Proportion And Factors Associated With Intra-Procedural Pain Among Women Undergoing Manual Vacuum Aspiration For Incomplete Abortion At Mbarara Regional Referral Hospital, Uganda

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Abstract

Background: Intra-procedural pain (IPP) is common among women undergoing Manual Vacuum Aspiration (MVA) for incomplete abortion. Globally, the proportion varies between 60% to 90% while in Sub-Saharan Africa including Uganda, the proportion varies between 80% to 98%. IPP management during MVA include Para-cervical block (using 1% lidocaine) or an opioid (using 100mg of intravenous pethidine).

Objectives: This study determined the proportion and factors associated with IPP among women undergoing MVA for incomplete abortion at MRRH.

Methods: We conducted a cross sectional study among 207 women who underwent MVA for incomplete abortion from 17th December 2020 to 28th May 2021. An interviewer-administered structured questionnaire was used, and pain assessment was done using VAS considering an IPP as a pain score of 6 or more. The participant characteristics were summarized. The proportion of women with IPP was calculated. We performed multivariable logistic regression to determine the factors associated with IPP.

Results: We consecutively enrolled 207 women with a mean age of 25.8 ± 5.8 years. The proportion of women with IPP undergoing MVA at MRRH was 82.6% (95% C.I: 76.8 – 87.2). The factors significantly associated with IPP were age and cervical dilatation. The odds of IPP increased with decreasing age of the women; compared to older women (aged >30 years), teenagers (age<20 years); OR=8 (95% CI=1.85-34.61) ($p=0.005$), while women aged 20-24 years; OR=3.45 (95% CI=1.47-8.20) ($p=0.004$), and those aged 25-30 years; OR=2.84 (95% CI=1.20-6.74) ($p=0.018$). Women with cervical dilatation of 1-2 cm had the odds of IPP increased; OR=2.27 (95% CI=1.11-4.62) ($p=0.024$), compared to a cervical dilation of 3-4 cm.

Conclusion: Majority of women undergoing MVA at MRRH experienced IPP. Younger women and those with cervical dilatation 1-2cm are more likely to experience IPP. We recommend improvement of pain control among women undergoing MVA.

Background

Intra-procedural pain (IPP) is common among women undergoing Manual Vacuum Aspiration (MVA) for incomplete abortion (1). It refers to an “An unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage” (2) or it may refer to mutually recognizable experience that reflects a person’s apprehension of threat to their bodily or existential integrity (3).

Globally, several studies which were done among women undergoing MVA found that the proportion of intra-procedural pain varies between 60% to 90% (4). In Africa, the proportion of intra-procedural pain varies between 70% to 92% (1, 5). Meanwhile in Sub-Saharan Africa including Uganda, the proportion is about 80% to 98% (6). IPP among women undergoing MVA is considered acute because it results from

direct surgical trauma to afferent neuronal barrage (7). The IPP may be physiological and or psychological and may be unbearable (8, 9).

MVA is the main option in the management of first trimester incomplete abortion. Other management modalities include; medical use of misoprostol, curettage and expectantly waiting for spontaneous expulsion of remaining products of conception (10). MVA is considered routinely (11), thus avoiding general anaesthesia and the need for access to theatre (12). MVA is the cheapest, fastest and safest surgical method of uterine evacuation for incomplete abortion in first trimester (13, 14). MVA has also been found to be effective in terms of completeness of uterine evacuation, shorter time during procedure, less complications and shorter duration of hospital stay (15, 16). The procedure was designed to be used in low resource setting since it is associated with lower costs compared to Electric Vacuum Aspiration (17). Nevertheless some women may get incomplete uterine evacuation (4) and in some instances, there can be uterine perforation due to difficulty in performing the procedure because of IPP (18).

The methods of intra-procedural pain (IPP) assessments include use of Visual Analogue Scale (VAS) and use of Numeric Rating Scale (NRS) (19). The VAS is the preferred method of IPP assessment because IPP is best assessed by the person who felt or experienced the pain (20, 21). Pain scores of 0-5 are considered bearable pain (22) and pain scores of 6 or more is considered unbearable pain and requires analgesics (23, 24).

The purpose of IPP control is to ensure that women do not suffer anxiety and discomfort as well as no risk to their health. Adequate IPP management generally requires medication for the physiological and counselling for the psychological pain (8). Methods of IPP management include verbal analgesia, local analgesia, and general anaesthesia. World Health Organization (WHO) recommends local analgesia by paracervical block or sedation with opioids (19). At MRRH, IPP management include paracervical block, opioids, and intramuscular diclofenac (unpublished).

