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Original Article

Efficacy, Safety, and Acceptability of Manual Vacuum Aspiration with Para Cervical Block as a Management of Incomplete Abortion

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Abstract

Limited access to safe abortion is a leading cause of maternal mortality and morbidity in the developing world, overwhelming hospitals with a large number of women seeking treatment for complications of unsafe abortion. In many cases, more than half of all gynecological admissions are due to incomplete or septic abortions. The primary aims were to assess the efficacy and cost-effectiveness of the manual vacuum aspiration (MVA) procedure for managing incomplete abortion, considering completeness, procedure, duration, and hemorrhage. Additionally, safety aspects, such as complications (hemorrhage, perforation, and cervical injury), pain relief, patient satisfaction, and factors like reduced hospital stays and waiting times, were evaluated. This descriptive cross-sectional study was conducted at Dhaka Medical College and Hospital, focusing on women with incomplete abortions up to 12 weeks of gestation. It took place over six months from July to December 2013, with a purposive sample of 100 cases selected based on specific criteria to represent the study's objectives. Statistical analysis was done by using SPSS (version 16.0, SPSS Inc., Chicago, Illinois, USA). Out of 100 respondents, more than two-third of the patients (68%) were in 21-30 years age group. Half of the patients (50%) came from lower middle class family and most of them were housewives (80%). Majority (58%) of the patients had average gestational age 6-10 weeks. More than two-third (70%) of the patients had incomplete abortion, with 47% having attempted to terminate pregnancy. Abdominal pain was reported among 64% of patients, and the average bleeding period was 5-7 days for 62% of them. More than two-third (68%) of patients had no palpable uterus, and active bleeding was also found among two-third 66.0% of cases. Nearly one-third of the patients (32%) received injectable oxytocin and 13% received blood transfusion. Method of para-cervical block was applied for pain management in all patients (100%), while pethidine was used in only 3% of cases. Almost all of the patients 97%) were given sedatives (diazepam) and oral non-steroidal anti-inflammatory drugs (NSAIDs). Duration for the procedure was 10-15 minutes for 46% of patients, and excessive hemorrhage was found in 2% of cases. The average hospital stay ranged from 2-11 hours. Treatment cost in the majority of cases was only 75-150 Bangladeshi taka (BDT), which was statistically significant. The MVA with paracervical block was found to be efficient for treatment of incomplete abortions during the first trimester of pregnancy, with few complications. MVA procedure had less blood loss, less time consuming, safe and effective with shorter hospital stay.

Keyword: *Efficacy, safety, acceptability, manual vacuum aspiration, para cervical block, incomplete abortion.*

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INTRODUCTION

Early pregnancy loss is a common experience for women and approximately one in four women experienced a miscarriage in her lifetime.[1] Abortion may be defined as the loss of product of conception in part or completely with or without a fetus weighing less than 500gm before the viable age which is usually 20 wks.[2] In Bangladesh the time limit is still 28th weeks as the facilities for neonatal resuscitation has not yet been developed as much as to the level at which a preterm baby before 28 weeks can survive. More than 50 percent of human pregnancies may be lost, although only about 15 percent cases is perceived as miscarriage, with lower abdominal cramps and uterine bleeding.[3] The incidence of abortion is difficult to work out and some women abort without knowing that they have been pregnant. Most probably 15 percent of clinically and 60 percent of chemically evident pregnancies end in spontaneous abortion.[4] Eighty percent abortions occur prior to 12th weeks, 20-30 percent in the 2nd trimester and

25 percent of women will have one or more miscarriage in her reproductive life.[3,5] According to duration, abortion may be typed as early abortion that occurs before 12 weeks of pregnancy and late abortion that occurs after 12 weeks of pregnancy The most common time for clinically evident abortion to occur is between 7 to 13 weeks.

