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ORIGINAL ARTICLEDOI: <https://doi.org/10.3329/mediscope.v6i2.43152>**Use of local infiltration and vasoconstrictors in vaginal surgery****SF Yeasmin¹, MA Hasanat², MT Rahman³, F Islam⁴, D Akhtar⁵, A Begum⁶****Abstract**

Background: Lidocaine Adrenaline Combination (LAC) in saline (Jungle juice) is used to provide perioperative analgesia, blood conservation and separation of tissue planes. It comprises 20 ml of 2% lidocaine, 80 ml of sterile saline and 0.5 ml of 1:1000 adrenaline solution. This study aimed to evaluate knowledge and safe usage of jungle juice on patients. **Objective:** To establish formulation, extent of usage, patterns & safety measures employed during use of jungle juice among surgical teams. **Methods:** This prospective case control study was carried out in Obstetrics & Gynecology department of Ad-din Akij Medical College & Hospital, Khulna from March 2014 to June 2018. Patients were divided into two groups. In the control group, no paracervical infiltration was given. In the experimental group, paracervical infiltration was given before hysterectomy. The operating time, blood loss and post-operative infection were noted in each group. **Results:** The mean operating time was higher (59.18 minutes) in vaginal hysterectomy and 60.93 minutes in fistula & perineal repair surgery without infiltration in comparison to the group with infiltration ($P < 0.05$). There was significant difference in haemoglobin concentration & amount of blood loss after surgery between the groups. There was no case of infection in both groups. **Conclusions:** From our study, we concluded that paracervical infiltration provide perioperative analgesia, blood conservation & separation of tissue for ease of dissection.

Introduction:

Minimizing blood loss during surgery is important because of the associated morbidity. In addition intraoperative bleeding can obstruct the view of operative field and lead to complications; in particular dissection during pelvic floor surgery can be hampered by blood loss. Several methods to control blood loss have been used including hydro dissection with saline as well as with the injection of vasoconstrictors.¹ Infiltration of local anes-

thetic has been used for a very long time in vaginal and perineal surgery. Use of local infiltration which contains adrenaline has been traditionally used to reduce hemorrhage, but is known to be associated with tachyarrhythmias when accidentally injected into the vascular system.² Lidocaine Adrenaline Combination (LAC) in saline (Jungle juice) is used to reduce blood loss along with perioperative analgesia and to facilitate the separation of tissue for ease of dissection. The commonly

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used concentration is a solution of 1:200,000 of adrenaline and 0.4% lidocaine (4mg/ ml). LAC 1:200,000 is preferred, as it mitigates the incisional stress response and also minimizes bleeding. Use of adrenaline in higher concentrations leads to increase circulating level of adrenaline which in turn increases the risk of hemodynamic disturbances with no clinical advantage. Usually a low concentration of lidocaine (0.125% to 0.05%) with adrenaline (1:1,000,000 to 1:2,000,000) is recommended.³

Methods:

This study was conducted in the Department of Obstetrics and Gynecology at Ad-din Akij Medical College & Hospital, Khulna from March 2014 to June 2018. It was a prospective case control study. All patients who underwent the study had informed consent taken from them. A total of 735 patients participated in the study. Among them, 616 patients had vaginal hysterectomy and 119 patients had fistula (VVF+RVF) plus 40 perineal tear repairs. A preoperative work up was done and pre-anesthetic clearance was obtained before surgery. Patients with history of smoking,

hypertension, ischemic heart disease, elevated serum creatinine were excluded from the study. Saline adrenaline preparation was made after diluting 1 ampoule (0.0018gm of Adrenaline) in 80 ml of saline. About 50 ml of the solution was infiltrated submucosally in 367 cases pericervically. While in the control 368 cases no infiltration was given. The patients were followed up. Time taken for surgery, blood loss and incidence of postoperative infection were analyzed in each group. Hemoglobin was done 24 hours after surgery.

Result:

A total 735 Patients entered the study. 616 subjects underwent vaginal hysterectomy and 119 patients underwent fistula plus perineal tear repair surgery. Among them 367 cases (308 cases of vaginal hysterectomy and 59 cases of fistula & perineal tear repair) had saline infiltration and rest had no infiltration. There was slight increase in the mean operating time 59.18 minutes in the cases of vaginal hysterectomy and 60.93 minutes in the cases of fistula & perineal tear repair with no infiltration and statistically significant (Table-1).