The factors associated with IPP during MVA include; previous history of abortion, partner involvement, prior uterine evacuation (25), Analgesia used (9). Therefore, this study aimed to determine the proportion and factors associated with IPP among women with incomplete abortion undergoing MVA at MRRH, Uganda.

Methods

Study design, setting and population

The study was a cross-sectional study conducted from 17th December 2020 to 28th May 2021. The study was a cross-sectional study conducted at a Gynaecology ward of Mbarara Regional Referral Hospital (MRRH). MRRH is found in Mbarara District, 260 km Southwest of Kampala the Capital city of Uganda. It is a public hospital and fully funded by Government of Uganda through the Ministry of Health (MoH). It is

the referral hospital for Southwestern Uganda serving 12 districts. The hospital serves a population of more than 2.5 million people including those from neighbouring countries of Rwanda, Democratic Republic of Congo, and Northern Tanzania. Women who underwent MVA for incomplete abortion at gynaecology ward at Mbarara Regional Referral Hospital and included all women who underwent MVA for incomplete abortion at 12 weeks of amenorrhea or less at gynaecology ward at Mbarara Regional Referral Hospital but excluded those who were unconscious at the time of data collection.

Sample Size Calculation

Sample size was estimated using the Kish Leslie's formula for cross sectional survey (Kish, 1965), $n = Z^2 pq / d^2$ Where; n is the sample size, Z is z-score for 95% CI (1.96), p is estimated proportion of women with intra-procedural pain during Manual Vacuum Aspiration, q is $1-p$ and d is desired level of precision (margin of error) set at $\pm 5\%$. $P = 85.9\%$ is the proportion of women with intra-procedural pain undergoing Manual Vacuum Aspiration at a teaching university hospital in Kano, Nigeria (1). Substituting into the Kish Leslie's formula, $n = (1.96)^2 (0.859) (0.141) / (0.05)^2 = 186$, adding 10% to account for none response, $n = 207$

Sampling method

Consecutive sampling was used to recruit eligible participants until the desired sample size was achieved.

Study procedure

On each day of the study period, a member of the research team was stationed at the admission unit of the gynecology ward. Whenever a diagnosis of abortion was made by the clinical care team, we recorded that patient on our screening log. For women with an incomplete abortion, we tracked to see which treatment modality was offered and included any of these, MVA, curettage or medical management with misoprostol. A member of the research team was present at the time of MVA and recorded the time when the procedure ended on the screening log. This was taken as time zero and two hours later, this patient was approached for consent. We also kept track of all the women admitted with threatened or inevitable abortion and in case any of them ended with an incomplete abortion and got a MVA, we approached them for consent 2 hours after the procedure as well. After getting an informed written consent, each participant was subjected to the interviewer administered questionnaire to obtain information on socio-demographic, medical factors and gynaecological factors and information was entered directly into Redcap® software. The participant was then given a colored picture of the VAS for scoring the pain that she experienced during the MVA. She was explained to that zero (0) meant no pain while ten (10) meant the worst kind of pain and was requested to point or circle any number from 0 to 10 to represent

the pain experienced. Pain scores of 6 or more was considered as intra-procedural pain in this study (23, 24).

Data management and analysis

Data was coded and entered into Redcap® Database (26) and exported to STATA® version 15 for cleaning and analysis. Data cleaning was done by checking for duplication, missing values and outliers and errors were corrected by cross checking with original questionnaires.

We computed descriptive statistics and displayed baseline characteristics in table one and table two. We described categorical variables using simple frequencies, proportion, and percentages. While for continuous variables we summarized using mean and standard deviation.

The proportion of women who experienced intra-procedural pain was determined by dividing the number of women with intra-procedural pain with the total number of women (n=207) who have undergone MVA. This proportion was multiplied by 100 and reported as a percentage. Factors associated with intra-procedural pain were determined by assessing the sociodemographic, gynaecological and medical factors at bivariable analysis level using logistic regression. The Crude Odds Ratios(cOR) were obtained and reported with their 95% Confidence Interval (CI) at alpha level of statistical significance, p-value less than 0.05. Variables with p-value less than 0.2 at bivariate analysis were then included in multivariate logistic regression model together with biologically plausible factors (gravidity, gestational age, analgesia used) to control for confounding and interaction between the variables. The calculated Adjusted Odds Ratios(aOR) with their 95% CI were recorded. Variables with $p < 0.05$ were reported as factors independently associated with intra-procedural pain.