In first-trimester surgical evacuation of abortion is performed by using one of two methods: vacuum aspiration or sharp curettage (also known as D & C). Vacuum aspiration uses an electric pump or manual aspirator to create a vacuum and the uterine contents are removed through a canula.[6] Vacuum aspiration is the most common method used in developed countries. Pain management during MVA procedure is essential; this includes verbal reassurance, respectful and supportive care during procedure, and some oral medication for relieve from pain such as paracetamol or ibuprofen and para cervical block. The term para cervical block refers to the injection of local anesthesia into the cervix. It is recommended for most women undergoing an MVA procedure. Vacuum aspiration is used for about 97 percent of first trimester abortion in the United States, Canada, China, New Zealand, Singapore and other countries use vacuum aspiration for almost all first trimester surgical abortions.[7] In sharp curettage method, the uterine lining is scraped with a metal curette, often while the patient is under general anesthesia or heavy sedation. Medical experts do not recommend using sharp curettage unless vacuum aspiration and medical methods are unavailable, because sharp curettage carries high risks of complications.[8] More than 50 studies had been conducted last 30 years on vacuum aspiration among 400,000 cases or more in over two dozen of countries, where vacuum aspiration was recommended as the safest and effective method for first trimester abortion.[9] Most of the literatures reveal that vacuum aspiration's effectiveness ranges from 87 to 100 percent. In the United State Edwards Creinin research found that MVA for early abortion was >99% effective, in Sweden Hemlin and Moller (2001) found >97 % effective, [9] where in Bangladesh**,** Bhatia et al. (1980) showed MVA for early abortion was > 99% and in India Roy (1974) found >98% effective.[9] In Bangladesh the traditional sharp curettage is still the popular method for evacuation of uterus, but practice of MVA is not uniform in all heaith service facilities. Now Government has taken steps to train different level of services provider to obtain the skill and to establish MVA as an acceptable and routine method with replacing the sharp curettage.

In Bangladesh, abortion is still one of the major cause of maternal morbidity and death due to limited access in safe management of incomplete abortion. In United Sates, Vietnam, South Africa, United Kingdom and other countries MVA has helped to expand women's access to safe and effective abortions. In the developed world, it has been proved that, management of incomplete abortion with the help of MVA is safe, effective, simpler, cost effective and requiring less hospital stay and allow greater privacy than other methods. This management also gives a greater sense of personal control, autonomy and active participation as there is no need of anesthesia. Effective pain management with para cervical block ensures patient's comfort, increase patient's satisfaction and ease the procedure for providers without increasing the cost of anesthesia. So, this study was assessed and evaluated that MVA with para cervical block that offered a highly effective treatment of incomplete abortion with uterine size up to 12 weeks.

MATERIALS AND METHODS

This cross-sectional study was conducted among women of incomplete abortion up to 12th week and was admitted in the Department of Obstetrics and Gynecology of Dhaka Medical College and Hospital, Dhaka, Bangladesh. The study period was from July to December 2013. Among the women, 100 cases were selected purposively according to inclusion and exclusion criteria. The inclusion criteria of the study were women of incomplete abortion, uterine size within 12th weeks, and women agreeing to participate in this study. On the other hand, the exclusion criteria were women with missed abortion, molar pregnancy, induced abortion with sepsis and suffering from any associated medical diseases. Per abdominal and per-vaginal examination findings, required resuscitation, sedation/ analgesics, amount of bleeding, duration of procedure, anesthesia needed, complications, hospital stay and cost were considered as main outcome variables. After proper enrolment, history and physical examination were done to confirm the diagnosis, then vital signs and haemodynamic stability, duration of gestation, uterine size with status of dilatation of OS were assessed. All patients were properly counselled for para cervical block and procedure of MVA**.** Data was collected using a structured questionnaire containing all the variables of interest. The questionnaire was finalized following pre-testing. All women were informed about the prospect and procedure of the study and informed written consent was taken from all the study subjects after full explanation of nature and purpose of the study. Data were collected by interviewing and examining the patients admitted at DMCH.

Data analysis and quality assurance

Statistical analyses were carried out by using the Statistical Package for Social Sciences version 16.0 for Windows (SPSS Inc., Chicago, Illinois, USA). The mean values were calculated for continuous variables. The quantitative observations were indicated by frequencies and percentages. It is extremely important that data was of good quality. Patient of incomplete abortion was the target group (within 12 weeks)

Ethical Implications

Permission for the study was taken from the concerned departments. All the study subjects were thoroughly appraised about the nature, purpose and implications of the study, as well as spectrum of benefits and risk of the study. All study subjects was assured of adequate treatment of any risk developed in relation to study purpose. Subjects will also be assured about their confidentiality and freedom to withdraw themselves from the study any time. Data was collected in approved data collection form. Finally written consent of all study subjects were taken free of duress and without exploiting any weakness of subjects. The study subjects were informed verbally about the study design, the purpose of the study, and their right to withdraw them from the study at any time, for any reason, whatsoever. Subjects who will give informed consent to participate in the study were included as study sample.

