International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Zerin MI et al. Int J Reprod Contracept Obstet Gynecol. 2025 Feb;14(2):421-425
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20250177

Original Research Article

Pain relief by paracervical block during manual vacuum aspiration for early miscarriage

M. Ismat Zerin*, M. Sharifa Khatun, Zarin T. Tamanna, Musammat R. Tamanna, Rogina Amin, Umme S. Shilpi, Rifat Ara

Department of Obstetrics and Gynaecology, Kurmitola General Hospital, Dhaka, Bangladesh

Received: 19 December 2024
Accepted: 15 January 2025

***Correspondence:**
Dr. M. Ismat Zerin,
E-mail: ismatzerin22@gmail.com

ABSTRACT

Background: Early miscarriage is a common clinical problem that requires safe and effective management. Manual vacuum aspiration (MVA) under paracervical block is a minimally invasive procedure that helps to minimize pain during the procedure. This study aims to determine the safety and effectiveness of paracervical block in reducing pain during MVA for early miscarriage.
Methods: A cross-sectional prospective observational study was conducted at the Department of Obstetrics and Gynaecology, Rajshahi Medical College Hospital, Bangladesh from January to June 2019. A total of 52 women with early miscarriages undergoing MVA were included. The procedure was done with a paracervical block given beforehand. Visual analog scale (VAS) was used to assess pain levels immediately after the procedure and 30 minutes later following the procedure.
Results: The average age of the patients (57%) was 20-30 years. The mean gestational age was 6-10 weeks, and 65.4 percent of patients had incomplete abortion. Immediately after MVA, 69.23% of patients had mild pain severity (VAS 0 to 3), though this rose to 80.77% at 30 minutes post procedure. The mean VAS scores was 2.92±1.38 immediately after procedure and 2.57±1.44 after 30 minutes of the procedure. The procedure was considered acceptable by most patients (86.54%) with few adverse effects.
Conclusions: During paracervical block for early miscarriage, MVA is a safe, effective and well tolerated means for pain relief and patient satisfaction.

Keywords: Early miscarriage, Paracervical block, MVA, Pain relief

INTRODUCTION

Miscarriage or spontaneous abortion is a regular occurrence among women. The rate of miscarriage is difficult to calculate. According to one study that used biochemical identification of early pregnancy, many pregnancies miscarry, with the majority occurring before the woman is aware of her pregnancy. Miscarriages occur in around 15% of clinical pregnancies, with the majority occurring in the first trimester.[1]

Incomplete miscarriage is a leading cause of maternal death and morbidity in underdeveloped nations, owing to hemorrhage and infection. The World Health Organization estimates that abortion complications account for 13% of all pregnancy-related fatalities worldwide. Early pregnancy failure can be treated with expectant care, medical termination using misoprostol, or surgical evacuation. Traditionally, the first-line surgical therapy has been dilatation and curettage (D&C), which needs qualified personnel, an operating room, the presence of an anaesthetist, and, in some cases, blood transfusion. Even with careful and expert management, problems such as bleeding, inadequate evacuation, perforation, and infection are possible.[3]

Manual vacuum aspiration (MVA) is an alternative to normal electrical vacuum curettage that can be conducted under local anaesthesia (LA) in a treatment ('procedure') room, eliminating the requirement for an operating theatre and the hazards associated with general anaesthesia.[4] MVA is the use of a plastic aspirator to empty the uterus during early miscarriage care. To evacuate the uterus, the aspirator is linked to a cannula that is introduced through the cervix to extract the uterine contents.[5] Reducing the physical discomfort and anxiety that women suffer during uterine evacuation is a key component of MVA treatment. The goal of pain management during uterine evacuation is to keep women as comfortable as possible while reducing medication-related hazards and side effects. The cervix and lower uterine segment are innervated by parasympathetic nerve fibres S2–S4.