Quality assurance

The research team was trained on strict adherence to the COVID 19 risk management plan. This was meant to reduce potential risk of exposure to COVID 19 for our potential participants, investigators, and other health care workers. The research team was also trained in grief assessment, preliminary counselling, and support. The team assessed and detected early signs of psychological stress. When psychological disorder occurs twice with failed attempts in counselling, the participant was to be excluded from the study and linked to mental health clinic.

Access to data was limited to those directly involved in the study. Confidentiality of the information collected was observed by using numbers and not names. Participants shall not be traced back to their study variables.

Ethical considerations

The proposal was presented to and approved by the Department of Obstetrics and Gynaecology; Mbarara University of Science and Technology and obtained clearance to carry out this research. Scientific and ethical approval were obtained from the Faculty Research Committee (FRC), Research Ethic Committee (MUREC-08/11-20), Mbarara University of Science and Technology and Uganda National Council for Science and Technology (UNCST, Ref. No. HS1462ES). Administrative clearance was sought from the office of the Hospital Director, Mbarara Regional Referral Hospital through the Head of department of Obstetrics and Gynaecology.

Informed consent was obtained from all respondents and participation was free and voluntary. Participants were free to withdraw from the study with no penalty. Privacy was observed by interviewing the study participants in a private and comfortable room.

Results

A total of 207 women who underwent Manual vacuum aspiration were recruited. The average age of study participants was 25.8 ± 5.8 years with majority aged between 20-24 years 38.7% (n=80), married women 84.5% (n=175) and primary level of education 35.8% (n=74). Majority had caretaker support 83.6% (n=173) with no history of alcohol intake 95.7% (n=198), Table 1.

Table 1. Baseline characteristics of study participants

Characteristics	Frequency (n=207)	Percentages (%)
Age, mean $\pm$ SD, years	25.8 ($\pm$ 5.8)	
Age category, years		
<20	21	10.1
20-24	80	38.7
25-30	47	22.7
>30	59	28.5
Level of education		
Uneducated	19	9.2
Primary	74	35.8
Secondary	55	26.6
Tertiary	59	28.5
Marital status		
Married	175	84.5
Not Married	32	15.5
Employment status		
Employed	35	16.9
Unemployed	172	83.1
Caretaker support		
Yes	173	83.6
No	34	16.4
History of alcohol intake		
Yes	9	4.3
No	198	95.7

Proportion of women with intra-procedural pain undergoing MVA at gynaecology ward, Mbarara Regional Referral Hospital.

The proportion of women who experienced intra-procedural pain undergoing MVA at gynaecology ward, MRRH was 171/207 (82.6%) (95% CI: 76.8 – 87.2).

Factors associated with intra-procedural pain among women undergoing MVA at gynaecology ward, Mbarara Regional Referral Hospital.

At bivariate analysis, the socio-demographic factors that were independently associated with intra-procedural pain were age and marital status (OR=2.83, 95% CI=1.21-6.65, P-value=0.017) meanwhile the medical and gynaecological factors that was independently associated with intra-procedural pain was cervical dilatation (cOR=2.25, 95% CI=1.28-3.98, p-value=0.005). Factors which were biologically plausible included gravidity, gestational age and analgesia used, Tables 2 and 3.

Table 2: Bivariate analysis of socio-demographic factors (N=171)

Factors	IPP (N=171) n (%)	No IPP (N=36) n (%)	cOR (95% C.I.)	p-value
Age (Years)				
>30	46 (26.9)	13 (36.1)	Ref.	
<20	17 (9.9)	4 (11.1)	9.48 (2.66-33.78)	0.001*
20-24	70 (41.0)	10 (27.8)	3.72 (1.68-8.24)	0.001*
25-30	38 (22.2)	9 (25.0)	2.53 (1.12-5.73)	0.026*
Level of education				
Tertiary	51 (29.8)	8 (22.2)	Ref.	
Uneducated	11 (6.4)	8 (22.2)	0.61 (0.22-1.74)	0.360
Primary	60 (35.1)	14 (38.9)	0.99 (0.50-1.97)	0.983
Secondary	49 (28.7)	6 (16.7)	1.37 (0.65-2.89)	0.413
Marital status				
Married	145 (84.8)	30 (83.3)	Ref.	
Not married	26 (15.2)	6 (16.7)	2.83 (1.21-6.65)	0.017*
Employment status				
Employed	31 (18.1)	4 (11.1)	Ref.	
Unemployed	140 (81.9)	32 (88.9)	1.37 (0.66-2.84)	0.397
Caretaker support				
No	26 (15.2)	8 (22.2)	Ref.	
Yes	145 (84.8)	28 (77.8)	1.11 (0.53-2.32)	0.785
History of alcohol intake				
No	164 (95.9)	34 (94.4)	Ref.	
Yes	7 (4.1)	2 (5.6)	1.67 (0.41-6.85)	0.479