RESULTS

Table I Shows age distribution of patients, here 56.0% belonged to 21-30 years, 20% was 31-40 years, 16% was ≤ 20 years and 8.0% patients belonged to more than 40 yrs.

Table- I: Age distribution of the study patients (n=100)

Age (years)	Patients (n=100) n	Percentage (100%) %
≤20	16	16.0
21-30	56	56.0
31-40	20	20.0
>40	8	8.0

Table II shows the obstetrical history of the study patients, among the patients 78% were multipara and 76.0% patients had previous normal vaginal delivery, where 16% patients had previous history of abortion and 84 % patients had none.

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Table-II: Obstetrical history of the study patients (n=100)

Obstetrical history		Patients (n=100)	Percentage (100%)
Para			
	Primipara	22	22.0
	Multipara	78	78.0
Mode of previous delivery			
	Caesarean section	24	24.0
	NVD	76	76.0
Number of previous			
	Abortion	4	4.0
	MR	12	12.0
	None	84	84.0
Treatment received in previous abortion			
	D&C	2	12.5
	Medical termination	8	50.0
	MVA	4	25.0
	Not received	2	12.5
Married for (years)			
	<5	22	22.0
	5-15	48	48.0
	>15	30	30

Table III describe the obstetrical features of the patients, among the patients 70% were presented with incomplete abortion and complete abortion was 17%. Here 58% of the patients had pregnancy of 6-10 weeks, 50% patients had moderate bleeding, 64.0% patients presented with abdominal pain and 87.% patients were Haemo-dynamically stable.

Table-III: Presenting obstetrical features of the study patients (n=100)

Presenting features		Patients (n=100)	Percentage (100%)
Duration of pregnancy (weeks)		n	%
	<6	10	10.0
	6 – 10	58	58.0
	>10 -12	32	32.0
Type of abortion			
	Anembryonic pregnancy	13	13.0
	Incomplete abortion	70	70.0
	Incomplete MR	17	17.0
Attempts to terminate pregnancy			
	Yes	47	47.0
	No	53	53.0
Amount of bleeding			
	Mild	37	37.0
	Moderate	50	50.0
	Severe	13	13.0
Duration of bleeding (days)			
	<5	37	37.0
	5-10	50	50
	>10	13	13
Abdominal pain			
	Yes	64	64.0
	No	36	36.0
Passage of fleshy Mass			
	Yes	68	68.0
	No	32	32.0
Haemodynamic status			
	Stable	87	87.0
	Unstable with shock	13	13.0

Table IV Shows 66.0% presented with active bleeding, open cervical OS was found in 82.0% patents and product of conception was felt in 70.0% patients.

Table-IV: Per-vaginal examination of the patients (n=100)

Pervaginal examination		Patients (n=100) n	Percentage (100%) %
Active bleeding			
	Present	66	66.0
	Absent	34	34.0
Status of OS			
	Closed	38	38.0
	Opened	62	62.0
Position of Uterus			
	Antiverted	82	82.0
	Retroiverted	18	18.0
Cervix			
	Healthy	94	94.0
	Unhealthy	6	6.0
Tenderness			
	Present	24	24.0
	Absent	76	76.0
Product of Conception			
	Felt	70	70.0
	Hanging	12	12.0
	No felt	18	18.0