LA administered by paracervical block to the cervix targets these nerves and is helpful in relieving discomfort produced by cervical dilatation and movement.[6] Anesthesia and analgesia are chosen based on their efficacy, cost, safety, and adverse effects. Other influences include the preferences of both the patient and the physician. Paracervical LA is an alternative for cervical dilatation and uterine intervention because it does not require general anesthetic equipment or staff trained to administer general anaesthesia.[7] Lidocaine is the most commonly used local anesthetic agent since it is readily available, inexpensive, stable, and has a minimal risk of allergic/adverse reactions. In comparison, general anesthesia necessitates more extensive treatment and incurs higher costs. It necessitates some kind of preoperative patient preparation. It causes the largest number of adverse effects and problems, including stroke. A doctor and technicians must work together to complete the task. Spinal and epidural anesthesia also require the services of an anesthesiologist. LA, on the other hand, can be managed by the clinician.[8]

Data from a cost analysis study has shown that MVA performed in the ambulatory setting is significantly less expensive performed under GA.[9] Despite the proven benefits, MVA under LA is still underused in Bangladesh. In our country the traditional sharp curettage is still popular method for evacuation of uterus for early miscarriage and practice of MVA under LA is not uniform in all institutes. Now Government has taken steps to train different level of service provider to obtain the skill and to establish MVA under LA as an acceptable and routine method of evacuation replacing sharp curettage. This study of MVA under LA was offered at indoor setting to women following an early miscarriage within the first 12 weeks of gestation. This study aims to assess the feasibility, safety and clinical outcomes of MVA under LA at indoor setting.

Objective

The objective of this study was to evaluate the efficacy of paracervical block in providing pain relief during manual vacuum aspiration for early miscarriage.

METHODS

This cross-sectional prospective observational study was conducted at the Department of Obstetrics and Gynaecology, Rajshahi Medical College Hospital, Rajshahi, Bangladesh from January 2019 to June 2019. A total of 52 women with early miscarriages undergoing MVA were included. The procedure was done with a paracervical block given beforehand. Visual analog scale (VAS) was used to assess pain levels immediately after the procedure and 30 minutes later following the procedure.

Inclusion criteria

Cases with missed miscarriage of up to 12 weeks, incomplete miscarriage up to 12 weeks of gestation, blighted ovum, women aged between 18-45 years, and patients able to and capable of giving written informed consent were included.

Exclusion criteria

Cases with septic abortion, molar pregnancy, psychiatric or neurological disease, hypovolemic or septic shock, abdominal rebound pain or signs of peritonitis, allergies to lidocaine, any observable pelvic mass, and severe medical condition (neoplasia) were excluded.

Data collection

Data were collected from by using a prestructured questionnaire to capture all the relevant clinical, demographic, and procedural information. Patient age, socio-economic status, parity, presenting symptoms, clinical examination findings and the procedural details such as pain scores using visual analog scale (VAS) immediately after and 30 minutes after pedicle treatment were in the questionnaire.

Resuscitation requirements, use of pain medication, procedural outcomes and adverse effects were also documented. They obtained data through patient interviews, clinical observation, and chart reviews during their hospital stay.

Statistical analysis of data

The data were analyzed with statistical package for the social sciences (SPSS) software (version 22). Patient characteristics, procedural details as well as pain scores were summarized using descriptive statistics, expressed as mean±standard deviation for continuous variables and frequencies and percent for categorical variables.

Paired t-tests were used to compare pain scores before versus after procedure. Crosses were used to assess associations between variables and the Chi-square tests to test for categorical variables. Statistically significant values of <0.05 were considered.

RESULTS

Table 1 shows the age distribution of the patients. 12 (23.1%) were below 20 years, 30 (57.7%) were 20-30 years of age group and 10 (19.2%) belonged to more than 30 years. It also shows 34.6% were primi gravida and 65.4% were multi gravida. Majority of the patients had pregnancy of 6-10 weeks (61.54%), 65.4% patients presented with incomplete abortion. Majority of patients (57.7%) presented with mild bleeding, had abdominal pain in 65.4% and 76.9% patients were haemodynamically stable.