* $p < 0.05$, cOR: crude OR, C.I: Confidence interval, IPP: Intra-procedural pain

Table 3: Bivariate analysis of Medical and Gynaecological factors (N=171)

Multivariable analysis of factors associated with intra-

Factors	IPP (N=171) n (%)	No IPP (N=36) n (%)	cOR (95% C.I.)	p-value
Gravidity				
Multigravida	130 (76.0)	27 (75.0)	Ref.	
Primigravida	41 (24.0)	9 (25.0)	1.82 (0.94-3.54)	0.077
Gestational age				
< 8 weeks	36 (21.1)	11 (30.6)	Ref.	
8-10 weeks	27 (15.7)	6 (16.7)	0.81 (0.33-2.0)	0.654
10-12 weeks	108 (63.2)	19 (52.7)	0.76 (0.38-1.50)	0.427
Cervical dilatation				
3-4 cm	95 (55.6)	23 (63.9)	Ref.	
1-2 cm	76 (44.4)	13 (36.1)	2.25 (1.28-3.98)	0.005*
Analgesia used				
Pethidine	63 (36.8)	14 (38.9)	Ref.	
PCB (lidocaine)	104 (60.9)	22 (61.1)	0.96 (0.54-1.69)	0.880
Diclofenac	4 (2.3)	0 (0.0)	0.79 (0.11-5.91)	0.819
Cadre of doctor				
Senior House Officer	104 (60.8)	22 (61.1)	Ref.	
Junior House Officer	67 (39.2)	14 (38.9)	0.88 (0.50-1.54)	0.645
Body mass index				
Normal	153 (89.5)	33 (91.7)	Ref.	
Overweight	18 (10.5)	2 (5.5)	1.24 (0.48-3.16)	0.660
Obese	0 (0.0)	1 (2.8)	–	–

*p-value<0.05, cOR: crude OR, C.I: Confidence interval, IPP: Intra-procedural pain, PCB: Paracervical block

procedural pain

At multivariable analysis, the factors significantly associated with intra-procedural pain were age and cervical dilatation. The odds of intra-procedural pain decreased with increasing age of the women. Compared to older women (aged >30 years), teenagers (age<20 years) had 8 times higher odds (adjusted odds ratios (aOR): 8.0, 95% confidence interval, C.I: 1.85-34.61, p-value=0.005), while women aged 20-24

years had 4 times higher odds (aOR: 3.45, 95% C.I: 1.47-8.20, p-value=0.004), and those aged 25-30 years had 3 times higher odds (aOR: 2.84, 95% C.I: 1.20-6.74, p-value=0.018) of intra-procedural pain.

Women with cervical dilatation of 1-2 cm had the odds of intra-procedural pain increased by 2 times (aOR: 2.27, 95% C.I: 1.11-4.62, p-value=0.024), compared to those who had a cervical dilation of 3-4 cm, Table 4.

