Section: Anesthesiology

Original Research Article

A STUDY COMPARING ANALGESIC EFFICACY OF PARACERVICAL BLOCK AND INTRAVENOUS SEDATION WITH DEXMEDETOMIDINE IN VACUUM OR SUCTION ASPIRATION FOR MISSED/INCOMPLETE ABORTION

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Abstract

Background: Despite different pain relief techniques, first-trimester abortions, particularly cervical dilatation and vacuum aspiration, are painful. The study aims to compare the analgesic efficacy of Para cervical Block (2% lignocaine) with intravenous sedation using dexmedetomidine in vacuum or suction aspiration for missed/incomplete abortion. **Materials and Methods:** The present study is a randomised controlled trial involving 74 study subjects containing 37 in each group; Group 1: Patient receiving paracervical block Group 2: Patient receiving iv sedation with dexmedetomidine. Standard anaesthesia monitoring in the form of baseline heart rate measurement, non-invasive arterial blood pressure and oxygen saturation were analysed. Qualitative analyses like the surgeon satisfaction score, ASA, and VAS Results were analysed. **Result:** The mean age in the Paracervical block group and I.V. Dexmedetomidine are 24.89 and 24.73, and there was no significant difference in age, height, and weight between groups. The hemodynamic parameters like respiratory rate, SPO2, and systolic and diastolic blood pressure have no significant differences between the two groups regarding baseline, intraoperative, or postoperative respiratory rate. However, there is a statistical difference between the heart rates of the two groups when compared intraoperatively. The surgeon satisfaction score significantly differed between groups 1 and 2 ($P<0.001$). According to ASA grading, the two groups had no significant differences. The paracervical block group had better VAS scores during the procedure, 10 minutes and 2 hours, than IVS. **Conclusion:** Based on VAS grading, the Paracervical block provided comparable pain relief to procedural sedation.

INTRODUCTION

About 1.2 million surgical procedures were performed yearly to terminate the first trimester pregnancy (suction aspiration). By the time a woman reaches 45, approximately one in three will have had an abortion. About half of these are performed at eight weeks or less in gestational age, and 88% are completed in the first trimester of pregnancy.[1,2] Researchers have compared sharp curettage to suction aspiration(electrical/manual). A comparison of MVA and electric suction reported that some patients prefer MVA because the sound of electrical suction can be disturbing. Clinicians may prefer MVA for aspiration at early gestational ages because it causes less disruption of the gestational sac, the presence of which confirms a successful aspiration procedure. Electrical suction may be preferred for later first-trimester gestational ages because of the larger amounts of products of conception (POC) and the need for repeat passes if MVA is used. MVA (manual vacuum aspiration) was as safe and even more effective in achieving complete uterine evacuation as sharp curettage. Uterine evacuation is associated with varying degrees of pain and requires some form of analgesia/anaesthesia. The methods available are oral non-steroidal anti-inflammatory drugs (NSAID), a local anaesthetic (topical/injectable), intravenous/inhalation procedural sedation, analgesia, and general anaesthesia.[3-5]

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Many healthcare professionals also use non-pharmacological pain management strategies during the surgical procedure, such as focused breathing, visualisation, and localised massage.[6] Many providers also offer oral or intravenous anxiolytics and narcotics for pain control.[7-9] However, in most circumstances, spontaneous abortion treatment can be integrated into outpatient settings. Expectant pain management to await spontaneous passage of the POC and medical management with misoprostol are also safe options. The highest patient satisfaction is achieved when patients can make their own choice of a pain management plan. The relative and absolute contraindications to first-trimester abortion would also apply to the treatment of spontaneous abortion. Paracervical block and IVS are commonly used for pain reduction during cervical dilatation and uterine interventions (such as hysteroscopic polypectomy, endometrial biopsies, fractional curettage, and suction terminations). This study aims to compare the analgesic efficacy of Para cervical Block (2% lignocaine) with intravenous sedation using dexmedetomidine in vacuum or suction aspiration for missed/incomplete abortion.

MATERIALS AND METHODS

This prospective randomised controlled trial was conducted on patients undergoing vacuum or suction aspiration for missed/incomplete abortion under the para cervical block and intravenous sedation with Dexmedetomidine at Govt Kilpauk Medical College Hospital, Chennai, for one year. The study population involves 74 subjects, which are grouped into Group 1: Patients receiving paracervical block (PCB) (37 patients); Group 2: Patients receiving IV sedation (IVS) with dexmedetomidine (37 patients). After ethical committee approval, informed written consent was obtained from study participants.