Table 1: Baseline characteristics (n=52).

Characteristics	Frequency (N)	Percentage
Age group (years)		
<20	12	23.10
20-30	30	57.70
>30	10	19.20
Parity		
Primi gravida	18	34.60
Multi gravida	34	65.40
Gestational age		
<6	8	15.38
6-10	32	61.54
>10-12	12	23.08
Type of miscarriage		
Incomplete	34	65.40
Missed	10	19.20
Blighted	8	15.40
Attempts to terminate pregnancy		
Yes	34	65.40
No	18	34.60
Amount of bleeding		
Mild	30	57.70
Moderate	12	23.10
Severe	10	19.20
Abdominal pain		
Yes	34	65.40
No	18	34.60
Passage of fleshy mass		
Yes	34	65.40
No	18	34.60
Hemodynamic status		
Stable	40	76.90
Unstable with shock	12	23.10

Paracervical block was used in all patients as a prime method of pain reliever. In addition to that NSAID were used for pain medication in 96.15% patients, 23.07% patient required diazepam (Table 2).

Table 3 shows in majority of patients evacuation was performed by using 5, 6, and 7 mm canula. Rest of the patients needed evacuation by using larger size canula 9 and 10 mm.

Table 2: Pain medication of study population (n=52).

Sedation/analgesics	Frequency (N)	Percentage
Diazepam		
Used	12	23.07
Not used	40	76.93
NSAIDS (tablet)		
Used	50	96.15
Not used	2	3.85
Paracervical block		
Used	52	100.00
Not used	0	0..00

Table 3: Size of canula used for manual vacuum aspiration (n=52).

Size of canula (mm)	Frequency (N)	Percentage
4	4	7.69
5	8	15.40
6	12	23.07
7	16	30.775
8	4	7.69
9	4	7.69
10	4	7.69

Table 4 shows that most of the patients 69.23% had minimal per vaginal bleeding and average duration of the procedure was 5-10 minutes (80.77%).

Table 4: Amount of bleeding and duration of procedure of the study population (n=52).

Variables	Frequency (N)	Percentage
Amount of bleeding (ml)		
5-10 (mild)	36	69.23
>10 (moderate)	14	26.92
>30 (severe)	2	3.85
Duration of procedure (min)		
<8	8	15.38
8-10	42	80.77
10-12	2	3.85

Table 5 shows level of intra operative pain recorded immediately after procedure, 69.23% were mild (0-3) pain and 30.77% were moderate and 30 min after the procedure, 80.77% were mild (0-3) and 19.23% were moderate (4-6).

Table 5: Level of intra-operative pain which recorded immediately and 30 minutes after procedure (n=52).

Pain score	Frequency (N)	Percentage
Immediately after procedure		
Mild (0-3)	36	69.23
Moderate (4-6)	16	30.77
30 minutes after procedure		
Mild (0-3)	42	80.77
Moderate (4-6)	10	19.23

Table 6 shows mean VAS score was 2.92±1.38 immediately after procedure and 2.57±1.44 after 30 minutes of the procedure.

Table 6: Mean level of intra-operative pain which recorded immediately and 30 minutes after procedure (n=52).

Intra operative pain	Mean±SD	Range
Immediately after procedure	2.92±1.38	0-10
Pain score 30 minutes after procedure	2.57±1.44	0-10

DISCUSSION

This cross-sectional prospective observational study was carried out with an aim to assess the safety and efficacy of paracervical block during MVA.