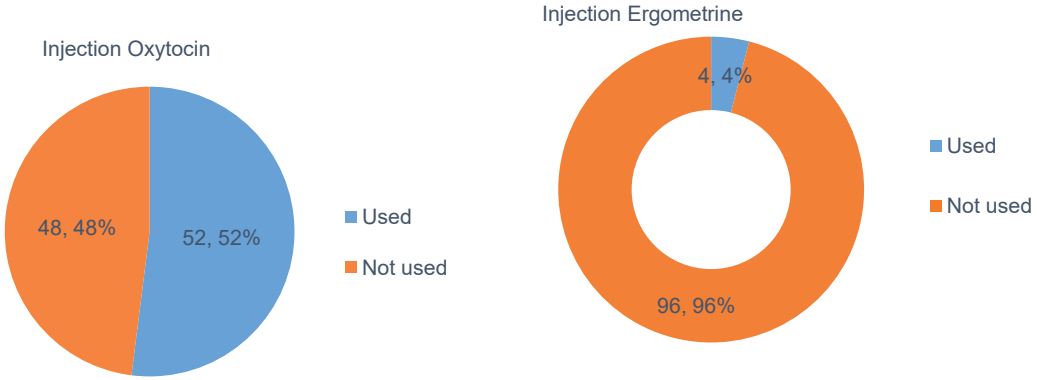

Figure- 1: *Distribution of oxytocic drugs (a) Injection Oxytocin and (b) Injection Ergometrine used by the patients*

Figure 1 (a and b) shows the use of oxytocic drugs for the patients. Among the oxytocic drugs injection oxytocin in 52.0% patients and injection ergometrine was used in 4.0% of patients followed by tablet misoprostol was used in 90% of the patients.

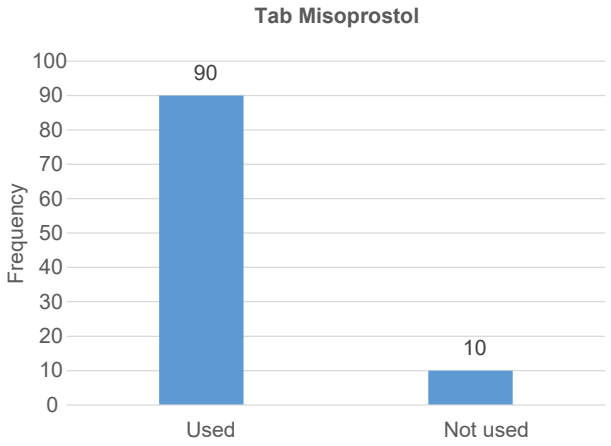

Figure-1(b): *Distribution of oxytocic drugs Tablet Misoprostol used by the patients.*

Table V shows the resuscitation requirement of the patients, here IV fluid infusion was required for 66.0% patients. Blood transfusion was given to 13.0% patients.

Table-V: Resuscitation requirement of the patients (n=100)

Resuscitation required	Patients (n=100) n	Percentage (100%) %
I/V fluid		
Needed	66	66.0
Not needed	34	34.0
Antibiotic		
Given	100	100.0
Not given	0	0.0
Blood transfusion		
Needed	13	13.0
Not needed	87	87.0

Table VI shows the use of para cervical block in all patients as a prime method of anesthesia. In addition to the tablet diazepam and NSAID were also used for pain medication in 97% patients where 3% patients required pethidine.

Table:VI: Use of pain medication of study population.

Sedation/Analgesics	Patients (n=100) n	Percentage (100%) %
Pethedine		
Used	3	3.0
Not used	97	97.0
Diazepam (Tablet)		
Used	97	97.0
Not used	3	3.0
NSAID (Tablet)		
Used	97	97.0
Not used	3	3.0
Para cervical block		
Used	100	100.0
Not used	0	0.0

Table VII shows that 46% of the patients had minimal per vaginal bleeding and average duration of procedure was 10-15 minutes among 46.0% of patients. Here, 26.0% patients needed >15 minutes to complete the MVA procedure.

Table: VII Amount of bleeding and duration of procedure of the patients (n=100)

Variable	Patients (n=100) n	Percentage (100%) %
Amount of bleeding		
5-10 ml (Mild)	46	46.0
>10 ml (moderate)	28	28.0
>30 ml (Severe)	26	26.0
Duration of procedure (min)	n	%
< 10	28	28.0
10 -15	46	46.0
> 15	26	26.0

Table VIII describes that excessive haemorrhage occurred in 4.0% patients during evacuation and shock was found in 2.0% patients. None of the patients had any sort of other complication like incomplete evacuation, repeat D & C or perforation.

Table-VIII: Complications of the study patients (n=100)

Complications	Patients (n=100) n	Percentage (100%) %
Hemorrhage	4	4.0
Shock	2	2.0
Incomplete evacuation	None	-
Repeat D&C	None	-
Infection	None	-
Perforation	None	-

Table IX shows the hospital stay of the patients, average hospital stay was 2- 12 hours in 65.0% patients and 20.0% patient stayed in hospital for > 12 hours.

