East African Medical Journal Vol. 79 No 10 October 2002
PAIN RELIEF USING PARACERVICAL BLOCK IN PATIENTS UNDERGOING MANUAL VACUUM ASPIRATION OF UTERUS
Tekle G. Egziabher, MMed (Obs/Gyn), Consultant, Kenyatta National Hospital, J.K. Ruminjo, MMed, (Obs/Gyn), FCTR, Senior Lecturer, Department of Obstetrics and Gynaecology and C. Sekadde-Kigondu, PhD Associate Professor, Department of Clinical Chemistry, College of Health Sciences, University of Nairobi, P.O. Box 19676, Nairobi, Kenya

Request for reprints to: Dr. J.K. Ruminjo, Department of Obstetrics and Gynaecology, College of Health Sciences, University of Nairobi, P.O. Box 19676, Nairobi, Kenya

PAIN RELIEF USING PARACERVICAL BLOCK IN PATIENTS UNDERGOING MANUAL VACUUM ASPIRATION OF UTERUS

TEKLE G. EGZIABHER, J.K. RUMINJO and C. SEKADDE-KIGONDU

ABSTRACT

Objective: **To evaluate pain relief using paracervical nerve block with 1% lignocaine injection in patients undergoing uterine evacuation by Manual Vacuum Aspiration (MVA) for the treatment of incomplete abortion.**
Design: **A randomized double blind clinical trial.**
Setting: **Marie Stopes Health Centre, Nairobi.**
Methods: **One hundred and forty two patients were recruited between September and October 1997. The intervention was random assignment to the study group (paracervical block with 1% lignocaine) or the placebo group (paracervical block with sterile water for injection). Intra and post operative assessment of pain was made using McGills and facial expression scales.**
Results: **The untreated group experienced significantly more pain than the treated group, especially lower abdominal pain and backache. The pain was especially marked intra-operatively, less so 30 minutes post-operatively.**
Conclusion: **Based on the findings of this study, any patient going for manual vacuum aspiration for the treatment of incomplete abortion should be given Paracervical block as it is cost effective, easy to perform and with less side effects.**

INTRODUCTION

Fifteen to twenty percent of all clinically recognised pregnancies abort spontaneously(1,2). The World Health Organization (WHO) estimates that 20 million unsafe abortions occur each year, resulting on an average of 70,000 women dying. In some developing countries the rate is as high as 50%(2-4). Makokha reported a maternal mortality rate of 2 per a thousand at Kenyatta National Hospital, Nairobi of which 22-34% were caused by unsafe abortion (4).

Similar studies conducted in the same hospital by Mati *et al* and Rogo *et al* in 1982 and 1996 showed incidence of induced abortion to be 60% and 50% respectively(5,6).

Manual Vacuum Aspiration (MVA) is a simple and effective procedure for management of incomplete abortions and was introduced to Western countries by Karman *et al* in 1977(2). In Kenya, MVA was introduced to the Kenyatta National Hospital in 1987 and was extended later on to district hospitals. In 1993 alone, more than 20,000 MVA procedures were performed countrywide. Many investigators showed that the procedure was simple, safe, cost-effective and easily accessible to many patients (8-12). However, the procedure is carried out mostly without provision of any form of analgesia or pain relief. Despite the simplicity and efficacy of the procedure, a large proportion of patients have been noted to have moderate to severe pain which can make the procedure impossible.

Hypothesis: Pain experienced by patients undergoing evacuation of the uterus using MVA is relieved by using paracervical block with lignocaine 1%.

The objective of this study was to assess the efficacy of MVA in relation to pain during evacuation for incomplete abortion; to assess the extent of pain relief using paracervical lignocaine 1% during MVA and to determine the incidence of side effects after lignocaine injection such as nausea, vomiting, fainting and bleeding.

MATERIALS AND METHODS

This was a randomized clinical trial (RCT) comparing lignocaine with placebo in the control of pain during MVA treatment of incomplete abortion. Calculation of the sample size was performed using Epi Info Version 5 with the following assumptions:-

unexposed = 1.1.
Expected prevalence in unexposed group =10%.

The calculated sample size was 71 for MVA with lignocaine (group 1) and 71 for MVA with untreated (group 2), for a total of 142 randomly selected participants, using random tables. The investigator, participant and the nurse filling out the questionnaire were blinded to allocation.

One nurse who gave out the medication was not blinded. The study was carried out between September 1997 - October 1997 at the Marie Stopes Health Centres in Nairobi.

Inclusion criteria: Incomplete abortion occurring less than 16 weeks of gestation with no evidence of infections, blood pressure less than 140/90 mm Hg, non diabetic or cardiac patients, free from severe anaemia, cervical dilation at least 1.5 - 2 cm dilated and free from acute pelvic inflammatory disease.

