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A 5-Year Retrospective Study on the Use of Manual Vacuum Aspiration in the Federal Teaching Hospital Abakaliki

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Abstract

Introduction: Since the inception of our hospital in 2011, manual vacuum aspiration has been in use for the treatment first trimester miscarriages. Hence there is a need for operational review on its use. **Aim:** The aim of this study is to evaluate the determinants and outcome of Manual Vacuum Aspiration (MVA) use in our hospital. **Method:** This was a retrospective study on the use of MVA for various indications in our facility over a 5-year period. **Results:** There were 625 (19.7%) manual vacuum aspirations among 3179 gynaecological patients seen during the period. The age range of the women was from 15 to 48 years and the mean age was 28.5 ± 5.3 years. Incomplete abortion was the commonest indication for the use of MVA and accounted for 89.9% of cases. Other indications for the use of MVA include missed miscarriage (1.8%), and blighted ovum (1.8%). The complications were uterine perforation (0.3%), infection (3.7%) and severe anaemia (10.7%). The mean total hospital stay was 1.6 ± 0.6 days. Overall, 267 (42.7%) patients were managed as a day case. **Conclusion:** Manual vacuum aspiration is an effective tool in the management of early pregnancy complications. It is a safe, easily performed and possibly cost-effective procedure, with advantages for both the patient and the health care system.

Keywords

Manual Vacuum Aspiration, Miscarriage, Uterine Evacuation, Hospital

1. Introduction

Miscarriage is a common experience for women and is responsible for the

maximum number of pregnancy losses [1] [2] [3] [4] [5].

Approximately one in four women will experience such a loss in her life time [6]. Miscarriage occurs in 10% - 20% of clinically recognised pregnancies [7] [8] [9] [10]. Manual vacuum aspiration (MVA) has become standard surgical procedure for management of first trimester miscariages [1]-[20]. It is an alternative to the standard electrical vacuum curettage and can be performed under local anaesthetic [9].

During MVA, a 60-ml hand held syringe with a self-locking plunger is used to produce the vacuum needed for the aspiration of products of conception [21]. It is performed under local anaesthetic in the setting of a treatment ("procedure") room, thus avoiding the need for the use of an operating theatre and the risks of general anaesthesia [20]-[25].

Complications of MVA are similar to suction curettage and include failure to completely evacuate the uterus, uterine perforation, infection, bleeding and cervical laceration [1]-[25].

Manual vacuum aspiration was first described in the 1970s, initially for the management of incomplete miscarriage, but its use has been extended for the management of missed miscarriage and termination of pregnancy [19]. It has been widely used in the USA, Asian and European countries and many African countries including Nigeria.

No local data are available to provide the determinants and outcome of MVA use in our set-up. Hence we conducted this study with the aim of evaluating the determinants and outcome of MVA use in the Federal Teaching Hospital Abakaliki.

2. Materials and Methods

This 5-year retrospective study was conducted in the department of Obstetrics and Gynaecology of the Federal Teaching Hospital, Abakaliki (FETHA), Ebonyi State, Nigeria. The approval for the study was obtained from the Research and Ethical Committee of the Federal Teaching Hospital, Abakaliki.

All women who underwent MVA for early pregnancy loss between January 2014 and June 2018 were identified from the database of the early pregnancy unit. Women who met one of the following diagnostic criteria were included in the study: incomplete miscarriage, missed abortion, molar pregnancy, retained products of conception, secondary postpartum haemorrhage and blighted ovum/anaembryonic gestation. Women with history of use of manual vacuum aspiration in a peripheral hospital prior to presentation in FETHA were excluded from the study.

The MVA syringe is made of latex-free plastic and it can be single-valved or double-valved. The double-valve syringe is the newer version that is used more frequently. It has a volume of 60 ml and can create a vacuum of 610 - 660 mmHg; similar to that generated by an electric vacuum machine. Cannulae are 24 cm long and are colour-coded according to their diameter, which ranges from 4 mm

to 12 mm. The size of the cannula is chosen according to the period of gestation and the estimated size of the uterus. It has graduations with six marking dots starting at 6 cm from the tip and spaced 1 cm apart. The tube is flexible and the tips are rounded to help minimise the risk of uterine perforation.