Table-IX: Duration of hospital stay of the patients (n=100)

Hospital Stay	Patients (n=100)	Percentage (100%)
1-2 hrs	15	15.0
2 -12 hrs	65	65.0
> 12 hrs	20	20.0

Table X shows the cost of treatment of the patients, it was observed that cost of treatment was 75 -150 BDT in 96.0% patients and 200 – 500TK in 4.0% patients which was statistically significant.

Table-X: Distribution of the study patients according to cost of treatment (n=100)

Cost of treatment	Patients (n=100) n	Percentage (100%) %
75-150 Tk	96	96.0
200-500	4	4.0
>500	0	0.0

Table XI states the satisfaction of MVA procedure by the respondents, 96% patients were fully satisfied with this procedure.

Table-XI: Satisfaction of study population about MVA procedure (100)

Patient's Satisfaction about MVA procedure	Patients (n=100)	Percentage (100%)
Satisfied	96	96.0
Not satisfied	4	4.0

DISCUSSION

In this study it was observed that the average age of the patients (68%) was 21-30 years. Faichamnan et al.[15], have shown in their series, that the mean age of the patients were 27.5 ± 6.5 years and 26.4 ± 8 years in group I and Group II respectively, which closely resembled with the present study. Farooq et al.[12] have observed similar mean age of the patients having incomplete abortion, which support the present study, where the authors found the mean age was 28.04±6.19 years in group I and 29.35±6.4 years in group II. Similarly, Ghafar[10], Lukman and Pogharian.[18] Gomez et al.[17] have observed identical mean age of the patients having incomplete abortion and thus, support the present study.

Regarding the socioeconomic condition it was observed that 50% patients came from low socio-economic status. In this present series it was observed that most of the patients (80%) were housewives. In this study it was observed that most of the patients (84%) had no history of DM, heart disease, HTN bronchial asthma. Only 8% patients had DM and 6% patients had Hypertension & 2% patients had heart disease.

In this study it was observed that the average (58%) gestational age was 6 -10 weeks. Similarly, Faichamnan[15] showed the mean gestational age were 10.5 + 3.5 weeks and 11.4 + 4.3 weeks in group I and groups II respectively. Milingos et al.[25] and Westfall et al.[26] showed high success rate of using MVA especially in first or second trimester. In this study it was observed that majority (70%) of patients had incomplete abortion. Attempts to terminate pregnancy was found in 47% cases. Pereira et al.[16] mentioned in their study that MVA caused less blood loss, less time consuming, and resulted in shorter hospitalization. This surgical procedure was found to be efficient for treatment of incomplete abortions during the first trimester of pregnancy, with no complications after treatments. In this current study it was observed that more than half (37%) of the patients presented with mild bleeding and 50% patients had moderate bleeding and

their average duration of bleeding was found 5-7 days which was 66%. 94% patients were found haemodynamically stable. Faichamnan[15] showed bleeding significantly higher in group II (D & C) where the author found the mean blood loss was 74.3±60.1 ml and 104.2±104.1 ml in group I (MVA) and group II (D & C) respectively, which is similar with the current study.

In this present study it was observed that more than a half (64%) of the patients had abdominal pain. Almost similar findings regarding the pain was also obtained by Shelley, Healy and Grover.[27]

In this present study (68%) patients complained of passage of fleshy mass and rest 32% patients had none.

In this current study it was observed that more than one fourth (26%) of the patients received OCP. Contraceptive and history of hormonal intake was also observed by Ghafar.[10]

In this study it was observed that most of the patients (78%) were multipara. Faichamnan et al.[15] found 64.2% and 68.2% were multipara in group I and group II respectively, which is comparable with the current study.

In this current study it was observed that more than three fourth (76%) of study population had normal vaginal delivery. Maximum patients (76%) had not received any treatment and previous history of MR was present in 12% patient. `The average marital age was 2-10 years in 54% patient.

In general examination all patients were found haemodynamically stable. 35% patients had mild anaemia, dehydration was found in 12% patients. Clear lung was found 100.0% patients.