Exclusion criteria: Abortion occurring 16 weeks and over of gestation, blood pressure greater or equal to 140/90 mmHg, infections of cervix, uterus and pelvis, diabetic and cardiac patients and allergy to lignocaine as well as respiratory distress.

The following steps for drug administration were followed:

Step 1: Determination of the absence of known allergies to the anaesthetic agent was done and then a 10 - 20 ml syringe was filled with lignocaine.

Step 2: A 22 or 25 gauge needle was used. The cervix was grasped with a tenaculum and injection of 1 ml of the drug into the posterior and anterior lips of the cervix at 3 and 9 o'clock was done.

Step 3: Using a slight traction on the cervix with the tenaculum, the cervix was moved to help identify the area between the smooth cervical epithelium and vaginal tissue.

Step 4: The needle was inserted just under the epithelium and aspirate by drawing the plunger back slightly to make sure the needle was not penetrating a blood vessel.

Step 5: Injected about 2 mls of lignocaine just under the epithelium not deeper than 2-3 mm at 3 and 9 o'clock and when correctly placed, a swelling and bloating of the tissue was noted.

Step 6: At the conclusion of the set of injection, allowing minimum of 2-4 minutes for anaesthesia to diffuse and the block to have its maximum effect.

Before the manual vacuum aspiration, assessment of patients mood, anxiety and presence of pain was conducted using either McGill Scale or Face Scale or both to assess the degree of pain (13-16).

RESULTS

A total of 142 patients were recruited into the study.

Table 1

Distribution of gestation age in weeks

Amenorrhoea (weeks)	Placebo	Lignocaine
6 - 7	8	8
8 - 9	9	12
10 - 11	16	14
12 - 13	11	8
14 - 15	27	29
Total	71	71

The distribution of gestation age in weeks which ranged from 6 to 15 weeks. There was no significant difference in distribution of gestation age between the two groups ($p > 0.05$) (Table 1).

Selected Socio-Demographic Characteristics: Approximately two thirds (66.9%) of the patients in both groups were aged between 17-25 years. The mean age for both groups combined was 24.7 years with a standard deviation (s.d.) of 4-9 years. There was no significant difference in age distribution between the two groups ($p > 0.05$). Majority of patients in both groups had attained secondary education (77.5%) and only 1.4% had no education at all while 8.5% had college/university education and 0.7% had adult education. Almost three quarters (73.2%) were single and 2.1% were either divorced, widowed or separated (Table 2).

Table 2

Selected socio-demographic characteristics of patients undergoing MVA aspiration

Characteristic	No.	%
Age (years)		
17-20	24	16.9
21-25	71	50.0
26-30	29	20.4
31-35	11	7.7
36-39	7	4.9
Education level		
None	2	1.4
adult education	1	0.7
Primary	17	12.0
Secondary	110	77.5
University/College	12	8.5
Marital status		
Married	35	24.6
Single	104	73.2
Widowed	1	0.7
Separated	1	0.7
Divorced	1	0.7
Occupation		
Housewife	28	19.7
Housemaid	12	8.5
Student	60	42.2
Professional	42	29.6
Gravidity		
1	78	55.0
2	36	25.3
3	11	7.7
4	17	12.0

Duration of MVA Procedure and Hospital Stay: For 83.1 % of the patients the procedure lasted 10-15 minutes, (87.3%), for treatment group, (80.3% for untreated group). For the rest (16.9%) the procedure lasted 16-30 minutes.

Duration of Hospital stay was under six hours for the majority (87.3%), six hours to one day for 10.6%, and over one day for 2. 1 %.

MVA side effects by Study Group: There was no statistically significant difference between the study groups with regard to increased intra-operative blood pressure (treated: 9.9% vs untreated: 20.3%; p=0.08), sweating (treated: 38% vs untreated: 34.8%. p=0.68). However, significantly more patients in the untreated group experienced nausea and/or vomiting than in the group (treated: 38% vs untreated: 67.6%; p< 0. 001).

Abdominal Pain: Before the operation, abdominal pain was either absent or mild in both groups (Table 3). However, during the operation, it was very severe in the untreated group (46.5%), but moderate to severe in the treatment group (56.3%). After the operation, the abdominal pain remained moderate to severe in the untreated group (47.9%), while 31 % of the treatment group did not have any abdominal pain at all and 53.5% had mild pain.

Shoulder Tip Pain: Shoulder pain was absent in 99% of the untreated and treatment group patients before the operation (Table 4). During and soon after the operation the shoulder pain was not present in most of the patients regardless of their treatment group.