Inclusion Criteria

Female patients undergoing vacuum or suction aspiration (missed/incomplete abortion) aged 18 to 45 years and patients with American Society of Anesthesiologists (ASA) class 1 and 2 were included.

Exclusion Criteria

Patients with pathologies related to abdominal pelvic pain, allergy or sensitivity to local anaesthetics, a history of severe cardiac, respiratory, hepatic or renal disease, and patients with bleeding disorders, infection at the injection site and unconscious or severely ill are excluded.

Methods

Recruited patients are counselled about the risks and benefits involved in the study. Patients who agreed to participate in the study were enrolled and analysed. All patients were pre-anesthetically assessed the day before surgery. Patients were premedicated with tablet diazepam 5mg and tablet ranitidine 150 mg the night before surgery. After shifting the patient to the operating table, standard anaesthesia monitoring in the form of baseline heart rate measurement, non-invasive arterial blood pressure and oxygen saturation would be started. An 18G cannula was used to provide intravenous access.

Recruited 37 Patients for paracervical block were sedated before putting in lithotomy position with glycopyrrolate 0.2mg, midazolam 0.02mg/kg and fentanyl 2mcg/kg. In the lithotomy position, bilaterally 10 ml of local anaesthetic (2% lignocaine) was given 1-2 cm from the epithelium in the lateral fornices of the vagina after check aspiration to prevent accidental intravenous injection, especially to the cervical branch of the uterine artery. However, in the case of 37 patients enlisted for I.V sedation with dexmedetomidine, conscious sedation was administered 10 minutes before surgery via IV administration of midazolam (0.02 mg/kg), fentanyl (2mc g/kg), and Dexmedetomidine (1mcg/kg) loading dose with the maintenance of 0.5 mcg/kg/hr infusion (if required) until Ramsay sedation score is 3-4 with O2 4-5 lit/min via face mask. Patients in the IVS and PCB groups were asked to rate their discomfort on a 10 cm visual analogue scale (VAS) at three intervals: during, 10 minutes after, and 2 hours after the surgery.

Statistical Analysis

Data collected were entered in Microsoft Excel and analysed using SPSS version 20. Descriptive data were expressed in mean and standard deviation. Quantitative data between the groups are compared with an independent t-test. Qualitative data between the groups are analysed using the Chi-square test. $P<0.05$ was considered to be significant.

RESULTS

The mean age in the Paracervical block group and I.V. Dexmedetomidine are 24.89 and 24.73, respectively. The mean height in the paracervical block group is 150.89 cm, while it is 150.73 cm in the I.V. Dexmedetomidine group. The mean weight of the paracervical block group is 56.19, whereas that of the I.V. dexmedetomidine group is 55.22. There was no significant difference in age, height, and weight between groups [Table 1].

The surgeon satisfaction score ranges from 1 to 4, with one denoting poor satisfaction, two satisfactory, three good, and four excellent. A significant difference in satisfaction was found between groups 1 and 2 ($P<0.001$). According to ASA grading, the two groups had no significant differences. VAS scores during surgery revealed statistically significant differences between the two groups ($P=0.03$). A statistically significant difference was found between the groups receiving I.V. dexmedetomidine and paracervical block at 10 minutes and during 2 hours ($P< 0.0001$). As a result, VAS scores in the paracervical block group are higher than those in the I.V. dexmedetomidine group [Table 2].

In these two groups, the hemodynamic variables such as heart rate, respiratory rate, SPO2, and systolic and

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diastolic blood pressure are examined three times: baseline, intraoperative and postoperative. Heart rate comparisons between baseline and post-op did not reveal any differences, while intraoperative heart rate showed statistically significant variations between the two groups. However, other measurements, such as respiratory rate, SPO2, and systolic and diastolic blood pressure, did not differentiate between the two groups regarding baseline, intraoperative, or postoperative respiratory rate [Table 3].