Regarding the P/A examination it was observed in this present study that tenderness was found in 20.0%. Height of uterus was found just palpable in 32.0% patients. Tenderness and scar mark were present which was not significant.

About the pervaginal examination it was observed in this current study that active bleeding was found in 66.0% patients. Cervical os was open in 62.0% patients and os was closed in 38.0% patients. Average size of uterus was found within 6 -10 weeks in 58.0% patients. Product of conception was felt in 70.0% patients.

In this current study it was observed that IV infusion was required in 66.0% patients because 66% patients presented with active bleeding. All patients received antibiotics. Only 13.0% patients received blood transfusion because of presented severe anaemia. Use of iv fluid and blood transfusion are similar with Pereira et al.[16] findings.

Regarding the oxytocic drugs used in this current study it was observed that injectable oxytocin was used in 52.0% patients. Ergometrine was used in only 4.0% patients. Misoprostol was used in 90.0% patients.

Para cervical block was used in all patients in study population for pain medication. Regarding the sedation/analgesics it was observed that pethedine was used only in 3.0% patients. Diazepam was used in 97.0% patients. NSAID was used in 97.0% patients. Almost one fourth (24.0%) of the patients who underwent manual vacuum aspiration used 7 mm canula.

In this present study, Blood loss was minimum in majority (46.0%) of patients. Average duration of procedure was found 10 -15 minute in 46.0% patients. Similarly, Faichamnan[15] obtained that the mean time for the operation was 17.2±8 minutes in group I and 44.6 ± 7 minutes in group II. Another study by Kulier[28] also stated that the operation time in the MVA group was shorter. Khani et al.[29] compared MVA with curettage, the duration of surgery was significantly shorter in the MVA group and patients had more bleeding in curettage group. Various other trials reported 95–100% efficacy with MVA obtained by Say et al.[30]; Greensalad et al.[7]

Regarding the need of anesthesia of study population it was observed that para cervical block was used in all patients (100%) Similarly, in faichamnan study para cervical block was used in group I and general anesthesia was used in group II in study population.

About the complications it was observed that hemorrhage was found in 4.0% patients. Shock was found in 2.0% patients, none of the patient had incomplete evacuation. Incomplete evacuation and repeat D&C was not needed for any patient in this study population. Grave complications like infection and perforation had not occured in this study population. Faichamnan[15] found four cases of pelvic inflammatory disease & no perforation was observed in both groups. No significant differences were found between these two groups regarding the completeness of conception removal or adverse effects.

Regarding the hospital stay it was observed that the average duration of hospital stay was 2-12 hrs in 65.0% patients.

Similar observations regarding the duration of hospital stay were also made by Farooq et al.[12]; Faichamnan[15]; Westfall et al.[26]

Mahomed et al.[20] documented in their study that given the safety and effectiveness of the MVA procedure and the potential for reducing health care costs and improving patient management, this technology should be considered by health care systems in developing countries for improving treatment of abortion complications. Regarding the cost of the study patients, in (96.0%) patient's hospital cost was 75-150 Tk. and (4.0%) patient's hospital cost was 200 to 500 Tk. Similarly the cost of procedure was significantly lower in MVA group observed by Farooq.[12]

CONCLUSIONS

This study was designed to observed the efficacy and simplicity of the MVA procedure and to established this as an alternative easy, cost effective, less complicated approach of treatment of incomplete abortion in comparison to others method like D & C, EVA. It can be concluded that manual vacuum aspiration is safe and effective for first-trimester termination of pregnancy. Manual vacuum aspiration needs less time to perform than others methods. Manual vacuum aspiration is associated with less pain but manual vacuum aspiration involves greater procedural difficulty.

Limitation of the study

The present study was conducted at a very short period due to time constrain and fund limitation. Small sample size was also a limitation of the present study

Recommendation

The safety and effectiveness of the MVA procedure and the potential for reducing health care costs. This technology should be considered by health care systems in developing countries for improving treatment of abortion complications. MVA is found to be equally safe, effective, simple and fast set of instruments which can be employed in the management of incomplete abortions. Integration of MVA in the medical training is recommended as it is a measure which can greatly contribute towards the reduction of maternal morbidity and mortality especially in a developing country like ours where resources are scare and alternatives are quite limited. For further study, the efficacy of the two studies should be confirmed with the randomized controlled trial.

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