Backache: The majority of the patients regardless of the treatment groups had no backache, 94.4% in the treatment group and 76.1% in the untreated group (Table 4). However, during the operation, 63.4% in the treated group experienced backache soon after treatment, 26.8% of the untreated group continued experiencing the backache compared to only 7% in the treated group. Thirty minutes later, the majority of the patients had stopped experiencing the backache.

Table 3 shows that pain was experienced more in the untreated group than in the treatment group. There were significant differences in those who experienced backache between treated and untreated before, during and after MVA but not after 30 minutes.

Table 3

Distribution of pain intensity before during and after 30 minutes after MVA by treatment group

Abdominal pain		Degree of pain					
Time	Treatment Group	% None	% Mild	% Moderate	% Severe	% Very Severe	p-value
Before	Treated	87.3	12.7	0	0	0	*
	Untreated	0					
During	Treated	4.2	26.8	11.3	1.4	1.4	*
	Untreated	0	4.2	46.5	5.6	5.6	*
After MVA	Treated	31	53,5	14.1	1.4	0	*
	Untreated	4.2	47.9	43.7	4.2	0	*
After 30	Treated	73.2	25.4	1.4	0	0	*
minutes	water	32.4	60.6	7.0	0	0	*
Shoulder pain							
Before	Treated	98.6	1.4	0	0	0	0.5
	Untreated	100.0		0	0	0	
During	Treated	98.6	1.4	0	0	0	0.5
	Untreated	97.2	2.8	0	0	0	
After	Treated	100.0		0	0	0	0.5
MVA	Untreated	98.6	1.4	0	0	0	0.5
After 30	Treated						
minutes	Utreated						
Backache							
Before	Treated	94.4	5.6	0	0	0	0.002
	Untreated	76.1	23.9	0	0	0	
During	Treated	53.5	43.7	2.8	0	0	0.002
	Untreated	31.0	63.4	5.6	0	0	*
After MVA	Treated	93.0	7.0	0	0	0	0.002
	Untreated	73.2	26.8	0	0	0	
After 30	Treated	95.8	4.2	0	0	0	0.19
minutes	Untreated	90.1	9.9	0	0	0	

p-value not indicated because chi-square was not valid
Results are numbers of women assessed on a 10 cm visual analogue scale (McGill)

Table 4 shows that pain was experienced more in the untreated group. During the MVA procedure for example, those in the untreated group were 10 times more likely to have severe abdominal pain than those treated with lignocaine.

Table 4

Comparison of the severity of peri-operative pain and backache by treatment group

	Odds ratio	95% C.I	P-value
Abdominal (None severe pain)			
During	10.8	2.68-45.41	<0.001
Immediate Post Op.	5.01	2.13-12.02	<0.001
After 30 minutes	5.30	0.53-123.18	<0.2
Backache (None and mild pain)			
During	2.42	1.16-5.07	0.016
Immediate post Op.	2.82	1.56-15.92	0.003
After 30 minutes	2.48	0.54-12.72	0.97

The odds ratios were high indicating a significant statistical difference except 30 minutes later where pain seemed to be the same in both groups. Backache was generally mild in both groups.

DISCUSSION

The patients in this study were of various marital, parity and age status and most of them had interfered with the pregnancy. The majority of patients (66.9%) were aged between 17-25; 73.2% were single; and 24.2% were students. Most (54.9%) were primigravida, and 29.6% were engaged in some form of employment. The mean age was 24 and 60.6% of the patients were in the first trimester. Only 56 (39.4%) were 14-15 weeks of gestation.

The treatment of incomplete abortion always requires removal of retained products of conception (POC) from the uterus. Dilatation and Curettage (D&C), the traditional method of removing tissues from the uterus is accompanied by scraping the uterus walls with a metal curette. Vacuum aspiration uses suction to remove uterine tissue through a cannula with minimum scraping of the uterine walls.

The purpose of pain control therefore is to ensure that the woman suffers the minimum of anxiety and discomfort as well as the least risk to her health. The majority of pain carrying fibres from the uterus and cervix pass through the paracervical tissue. Thus paracervical block with lignocaine will relieve pain during the manipulation.

This study has shown that treatment of incomplete abortion with manual vacuum aspiration is easy, safe and effective. This procedure can be used to treat incomplete abortion of uterine size upto to 15 weeks of gestation safely. One inconvenience of this procedure is that when the cervical os is 4 cm or more dilated, a good vacuum cannot be created as even the largest cannula available is likely to become loose within the os. The complications associated with this procedure are minor and common.

The manual vacuum aspiration (MVA) can be performed outside the operating theatre. The purpose of pain management for MVA is to ensure that the patient experience a minimum of anxiety and discomfort as well as the least risk to her health. Patients undergoing manual vacuum aspirations experience two types of pain. The first is deep intense pain which accompanies cervical dilation and stimulation of the internal cervical os. The second type of pain, commonly caused by uterine evacuation, is a diffuse lower abdominal pain with cramping which occurs with movement of the uterus, scraping of the uterine wall and uterine muscle contractions related to emptying of the uterine cavity.

