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The Effect of Oxytocin Drip During Hysteroscopy on Operative Blood Loss and Fluid Overload

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ABSTRACT

Background & Objective: Current study was conducted to determine the effects of Oxytocin drip on operative blood loss and fluid overload during hysteroscopy.

Materials & Methods: In this double-blind randomized clinical trial, 54 women with abnormal uterine bleeding who were candidates for hysteroscopy were consecutively enrolled and randomly assigned to receive either oxytocin or normal saline and the alterations in serum hemoglobin, sodium, albumin, and hematocrit were compared between two groups.

Results: The results demonstrated that alterations in serum hemoglobin, sodium, albumin, and hematocrit did not significantly differ between the two groups (P>0.05).

Conclusion: It seems using oxytocin drip during hysteroscopy in patients with intrauterine lesions would have no effect on operative blood loss and fluid overload.

Keywords: Blood loss, Hysteroscopy, Intrauterine lesions, Oxytocin

Introduction

Hysteroscopy is a common diagnostic procedure which is done to detect abnormal uterine conditions such as fibromas, intrauterine adhesions, polyps, intrauterine septum, and other congenital uterine anomalies **(1, 2)**.

Intrauterine fibromas, adhesions, and polyps may be resected by surgical hysteroscopy and the congenital anomalies and abnormal uterine bleedings may be diagnosed and treated by this exam **(3)**.

Abnormal uterine bleeding (AUB) is a common complaint in women of reproductive age. In treatment-resistant ABU cases, it is recommended to perform an endometrial biopsy, transvaginal ultrasonography, hysteroscopy, and D&C (dilation and curettage) **(4, 5)**.

One challenge that the surgeons face during endometrial hysteroscopy is the patient's blood loss which may be due to poor technical performance, presence of other intrauterine lesions, and loss of accumulated blood during endometrial resection **(12, 13)**.

Evidences showed that preventive approaches by GnRH agonists and intracervical vasopressin injection may reduce the blood loss volume during surgery and systemic absorption of glycine during uterine resection by hysteroscopy **(14-16)**.

To our knowledge, few studies were done in this area. Accordingly, in this study, the effect of oxytocin drip during hysteroscopy in patients with intrauterine lesions was evaluated on operative blood loss and fluid overload.

Materials and Methods

This double-blind randomized clinical trial was conducted on 54 consecutive women with abnormal uterine bleeding who were candidates for hysteroscopy for resection of fibroma or polyp (diagnosed by transvaginal ultrasonography) at Yas Hospital in 2012.

The inclusion criteria were menorrhagia and the existence of polyps and fibromas resistance to medical treatments. Patients with diabetes mellitus, severe medical background disease, pregnancy over 12 weeks, symptoms of endometriosis, and pelvic inflammatory disease and who might not tolerate sterility, were excluded.

This research was done in compliance with the Helsinki Declaration and was approved by the local ethics committee (IR.TUMS.MEDICINE.REC.1392.30.1431). All the patients signed an informed consent.

All patients were admitted one day before operation and the serum hemoglobin, hematocrit, sodium, and albumin were checked in them. Spinal anesthesia was performed for all patients. Hysteroscopy was performed by Karl-Storz instrument and the resectoscope was Karl-Storz number 12 with an Olympus camera of 8 mm diameter. Dilatation was performed up to 9 Hegar and the fluid flow rate was 300 to 450 mL per minute with distension pressure between 90 and 130 mmHg.

The subjects were randomly (by stratified block randomization) assigned to receive either oxytocin (including five Caspian tamin Pharmaceutical Company oxytocin vials containing 50 unit per mL per vial added in 500-mL ringer-lactate serum administered during surgery) or normal saline (as placebo with similar form and administration patterns) 15 minutes before the surgery with an infusion rate of 227 milli-unit per minute and the infusion stopped exactly after the termination of the operation. Then the alteration in serum hemoglobin, sodium, and hematocrit was compared between two groups (each group including 27 subjects) till 12 hours after the operation.

The entering fluid was measured but exiting fluid and central venous pressure (CVP) were not measured. The patients in the two groups were matched for confounding variables.

Data analysis was performed by SPSS software version 13 (SPSS Inc., Chicago, IL., USA). Independent-sample-T, Fisher, and Repeated-Measure ANOVA tests were used and were considered statistically significant at P-values less than 0.05.

To ensure the reliability of the questionnaire on demographic, pregnancy, and childbirth characteristics, the concurrent evaluation method was applied. Initially, the information form was completed simultaneously by the researcher and an assistant in the research environment for 10 qualified units, and then the correlation coefficients were calculated between the small variables determined by examination.

To describe the descriptive variables of the study, the central indicators and data distribution and frequency were used. Afterwards, to compare the quantitative variables with normal distribution and homogeneity of variances, an independent t-test was applied between the two groups. In cases of abnormal distribution, the Mann-Whitney U test was used. To compare and relate the quantitative and qualitative variables between the groups, the chi-square test and one-way ANOVA (Tukey) were used, respectively. In all calculations, P-value<0.05 was considered as the significance level.