In the present study it was observed that the average age of the patients (57%) was 20-30 years. Samal et al showed the mean age of the patients were 27.7±4.75 years and 28.31±4.73 years in group I and group II respectively, which closely resembled with present study.[10]

In this study, it was observed that average gestational age was 6-10 weeks. Similarly, Gomez et al showed that the mean gestational age was 8.8±1.8 weeks and 8.8±1.8 in two groups' respectively.[11] The majority of patients (65.4%%) presented with incomplete abortion, (57.7%) presented with mild bleeding, had abdominal pain in 65.4% and 76.9% patients were hemodynamically stable. 23.07% of patients had just palpable uterus and tenderness was found in 88.5% of patients. Egziabher et al had shown in their study that the treatment of incomplete abortion using manual vacuum aspiration with paracervical block is safe, easy, and effective.[12] Paracervical block with lignocaine is widely used to ease cervical pain during MVA. Philip et al in his study of patients treated for incomplete abortion, put emphasis on safe and effective administration of paracervical block during manual vacuum aspiration.[13]

Significantly higher proportion of patients 73.10% presented with active bleeding. Cervical os was found open in 76.93% patients and in 42.30% of patients' product of conception was felt. Regarding resuscitation requirement of the study patients, IV fluid infusion was required for 73.07% patients, antibiotic was given to all patients. Blood transfusion was needed for 23.1% patients.

In this study paracervical block was used in all patients as a prime method of pain reliever. In addition to that NSAID were used for pain medication in 96.15% patients, 23.07% patient required diazepam post operatively. In majority of patients' evacuation was performed by using 5, 6, and 7 mm canula. Rest of the patients needed evacuation by using larger size canula 9 and 10 mm. Most of the patients 69.23% had minimal per vaginal bleeding and average duration of the procedure was 8-10 minutes (80.77%). Tasnim et al found in their study that MVA was superior in terms of significantly less blood loss (62.08±32.19 versus 75.71±35.53; p=0.008).[14]

Praagh V et al showed paracervical block to be a convenient, safe, simple effective anesthetic for dilation and curettage in 176 patients.[15] Another study by Donat et al showed vacuum aspiration under local anesthesia appears to be a reasonable procedure up to 12 weeks from last menses.[16] Pain is rated by patients as being only minor in severity and it tends to be less severe than patients expect. A time interval less than 2 min from the injection of anesthetic to the beginning of the procedure is the only variable statistically significant at 5% level (RR=3.0). Even for a time interval of 2-3 min the risk of feeling more pain during abortion was higher than procedures with a waiting time more than 3 min (RR=1.2). This is an observation of great importance because a simple 4 min wait confers no additional health risk.

Keder et al in her study found that paracervical block is effective in alleviating pain associated with the application of a tenaculum to the cervix.[17] Pain control is one of the most relevant issues in managing incomplete abortion. In one study that evaluated postoperative pain using a paracervical block or no analgesics, there was no difference between using a paracervical block and using no medication for pain management.

Level of intra operative pain which was recorded immediately after procedure, 69.23% were mild (0-3) pain and 30.77% were moderate and 30 minutes after the procedure, 80.77% were mild (0-3) and 19.23% were moderate (4-6). Mean VAS score was 2.92±1.38 immediately after procedure and 2.57±1.44 after 30 minutes of the procedure.

Above findings strongly suggest the hypothesis that paracervical block anaesthesia is effective in relieving pain during MVA.

Limitations and recommendations

This study was conducted at a single tertiary care hospital with a relatively small sample size, which may limit the generalizability of the findings. Thus, the outcomes are subject to the variation of individual variations in response to the paracervical block, and furthermore pain perception is subjective. The findings are validated and the comparative efficacy of paracervical block versus other pain management techniques in manual vacuum aspiration needs to be further explored in future studies with larger and multi center cohort, randomized controlled trials.