Data were collected from the medical records in a specially designed data sheet which contained socio-demographic characteristics, parity, indication, complications and duration of hospital stay. The data was entered and analyzed using SPSS Version 22.0 (SPSS Inc., Chicago, IL, USA).

3. Results

A total of 625 patients were identified and there were 3,179 gynaecological cases during the study period. This gives a prevalence rate of MVA use in FETHA to be 19.7%. The mean age of women treated with MVA was 28.5 ± 5.3 years. The mean parity was 1.49 ± 1.4 and majority (51.4%) of women was between para 0 and 1. The mean gestational age was 11.6 ± 3.5 weeks. The indications for the MVA were incomplete miscarriage (89.9%) patients, whereas missed abortion and removal retained product of conception accounted for 11% and 24% of patients respectively. Majority (85.3%) of women had no complications. The complications were uterine perforation (0.3%), infection (3.7%) and severe anaemia (10.7%). The mean total hospital stay was 1.6 ± 0.6 days. Overall, 267 (42.7%) patients were managed as a day case and 323 (51.7%) patients had a total hospital stay more than 24 hours. The primary causes for the prolonged stay were geographical reasons, presence of complication and delay of the procedure due to prioritised workload of the on-call doctor who would perform the MVA (**Table 1**).

4. Discussion

It has been shown that MVA is a safe and effective method of uterine evacuation and has been successfully used for the management of incomplete miscarriage and first-trimester termination of pregnancy. MVA has been routinely offered in our institution as a treatment option for first trimester missed miscarriage and first- and mid-trimester incomplete miscarriage. This study showed that prevalence of MVA use for various reasons was 19.7%. This finding is similar to the finding of a study carried out in a teaching hospital in Jos [22]. Since its introduction, MVA has been widely used in low resource setting like ours because of its safety and cost-effectiveness.

Six hundred and twenty-five women were treated with MVA with their age ranging from 15 to 48 years with a mean age of 28.5 ± 5.3 years. This finding was similar to the findings of studies done in USA, Jos and Aberdeen [18] [19] [22]. This is the group of women in their active reproductive career in this environment.

The indication for the use of the instrument was incomplete abortion in 89.9% of cases. It was also found to be useful in the management of missed abortions/

Table 1. Sociodemographic and clinical characteristics of women who had MVA in FETHA.

Variables		Frequency	Percentages
Age	15 - 19	16	2.6
	20 - 24	138	22.1
	25 - 29	198	31.7
	30 - 34	172	27.5
	35 - 39	90	14.4
	≥40	11	1.8
Marital status	Married	553	88.5
	Single	72	11.5
Parity	0 - 1	321	51.4
	2 - 3	234	37.4
	4 - 5	65	10.4
	>5	5	0.8
Gestational age	<7 weeks	39	6.2
	7 - 9 weeks	218	34.9
	10 - 12 weeks	303	48.5
	>12 weeks	65	10.4
Indications	Incomplete abortion	562	89.9
	Molar pregnancy	1	0.2
	Missed abortion	11	1.8
	Removal of retained product of conception	24	3.8
	Secondary PPH	12	1.9
	Blighted ovum/anembryonic pregnancy	11	1.8
complications	None	533	85.3
	Severe anemia	67	10.7
	Uterine perforation	2	0.3
	Infection	23	3.7
Hospital stay (days)	1	267	42.7
	2	323	51.7
	3	31	5.0
	≥4	4	0.7

blighted ova in our facility in as many as 3.6% of cases. This finding is similar to the finding of a study done Jos [22]. Manual vacuum aspiration uses suction to remove products of conception. It has become the predominant method of treatment of incomplete abortion in our centre. We found it to be simple, safe and effective when properly used for incomplete abortions. The procedure was also found to be cost-effective as it eliminated the admissions of the patients to the ward for more than 24 hours thereby drastically reducing costs from hospital

bed charges.

The risk of complications with surgical uterine evacuation using MVA is relatively small. In our sample, uterine perforation occurred in 0.3% of women who had MVA. This finding is similar to the result of studies in Kenya, U.S.A and Aberdeen [17] [18] [19]. This further confirm findings of others that the cannula and syringe are safe, reliable, simple to use, and very convenient and inexpensive and is suitable for use in an out-patient setting. It has allowed postabortion care to be offered to desiring patients at service delivery points where electricity supply is epileptic or nonexistent.