Results

The frequency distribution of age, previous pregnancies, durations of normal vaginal deliveries and cesarean sections, and abortions were matched across the groups (Table 1). In addition, the intraoperative and ultrasonographic findings were alike between the two groups (Table 2).

The hysteroscopy exams were indicative of polyp in 44.4% and fibroma in 55.6% in both groups (P>0.05). There was no significant difference between the two groups from points of change in serum levels of hemoglobin, hematocrit, sodium, and albumin (Table 3)

Table 1. Frequency distribution of age and previous gestational history among participants

Variables	Group	Mean	Standard Deviation
Age	**Oxytocin**	36.4	5.9
	Placebo	36.3	7.6
Gravid	**Oxytocin**	2.4	1.4
	Placebo	2.4	1.3
Previous NVD times	**Oxytocin**	1.1	1.1
	Placebo	1.3	1.3
Previous C/Section times	**Oxytocin**	0.7	0.8
	Placebo	0.6	0.8
Previous Abortion times	**Oxytocin**	0.6	0.7
	Placebo	0.4	0.7

NVD: Normal Vaginal Delivery, C/Section: Cesarean Section. There was no significant difference between two groups for all mentioned variables (P-value> 0.05).

Table 2. Frequency distribution of intraoperative and ultrasonography findings among participants

Variables	Group	Mean	Standard Deviation
Uterine Size	Oxytocin	88.4	12.9
	Placebo	81.8	9.9
Endometrial Thickness	Oxytocin	10	2.2
	Placebo	9.5	1.9
Operation Time	Oxytocin	37.2	15.3
	Placebo	44.4	16.2
Glycine Amount	Oxytocin	2825.9	1956.5
	Placebo	3079.6	1905.1
Size in Ultrasound	Oxytocin	22.2	10.5
	Placebo	29.3	9.1
Size in Surgery	Oxytocin	25.4	9.2
	Placebo	27.8	10.1

There was no significant difference between two groups for all mentioned variables (P-value> 0.05).

Table 3. Frequency distribution of serum hemoglobin, hematocrit, sodium and albumin levels among participants

Variables	Group	Pre-operative	1 hour after surgery	6 hours after surgery	12 hours after surgery
Hemoglobin	Oxytocin	11.7±0.8	11.3±0.9	11±0.9	10.9±0.9
	Placebo	12.2±0.8	11.8±0.7	11.1±0.9	10.7±0.9
Hematocrit	Oxytocin	35.6±2.1	34.6±2.3	33.9±2.8	33.5±2.9
	Placebo	36.2±1.9	35.5±2	34.2±2.2	33.8±2.3
Sodium	Oxytocin	142.5±2.3	141±3.9	139.7±3.3	139.5±1.9
	Placebo	142.8±2.5	141.3±2.1	139.6±2.6	138.7±2.9
Albumin	Oxytocin	4.5±0.3	4.3±0.3	4.2±0.3	4.1±0.3
	Placebo	4.5±0.3	4.3±0.3	4.1±0.3	4.1±0.3

There was no significant difference between two groups for all mentioned variables (P value> 0.05).

Discussion

The results demonstrated that alterations in serum hemoglobin, sodium, albumin, and hematocrit levels did not significantly differ between the two groups. However, no drug adverse reaction was seen in the two groups except one case of pulmonary edema in the oxytocin group. A study by Shokeir *et al.* in Egypt in 2011 **(17)**, revealed that the mean fluid-related distension amount and the mean duration of surgery did not differ across the oxytocin and placebo group. Also, serum albumin, ethanol, sodium, Glycine, and hematocrit despite lower status in the oxytocin group, were not significantly different. Demographic data, uterine size, endometrial thickness, and resected tissue weight were alike across the groups. In total, their results showed no differences between oxytocin and placebo injection as well as our study.

In a study by Sherif Abdo Mousa and colleagues **(18)**, oxytocin and Tran examine acid were compared among women under myomectomy by hysteroscopy and the results demonstrated that hemoglobin had more reduction in the tranexamic acid receiving group compared with the oxytocin group. Also, the heart rate was lower in the tranexamic acid group. Wang *et al.* **(19)** in 2007, evaluated women under laparoscopic myomectomy and compared those with and without oxytocin administration and found that blood loss and blood transfusion amounts were significantly lower in the oxytocin group.

A meta-analysis published by Kongnyuy *et al.* in 2011 **(20)** reported no additional effect for oxytocin in the reduction of blood loss in patients under myomectomy. However, also seen in our study, no additional side effects were seen in patients who received oxytocin.

Conclusion

Overall, according to the obtained results, it may be concluded that using oxytocin drip during hysteroscopy in patients with intrauterine lesions

would have no effect on operative blood loss and fluid overload. However, further studies, with larger sample size and modification of confounding factors, are required to obtain more definite results. Also, evaluating other therapeutics is suggested in order to reduce blood loss during hysteroscopy.

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Conflict of Interest

Authors declared no conflict of interests.

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