Table 1: Operating time

Type of surgery	Operating time (Mean) in minutes		
	Saline adrenaline infiltration	No infiltration	P value
Vaginal hysterectomy	46.83 ± 2.30 (n=308)	59.18 ± 3.98 (n=308)	0.000***
Fistula +4 ⁰ perineal tear repair	48.37 ± 3.05 (n=59)	60.93 ± 4.59 (n=60)	0.000***

The mean amount of bleeding was more 150.63 ml in cases of vaginal hysterectomy and 142.93 ml in cases of fistula & perineal tear repair with no infiltration and statistically significant (Table-2).

Table 2: Amount of bleeding

Type of surgery	Amount of bleeding (Mean) in ml		
	Saline adrenaline infiltration	No infiltration	P value
Vaginal hysterectomy	76.36 ± 12.38 (n=308)	150.63 ± 13.26 (n=308)	0.000***
Fistula +4 ⁰ perineal tear repair	80.36 ± 15.45 (n=59)	142.93 ± 12.59 (n=60)	0.000***

There was no significant fall in hemoglobin concentration on Day 1 after surgery. There was no postoperative infection in the study. (Table-3)

Table 3: Change in hemoglobin

Type of surgery	Change in Hb. (Mean) in gm/dl		P value
	Saline adrenaline infiltration	No infiltration	
Vaginal hysterectomy	0.53 ± 0.23 (n=308)	1.09 ± 0.28 (n=308)	0.000***
Fistula +4 ⁰ perineal tear repair	0.68 ± 0.72 (n=59)	1.24 ± 0.98 (n=60)	0.000***

Few patients had experienced toxicity symptoms after giving jungle juice that mainly included arrhythmia, tachycardia & hypertension. (Table-4)

Table 4: Toxicity symptoms seen in the patients

Toxicity	Frequency (N=367)	Percentage (%)
Tachycardia	39	10.6 %
Palpitations	18	4.9%
Hypertension	16	4.3%
Arrhythmia	12	3.2%
Cardiac arrest	0	0%
Bradycardia	0	0%
Convulsion	0	0%
Circumoral numbness	0	0%
Anaphylactic shock	0	0%
Massive local vasoconstriction	0	0%
Breathlessness	3	0%

The immediate management steps followed when dealing with a patient with toxicity included mainly stopping injection and administering oxygen. (Table-5)

Table-5: Immediate response when dealing with a patient with toxicity

Immediate response	Frequency
Oxygen	50
IV Fluids	20
Resuscitation	5
Stop Injection	2
CPR	0
ILE	0
ECG monitoring	0
Antidote administration	0

Discussion:

Traditionally adrenaline infiltration has been used in making non-descent vaginal hysterectomy easier. Its use however can be associated with hypertension or tachyarrhythmias when inadvertently injected intravenously.⁴ We did a study to find out the advantage, safety and efficacy of using local infiltration and vasoconstrictors in vaginal surgery in terms of

mean operative time, amount of blood loss, change of Hemoglobin concentration and frequency of toxicity symptoms. Adrenaline infiltration by temporarily decreasing blood flow may predispose to infection.⁵ In our study, we did not find any difficulty in patients undergoing both vaginal hysterectomy and perineal repair. In our study, there was decrease in mean operating time in the group

with infiltration. Lidocaine when combined with adrenaline, its speed of onset and duration of action are increased and reduces blood loss. Saline adrenaline infiltration also facilitates separation of tissue planes.⁶ Some evidence suggests that use of infiltration do not prevent visceral injuries during vaginal surgeries.⁷ Though it appears that hydro dissection facilitates tissue dissection, there are some evidence that hydro dissection do not facilitate tissue dissection.⁸ Saline adrenaline infiltration reduces blood loss during vaginal surgeries in our series. Most Gynecologists in our institution use Local infiltration before vaginal hysterectomy.

Conclusion:

From our study, we concluded that paracervical infiltration provide perioperative analgesia, blood conservation & separation of tissue for ease of dissection. Attractive benefits we found in our study were less operating time, less amount of blood loss, no significant change of post operative Hb. concentration. Very few numbers of patients had experienced toxicity symptoms like tachycardia, arrhythmia, hypertension, palpitation & breathlessness.

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