.18% of all gynecological admissions during the period under review.

The mean age of the patients was 26.32 +/- 7.01 years and the mean parity was 2.43+/- 2.51. Incomplete abortion was the commonest indication for MVA and it accounted for 74.67% of the indications. 13 patients developed various complications. The most frequent complication was incomplete evacuation. All procedures were performed by Doctors.

RESULTS:

From 1st January 2018 to 31st December 2022 there were 2824 admissions into the Gynecology ward of the hospital for various gynecological conditions. Out of these, 824 patients had manual vacuum aspiration for various indications giving a prevalence of 29.18% of all gynecological admissions. Six hundred and eighty two case folders were retrieved giving a retrieval rate of 94.90%. However, 612 case folders were analyzed due to paucity of data captured in seventy of the case folders retrieved.

The age of the patients ranged from 14 to 63 years with a mean age of 26.32 ± 7.01 years, and the mean parity was 2.43±2.50.

Table 1. Frequency of age of patients that had MVA.

AGE RANGE	FREQUENCY	PERCENTAGE
14-23	256	41.80
24-33	265	43.30
34-43	76	12.40
44-53	12	2.00
55-63	3	0.50
TOTAL	612	100.00

The major indication for the use of MVA was incomplete abortion which accounted for 74.67% of the cases. Other indications were missed abortion/blighted ovum (12.91 %), molar pregnancy (2.78 %), endometrial biopsy for dysfunctional uterine bleeding and perimenopausal bleeding (5.56 %), secondary post partum haemorrhage (3.76 %), and therapeutic abortion (0.33%). The therapeutic abortions were performed by consultants for patients with breast cancer on chemotherapy who had failure of contraception (Table 2).

Table 2. Indications for MVA

INDICATIONS	FREQUENCY (%)
Incomplete abortion	457 (74.67)
Missed abortion/blighted ovum	79 (12.56)
Endometrial biopsy	34 (5.56)
Molar pregnancy	17 (2.78)
Secondary PPH	23 (3.76)
Therapeutic abortion	2 (0.33)
Total	612 (100.00)

Thirteen patients had complications. The most frequent complication was incomplete evacuation which accounted for 53.85% of the complications, followed by sepsis which accounted for 23.08%, uterine perforation, amenorrhea and excessive bleeding accounted for 7.69% each (Table 3).

Resident Doctors performed most of the procedures (87. 58 %). Consultants and House Officers performed 4.42 % and 8.00 % of the procedures respectively (Table 4).

Analysis for linear trend in proportions showed that the odd ratio for developing complication from MVA done by house officers was ten times higher than those done by Resident Doctors and five times higher than those done by Consultants. This was found to show statistically significant difference (X^2_{trend}= 27.25, P = 0.00) (Table 4).

Table 3. Complications following MVA.

COMPLICATIONS	FREQUENCY (%)
Incomplete evacuation	7 (53.85)
Sepsis	3 (23.06)
Uterine perforation	1 (7.69)
Amenorrhea	1 (7.69)
Excessive bleeding	1 (7.69)
Total	13 (100.0)

Table 4. Complications and cadre of operators

Cadre	Complications			
	Yes	No	Total (%)	OR of occurrence
Consultants	1	26	27 (4.42)	1.00
Residents	4	532	536 (87.58)	0.20
H/Officers	8	41	49 (8.00)	5.07
Total	13	599	612 (100)	

$X^2_{trend} = 27.25$, $P = 0.00$

DISCUSSION:

Most of the patients that had MVA were in their peak reproductive age with a mean age of 26.32± 7.01years. Incomplete abortion was found to be the major indication for the procedure in this study, accounting for 74.67 %. This is similar to the finding in Jos, Nigeria where incomplete abortion was also the major indication for MVA[24]. This could be probably because incomplete abortion is the commonest gynaecological emergency. Other indications were similar to the Jos study.

All procedures were performed by Doctors. Resident Doctors performed 87.58 % of the procedures. This was because of the less sophistication of the MVA procedure as House Officers also performed 8% of the procedures. However the few cases that require extra care or were potentially difficult and may be associated with complications, such as therapeutic abortion and molar gestation were done by the consultants. No paramedical personnel performed any of the procedure despite their participation in MVA training that takes place twice a year in the department. Studies done in some developing countries similar to ours showed that trained Nurses and midwives can perform the procedure in carefully selected cases[24]. This will supplement the effort of doctors in alleviating the problem of patients with incomplete abortion especially in a busy center like ours. A similar observation was made by Mutihir in Jos, Nigeria[23].

The complication rate was found to be 13 (2.2 %). This is higher than the complication rate of 1.3% reported from Zaria and 1.4% and 1.2% reported from South Africa and Vietnam[24] respectively all of which are in developing countries. The high rate of complication found in this study might be from the percentage complication contributed by the procedures performed by house officers.

Analysis for linear trend in proportion for complications showed that the complication rate for the Consultants was five times higher than for Resident Doctors. This could probably be due to the fact that they performed complicated cases which were associated with higher complication rates. The complication rate for the house officers was ten times that of the Resident Doctors. This may be because MVA training is not part of Medical student's curriculum which did not expose them to the procedure while in the Medical school. This also emphasizes the need for adequate supervision of MVA procedure done by house officers in the selected cases they performed.

CONCLUSION AND RECOMMENDATIONS:

Incomplete abortion was the commonest indication for MVA in this study. MVA is a fairly safe procedure in our hospital; as it is associated with a low complication rate. However, the procedure can be made safer if is inclu ded in the Medical school's curriculum, so that new house officers will be conversant with the procedure. Training of Nurses/Midwives to handle the procedure as is done in developed and some developing countries may be necessary to reduce phase III delay.

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