CONCLUSION

Manual vacuum aspiration under paracervical block is well tolerated, safe and effective in managing early miscarriage. The decision also greatly reduces the amount

of pain patients feel during the procedure and offers a less invasive alternative to surgical aspiration performed while patients are under general anaesthesia. Further, its use in clinical practice can create high patient satisfaction and minimal adverse effects.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Elina Hemminki MD. Treatment of miscarriage: current practice and rationale. Obstet Gynecol. 1998;91(2):247-53.
2. Natalia A, Galadanci H, Ibrahim SA, Mohammad Z. Comparison of effectiveness of pain management during Manual Vacuum Aspiration using single-agent analgesic and combination: A randomized double-blind controlled trial. Open J Obstet Gynecol. 2015;5(05):244.
3. Abd Elzaher M, Bedew M. Manual vacuum aspiration: a safe and cost-effective substitute for dilatation and curettage on the surgical management of first-trimester abortion. J Am Sci. 2013;9(6):581-5.
4. Milingos DS, Mathur M, Smith NC, Ashok PW. Manual vacuum aspiration: a safe alternative for the surgical management of early pregnancy loss. BJOG: Int J Obstet Gynaecol. 2009;116(9):1268-71.
5. Gebru AA, Yesuf AH, Demelew T, Demelew T. Health policy analysis on unsafe abortion in Ethiopia. Int J Biotechnol All Fields. 2016;4(11):376-97.
6. Castleman L, Mann C. Manual vacuum aspiration (MVA) for uterine evacuation: Pain management. Chapel Hill, NC, Ipas. 2002.
7. Tangsiriwatthana T, Sangkomkamhang US, Lumbiganon P, Laopaiboon M. Paracervical local anaesthesia for cervical dilatation and uterine intervention. Cochrane Database Syst Rev. 2013;(9):CD005056.
8. Jesmin N. Efficacy and Safety of Para Cervical Block in Manual Vacuum Aspiration (MVA)-in Low Resource Setting. Bangl J Obstet Gynaecol. 2016;31(2):70-4.
9. Kumar V, Chester J, Gupta J, Shehmar M. Manual vacuum aspiration under local anaesthetic for early miscarriage: 2 years experience in a university teaching hospital in UK. Gynecol Surg. 2013;10:241-6.
10. Samal SK, Rathod S, Padhi M. A comparative study between manual vacuum aspiration and electrical vacuum aspiration for the first trimester medical termination of pregnancy. Int J Reprod Contracept Obstet Gynecol. 2014;3(1):139-43.
11. Gomez PI, Gaitán H, Nova C, Paradas A. Paracervical block in incomplete abortion using manual vacuum aspiration: randomized clinical trial. Obstet Gynecol. 2004;103(5 Part 1):943-51.
12. Egziabher TG, Ruminjo JK, Sekadde-Kigondu C. Pain relief using paraceevical block in patients undergoing manual vacuum aspiration of uterus. East Afr Med J. 2002;79(10):530-4.
13. Stubblefield PG. Control of pain for women undergoing abortion. Int J Gynecol Obstet. 1989;30:131-40.
14. Tasnim N, Mahmud G, Fatima S, Sultana M. Manual vacuum aspiration: a safe and cost-effective substitute of electric vacuum aspiration for the surgical management of early pregnancy loss. Hypertension. 2011;1(2):149-53.
15. Van Praagh IG, Povey WG. The use of paracervical block anesthesia for dilatation and curettage. Canad Med Assoc J. 1966;94(6):267.
16. Donati S, Medda E, Proietti S, Rizzo L, Spinelli A, Subrizi D, Grandolfo ME. Reducing pain of first trimester abortion under local anaesthesia. Eur J Obstet Gynecol Reprod Biol. 1996;70(2):145-9.
17. Keder LM. Best practices in surgical abortion. Am J Obstet Gynecol. 2003;189(2):418-22.

Cite this article as: Zerin MI, Khatun MS, Tamanna ZT, Tamanna MR, Amin R, Shilpi US, et al. Pain relief by paracervical block during manual vacuum aspiration for early miscarriage. Int J Reprod Contracept Obstet Gynecol 2025;14:421-5.