It has been suggested that MVA has advantages over standard surgical curettage for both the patient and the health care provider in reducing hospital cost, waiting time and hospital stay. In our clinical application, MVA was performed under local anaesthetic in a treatment room in the early pregnancy unit. This prevents the need for a general anaesthetic with all the associated risks and allows earlier discharge from the hospital. It also reduces waiting time and total hospital stay for the patient since there is no need for available operating theatre. This is beneficial for our practice since our operating theatre is used for obstetric emergencies.

Even though MVA is a simple procedure, which does not require sophisticated equipment, it is not widely available in rural areas of sub-Saharan Africa. Furthermore, unfamiliarity of lower cadre of health providers with this technique could be contributing factors. In addition, staff training could be an issue due to poor funding of health system by policy makers. This leads to unavailability of this low cost life saving tool to vulnerable rural population who need it.

The introduction of the manual vacuum aspiration to health centers in rural areas, and training of lower cader health providers such as nurses and midwives to safely perform the procedure will certainly reduce the unacceptably high maternal mortality rate due abortions and its complications in this part of the world.

The strength of the study was mainly the availability of complete records and relatively significant sample size. Its limitation was that long term complications such Asherman syndrome was not assessed due to loss of patients to follow up.

5. Conclusion

Manual vacuum aspiration is an effective tool in the management of early pregnancy complications. Complications such as uterine perforation, bleeding and retained products of conception are minimal. It is a safe, easily performed and possibly cost-effective procedure, with advantages for both the patient and the health care system.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Jurkovic, D., Overton, C. and Bender-Atik, R. (2013) Diagnosis and Management of First Trimester Miscarriage. *BMJ*, **346**, f3676. https://doi.org/10.1136/bmj.f3676

[2] Beucher, G., Dolley, P., Stewart, Z., Carles, G. and Dreyfus, M. (2014) First Trimester Miscarriage: Benefit and Harms of Different Management Options. *Gynécologie Obstétrique & Fertilité*, **42**, 608-621. https://doi.org/10.1016/j.gyobfe.2014.07.006

[3] Al-Ma'ani, W., Solomayer, E.F. and Hammadeh, M. (2014) Expectant versus Surgical Management of First Trimester Miscarriage: A Randomised Controlled Study. *Archives of Gynecology and Obstetrics*, **298**, 1011-1015. https://doi.org/10.1007/s00404-013-3088-1

[4] Tasnim, N., Fatima, S. and Mahmud, G. (2014) Manual Vacuum Aspirator: A Safe and Effective Tool for Decentralization of Post-Miscarriage Care. *JCPSP*, **24**, 815-819.

[5] Barot, S. (2014) Implementing Postabortion Care Programs in the Developing World: Ongoing Challenges. *Guttmacher Policy Review*, **17**, 22-29.

[6] Adeniran, A.S., Fawole, A.A., Abdul, I.F. and Adesina, K.T. (2015) Spontaneous Abortions (Miscarriage): Analysis of Cases at a Tertiary Center in North Central Nigeria. *Journal of Medicine in the Tropics*, **17**, 22-26. https://doi.org/10.4103/2276-7096.148571

[7] Kong, G.W., Lok, I.H., Yiu, A.W., Hui, A.S., Lai, B.P. and Chung, T.K. (2013) Clinical and Psychological Impact after Surgical, Medical or Expectant Management of First Trimester Miscarriage—A Randomised Controlled Trial. *Australian and New Zealand Journal of Obstetrics and Gynaecology*, **53**, 170-177. https://doi.org/10.1111/ajo.12064

[8] Alsibiani, S.A. and Herzog, T. (2014) Value of Histopathologic Examination of Uterine Products after First Trimester Miscarriage. *BioMed Research International*, **12**, 67-72. https://doi.org/10.1155/2014/863482

[9] Gallos, I.D., Williams, H.M., Price, M.J., Eapen, A., Eyo, M.M., Tobias, A., *et al.* (2017) Methods for Managing Miscarriage: A Network Meta-Analysis. *Cochrane Database of Systematic Reviews*, Article No. CD012602. https://doi.org/10.1002/14651858.CD012602