Complications during the procedure like peritonitis and intra abdominal haemorrhage could result in abdominal and or shoulder pain.

Paracervical block with lignocaine is widely used to ease cervical pain during MVA. It causes minimal physiological disturbance, allowing the uterus to contract firmly and the patient to recover rapidly. Paracervical block affects nerve fibres located around the cervix and cervical canal. It minimises cervical pain associated with dilatation or movements of the cannula in the cervix. Paracervical block will not reach the nerves of the uterus itself. The nerves transmitting these sensations are higher in the pelvis than local infiltration will reach. Consequently, it does not affect pain of uterus cramping.

Toxic effects may be controlled by stopping administration of the drug. Respiratory failure may require assisted respiration. Convulsions may be controlled by a short acting barbiturate such as thiopentone sodium. Isoprenaline hydrochloride has been suggested for cardiac depression.

Treatment of hypertension or other depression effects of local anaesthetic should include establishment of a patent, airway and administration of 100% oxygen, lowering patients' head and intravenous fluids.

This study has shown that pain was experienced more in the untreated group than in the treatment group. Use of paracervical block with lignocaine is effective in relieving pain during MVA. Side effects were minor and infrequent and the duration of hospital stay was short. Patients under local anaesthesia are fully awake and therefore can help localise complications like severe pains following perforated uterus. Paracervical block can be a useful alternative to general anaesthesia for MVA.

Based on the findings of this study, any patient going for MVA in the treatment of incomplete abortion should be considered for paracervical block with lignocaine.

ACKNOWLEDGEMENTS

The authors are grateful to the Director, Kenyatta National Hospital, and the Director, Marie Stopes, Kenya. The author also wishes to thank the nursing staff and doctors at the study site, and most of all the patients who consented to take part in this study. The study did not receive any external funding. This paper is published with the permission of Director, Kenyatta National Hospital.

REFERENCES

1. Rogo, K.O. Abortions in Africa. *Afr. J. of Fert.* 1996; **1:**14.
2. World Health Organization: Abortion: A tabulation of available data on the frequency and mortality of unsafe abortion. 2nd Edit. Geneva WHO 1994.
3. Greenslade, F. and Emuveyan E. E. Sie, A. *et. al.* Comprehensive clinical guidance for manual vacuum aspiration and various aspects of abortions. 1994; **12:** 1-8
4. Makokha, A.E. Maternal Mortality at Kenyatta National Hospital. *East Afr. Med. J.* 1980; **57:**541.
5. Mati, J.K. and Aggarwal, V.P. Epidemiology of abortion in Nairobi. *J. Obs. Gyn. E. Central Afr.* **57:**138.
6. Rogo, K.O. and Muia, E. Unsafe abortion in Kenya: Findings from eight studies, 1996; 1-8. Population Council, Nairobi.
7. Karman, H. and Potts, M. Very early abortion using syringe as vacuum source. *Lancet.* 1972; **1:**7759.
8. Katen, O. Abortion cases in safe motherhood programme. Post-abortion family planning services. *J. Obs. Gyn E. Central Afr.* 1995; **11:**4.
9. Programme for Appropriate Technology in Health (PATH) MVA for treatment of incomplete abortion. 1994; **12:**1-8.
10. Kizza, A.P. and Rogo K. O. Assessment of Manual Vacuum. Aspiration in the treatment of incomplete abortion. *East Afr. Med. J.* 1990; **97:**812-822.
11. Verknyl, D. D. and Growther, C. A. Suction versus Conventional curettage. Incomplete abortion. *East Afr. Med. J.* 1993, **83:**13-15
12. Ojwang, S.B.O. Contraceptive use among women admitted with abortion in Nairobi. *East Afr. Med. J.* 1991; **69:**197
13. Well, P.D. and Dubner, R. Analysis of Pain. *J. Inter. Assoc. for the study of pain.* 1986; **46:**1-8.
14. Gil Melzack, M.C. Present Pound Intensity (ppl) scale. Palliatiative care for people with cancer pain. 1997; 2nd Ed., 27.
15. Piero, V.D. and Jones, A. K. Pain. *J. Inter. Assoc. for the study of pain.*1991; **46:**9-12.
16. Cates, W. Death from paracervical anaesthesia used in first trimester abortion. *New England J. Med.* 1976; **295:**1397-1399.
17. Berger, G.S. and Tylen, C.W. Maternal deaths associated with paracervical block anaesthesia. *Amer. J. Obs and Gynae.* 1974; **118:**1142-1143.