Table 1: Demographic characteristics between groups

Variables	Group		P value
	PCB (n=37)	IVS (n=37)	
Age	24.89±3.81	24.73±3.65	0.852
Height	150.89±3.84	150.73±3.94	0.858
Weight	56.19±6.08	55.22±6.12	0.495

Table 2: Comparison of ASA, VAS score and surgeon satisfaction between groups

Variables	Grading	Group		P-value
		PCB (n=37)	IVS (n=37)	
Surgeon satisfaction	1	4	10	0.001
	2	8	17	
	3	14	10	
	4	11	0	
ASA	ASA I	28	9	0.58
	ASA II	28	9	
VAS during procedure	0	25	12	0.03
	1	5	2	
	2	3	5	
	3	0	8	
	4	4	10	
VAS during 10 minutes	0	25	4	0.001
	1	5	8	
	2	3	8	
	3	0	7	
	4	4	3	
	7	0	4	
	8	0	3	
VAS during 2 hours	6	14	0	0.001
	7	11	8	
	8	4	7	
	9	4	15	
	10	4	7	

Table 3: Hemodynamic parameters of two groups at pre, intra and postoperative

Parameters	Time of Assessment	Group		P value
		PCB (n=37)	IVS (n=37)	
Heart rate	Preop	83.95±17.82	81.78±10.02	0.86
	Intraop	95.35±16.84	59.89±9.45	0.0001
	Post-op	84.70±16.40	82.18±10.02	0.34
Respiratory rate	Preop	17.19±2.03	16.78±1.85	0.37
	Intraop	16.73±1.99	15.78±2.82	0.1
	Post-op	16.59±2.12	16.09±2.37	0.34
SPO2	Preop	99.89±0.39	99.35±1.08	0.37
	Intraop	99.81±0.39	99.67±2.12	0.32
	Post-op	99.81±0.39	99.44±1.96	0.3
SBP	Preop	132.54±5.80	132.38±5.53	0.902
	Intraop	130.54±6.57	130.36±6.04	0.89
	Post-op	132±6.23	131.92±6.42	0.86
DBP	Preop	80.49±2.37	80.00±0.00	0.217
	Intraop	86.27±3.62	85.79±0.00	0.28
	Post-op	83.51±5.93	83.46±4.41	0.965

DISCUSSION

During surgical abortion, drugs are used to manage pain, and their effectiveness varies widely. Many studies have shown that MVA (manual vacuum aspiration) was safer and more effective in achieving complete uterine evacuation than sharp curettage. Still, Paracervical block and IVS are commonly used methods in pain reduction during cervical dilatation and uterine interventions (such as hysteroscopic polypectomy, endometrial biopsies, fractional curettage, and suction terminations). In this study, we compared the Paracervical block to I.V. dexmedetomidine for the surgical management of incomplete and missed miscarriages.

To bolster our finding, A 2012 randomised, single-blind study by Renner et al. on patients receiving paracervical block who underwent abortions revealed

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that the benefit of paracervical block was stronger at a lower gestation. Additionally, the block group had much greater satisfaction scores with pain management and the operation.[10] According to the findings of Karashin et al., on 77 women undergoing manual vacuum aspiration for induced abortions, the mean VAS score of the PCB with the Lidocaine group was higher than the Lidocaine injection plus lignocaine spray group. PCB with lidocaine HCl safely reduces perceived pain during a first-trimester surgical abortion.[11]

In contrast to our result, Phair et al. reported a study on one hundred ninety-nine women who were randomised to a no-wait group (group 1) and a 3 to 5-minute wait between injection and dilation group (group 2). They concluded no difference in patient pain or satisfaction between paracervical injection and dilation during a first-trimester abortion. During the surgery, fentanyl reduced pain scores by 20% to 25%.[12] Additionally, Allen et al. found that preoperative ibuprofen and an intraoperative paracervical block were given to patients receiving suction curettage at less than 14 weeks gestation in their study. The findings of this study imply that moderate doses of intravenous fentanyl plus midazolam mildly lessen pain during first-trimester surgical abortion compared with paracervical block alone.[13] Mean visual analogue scale on patients undergoing dilatation and curettage or manual vacuum aspiration were given either paracervical block or intracervical block, and the results demonstrated that intracervical block is an efficient method of regional anaesthesia during cervical dilatation and minor procedures on the uterine cavity. Technically, a paracervical block is more complex than an intracervical block.[1]

CONCLUSION

Even though our findings exposed that paracervical block offered greater surgeon satisfaction and VAS score compared to procedural sedation. This evidence has several limitations; hence, a multicentre, randomised, double-blind experiment should be conducted. Several trials will be done in the future to demonstrate the superiority of paracervical block over intravenous sedation. Investigating alternatives to procedural sedation for treating patients having uterine evacuation for an incomplete or missed miscarriage has obvious advantages.

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