[10] Adisso, S., Hounkpatin, B.I.B., Komongui, G.D., Sambieni, O. and Perrinb, R.X. (2014) Introduction of Misoprostol for the Treatment of Incomplete Abortion beyond 12 Weeks of Pregnancy in Benin. *IJGO*, **126**, S36-S39. https://doi.org/10.1016/j.ijgo.2014.03.002

[11] Trinder, J., Brocklehurst, P., Porter, R., Read, M., Vyas, S. and Smith, L. (2006) Management of Miscarriage: Expectant, Medical, or Surgical? Results of Randomised Controlled Trial (Miscarriage Treatment (MIST) Trial). *BMJ*, **332**, 1235. https://doi.org/10.1136/bmj.38828.593125.55

[12] Greenslade, F.C., Leonard, A.H., Benson, J., Winkler, J. and Henderson, V.L. (1993) Manual Vacuum Aspiration: A Summary of Clinical and Programmatic Experience Worldwide. IPAS, Carrboro, NC.

[13] Hamoda, H., Flett, G.M.M., Ashok, P.W. and Templeton, A. (2005) Surgical Abortion Using Manual Vacuum Aspiration under Local Anaesthetic: A Pilot Study of Feasibility and Women's Acceptability. *Journal of Family Planning and Reproductive Health Care*, **31**, 185-188. https://doi.org/10.1783/1471189054484004

[14] Blumenthal, P.D. and Remsburg, R.E. (1994) A Time and Cost Analysis of the Management of Incomplete Abortion with Manual Vacuum Aspiration. *Interna-*

tional Journal of Gynecology & Obstetrics, **45**, 261-267. https://doi.org/10.1016/0020-7292(94)90252-6

[15] Khaskheli, M. (2002) Evaluation of Early Pregnancy Loss. *Pakistan Journal of Medical Research*, **41**, 70-72.

[16] Sattar, Z.A., Singh, S. and Fikree, F.F. (2007) Estimating the Incidence of Abortion in Pakistan. *Studies in Family Planning*, **38**, 11-22. https://doi.org/10.1111/j.1728-4465.2007.00112.x

[17] Greenslade, F., Benson, J., Winkler, J., Henderson, V. and Leonard, A. (1993) Summary of Clinical and Programmatic Experience with Manual Vacuum Aspiration. *Advances in Abortion Care*, **3**, 1-4.

[18] Ahsan, A. and Jafarey, S.N. (2008) Unsafe Abortion: Global Picture and Situation in Pakistan. *Journal of the Pakistan Medical Association*, **58**, 660-661.

[19] Shelley, J.M., Healy, D. and Grover, S. (2005) A Randomized Trial of Surgical, Medical and Expectant Management of First Trimester Spontaneous Miscarriage. *Australian and New Zealand Journal of Obstetrics and Gynaecology*, **45**, 122-127. https://doi.org/10.1111/j.1479-828X.2005.00357.x

[20] Karman, H. and Potts, M. (1972) Very Early Abortion Using Syringe as Vacuum Source. *The Lancet*, **1**, 1051-1052. https://doi.org/10.1016/S0140-6736(72)91225-1

[21] Milingos, D.S., Mathur, M., Smith, N.C. and Ashok, P.W. (2009) Manual Vacuum Aspiration: A Safe Alternative for the Surgical Management of Early Pregnancy Loss. *BJOG*, **116**, 1268-1271. https://doi.org/10.1111/j.1471-0528.2009.02223.x

[22] Mutihir, J.T. and Ujah, I.A.O. (2004) Experience with Manual Vacuum Aspiration in Jos, Nigeria. *Tropical Journal of Obstetrics and Gynaecology*, **21**, 100-102.

[23] Castleman, L. and Mann, C. (2002) Manual Vacuum Aspiration (MVA) for Uterine Evacuation: Pain Management. Ipas, Chapel Hill.

[24] Edwards, S., Tureck, R., Fredrick, M., Huang, X., Zhang, J. and Barnhart, K. (2007) Patient Acceptability of Manual versus Electric Vacuum Aspiration for Early Pregnancy Loss. *Journal of Women's Health*, **16**, 1429-1436.

[25] Wen, J., Cai, Q.Y., Deng, F. and Li, Y.P. (2008) Manual versus Electrical Vacuum Aspiration for First Trimester Abortion: A Systematic Review. *BJOG*, **115**, 5-13. https://doi.org/10.1111/j.1471-0528.2007.01572.x