Table 4: Multivariable analysis of factors associated with intra-procedural pain

Factors	IPP (n=171) n (%)	cOR (95% C.I)	p-value	aOR (95% C.I)	p-value
Age (Years)					
>30	46 (26.9)	Ref.		Ref.	
<20	17 (9.9)	9.48 (2.66-33.78)	0.001*	8.00 (1.85-34.61)	0.005*
20-24	70 (41.0)	3.72 (1.68-8.24)	0.001*	3.45 (1.47-8.20)	0.004*
25-30	38 (22.2)	2.53 (1.12-5.73)	0.026*	2.84 (1.20-6.74)	0.018*
Marital status					
Married	145 (84.8)	Ref.		Ref.	
Not married	26 (15.2)	2.83 (1.21-6.65)	0.017*	2.25 (0.78-6.48)	0.132
Gravidity					
Multigravida	130 (76.0)	Ref.		Ref.	
Primigravida	41 (24.0)	1.82 (0.94-3.54)	0.077	0.59 (0.24-1.49)	0.238
Gestational age					
< 8 weeks	36 (21.1)	Ref.		Ref.	
8-10 weeks	27 (15.7)	0.81 (0.33-2.0)	0.654	1.08 (0.39-3.03)	0.878
10-12 weeks	108 (63.2)	0.76 (0.38-1.50)	0.427	1.31 (0.56-3.04)	0.529
Cervical dilatation					
3-4 cm	95 (55.6)	Ref.		Ref.	
1-2 cm	76 (44.4)	2.25 (1.28-3.98)	0.005*	2.27 (1.11-4.62)	0.024*
Analgesia used					
Pethidine	63 (36.8)	Ref.		Ref.	
PCB (lidocaine)	104 (60.9)	0.96 (0.54-1.69)	0.880	1.22 (0.64-2.33)	0.547
Diclofenac	4 (2.3)	0.79 (0.11-5.91)	0.819	0.42 (0.05-3.61)	0.433

**p-value<0.05, cOR: crude odds ratios, aOR: adjusted odds ratios, C.I: Confidence interval, IPP: Intra-procedural pain, PCB: Paracervical block*

Discussion

This study aimed to determine the proportion and the factors associated with IPP among women with incomplete abortion undergoing MVA at Mbarara Regional Referral Hospital in Uganda.

In our study, the proportion of women with intra-procedural pain was 82.6% (95% C.I, 76.8-87.2). This proportion lies within the proportion ranges reported from Sub-Saharan Africa 80%-98% (6). Our finding is similar to findings from other studies; 85.9% from Nigeria (1) and 79% from United Kingdom (27).

Other studies found lower proportion. These studies include; 70.3% from Panama (28), 25% from United Kingdom (4) and 8% from India (29).

Similarity with studies done in Sub-Saharan Africa, Nigeria and United Kingdom could be because these studies were conducted in similar hospital setting and participants had similar characteristics like in our study. In those studies, MVA were performed under similar analgesia and Visual Analogue Scale was used for pain assessment like in our study.

Other studies done in Panama (28), United Kingdom (4), and India (29) found lower proportion. The study done among women who attended the gynecology department of the Complejo Hospitalario "Arnulfo Arias Madrid", Caja de Seguro Social, Panama determined a proportion of intra-procedural pain of 70.3% during MVA (28). This was lower proportion was because in their study, prior to MVA procedure prostaglandin was administered to cause cervical dilatation among their study participants and this reduces the chances of cervical manipulation hence less feeling of pain. In addition, pain scoring was done using Wong pain scale, this could have under estimated the pain level since it uses facial expression which is highly subjective and difficult to compare with actual pain experienced.

A study done in the United Kingdom estimated even a much lower proportion of 25% (4) than the case of our study. This could be because in their study, misoprostol was administered to enhance cervical dilatation before the procedure. In addition, they instilled 5mL of 4% lidocaine through the cervix unlike in our study which we used 1% lidocaine, all MVA procedures were done by the specialists. Higher dosage of lidocaine could have reduced pain more and all MVA procedures were done by specialists who are expected to be more skilful at performing MVA procedure with reduced cervical manipulation hence less pain.

A study done in India found a very low proportion of 8% (29) compared to the proportion in our study. This is because, in their study they had small sample size of only 50 participants who had MVA that were analysed. They also included only women aged between 18-45 years and those who had incomplete uterine evacuation unlike in our study, we enrolled all women including emancipated minors.

In our study, the odds of intra-procedural pain decreased with increasing age of the women. Compared to older women (aged >30 years), teenagers (age<20 years) had 8 times higher odds, while women aged 20-24 years had 4 times higher odds, and those aged 25-30 years had 3 times higher odds of intra-procedural pain. Our finding was similar to findings from studies done in the United States of America (30), Spain (31) and systematic review (32).

The study in the United States of America noted that the degree of pain significantly varies with age of the woman with younger patients (teenagers) experiencing more pain compared to older patients (aged $\geq$

35 years) (30).

A systematic review and meta-analysis of age effect on pain threshold and tolerance that was done on 31 studies on pain threshold and 9 studies assessing pain tolerance threshold and found out that pain threshold increases with age. This age-related change in pain perception increases the wider the age-gap between groups without significant difference in tolerance (32).

Another study which was conducted in Balearic Island, Spain demonstrated that increasing age was associated with increased pain threshold (31).

Age was a significant factor because aging is associated with changes in the structure, function and chemistry of the nervous system. These changes directly affect the pain perception because aging is associated with decrease in the density of unmyelinated nerve fibers in the peripheral system and this result into slowing nerve conduction hence reduced pain perception (33).

Our study found that women with a cervical dilatation of 1-2 cm before MVA procedure had the odds of intra-procedural pain increased by 2 times, compared to those who had a cervical dilation of 3-4 cm. This finding is similar to findings in a study conducted in United Kingdom which found that cervical dilation result into reduced intra-procedural pain (27). Meanwhile a study done in Portland, Ore (34) found no likelihood of increased intra-procedural pain with cervical dilatation. Similar finding is because increased cervical dilatation reduces the chances of cervical manipulation and trauma (13). This will result into less sensory activation of nociceptor at the cervix hence less pain owing to the fact that sensory function of the cervix is through the parasympathetic nerve fibres from uterovaginal plexus through inferior hypogastric plexus from S2-S4 (35). Besides, there are four processes of pain. These include; transduction involving mechanical stimuli that activates pain receptors, transmission which involves relay of nociceptive information to central nervous system by afferent axon of the primary afferent nociceptor, modulation which is a complex processes that takes place within specific areas of the brain and final perception of pain (36).

Our finding is different from a prospective randomized study done in Portland, Ore which found that dilatation of cervix prior to MVA procedure for first trimester abortion has no effect on patient's intra-procedural pain (34). This is because in their study, they included elective cases who were psychologically ready for the procedure. The participants in their study were given sedative which was either oral diazepam 5mg or intravenous fentanyl 100mg prior to paracervical block using lidocaine prior uterine evacuation. These drugs, inhibits depolarization, which results in blockade of conduction causing loss of pain sensation and hence no pain associated with cervical manipulation. It's worth noting that diazepam modulates postsynaptic effects of GABA-A transmission resulting in presynaptic inhibition and acts on part of limbic system, thalamus and hypothalamus to induce a calming effect. Fentanyl on the other hand is a narcotic agonist-analgesic of opiate receptors which inhibits ascending pain pathways hence altering response to pain, increasing pain threshold and these produces analgesia. In addition, paracervical block with lidocaine is thought to block pain conduction via Frankenhauser's plexus, which

causes an infiltrative effect that inhibits generation and conduction of nerve impulses by its mechanism of reducing sodium permeability and this increases action potential threshold. (37-39).

Conclusion

In conclusion, the proportion of women with intra-procedural pain undergoing Manual Vacuum Aspiration for incomplete abortion at Mbarara Regional Referral Hospital was very high. For every 10 women, 8 experiences intra-procedural pain.

The factors associated with intra-procedural pain were age and cervical dilatation. Younger women and those with cervical dilatation 1-2cm are more likely to experience intra-procedural pain.

Abbreviations

IPP: Intra-procedural pain; VAS: Visual Analogue Scale; MVA: Manual Vacuum Aspiration; MRRH: Mbarara Regional Referral hospital; MUST: Mbarara University of Science and Technology; UNCST: Uganda National Council for Science and Technology; WHO: World Health Organization.

Declarations

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Authors' contribution

JO, SBM, and JN did the initial study design, planning, implementation. JO, JN, FB and CGO did data analysis. All authors read and approved the final manuscript.

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Availability of data and materials

All data generated or analysed during this study are included in this published article.

Scientific and Ethical approval

Scientific and ethical approval were obtained from the Faculty Research Committee (FRC), Research Ethic Committee (MUREC-08/11-20), Mbarara University of Science and Technology and Uganda National

Council for Science and Technology (UNCST, Ref. No. HS1462ES). Administrative clearance was sought from the office of the Hospital Director, Mbarara Regional Referral Hospital through the Head of department of Obstetrics and Gynaecology. Informed consent was obtained from all respondents. The investigators, participants in the study and clinical care team followed the COVID 19 risk management plan at all time. All principles outlined in the declaration of HELSINKI were observed.

Consent to publication

Not applicable

Competing interests

The authors declare that they have no competing interests.

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