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Vasopressin Administration During Laparoscopic Hysterectomy : A Randomised Controlled Trial

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ABSTRACT *To study role of vasopressin in total laparoscopic hysterectomy. Material and methods- Prospective study in 20 patients (10 in each study and control group) was done at Smt Kashibai Navale Medical College And General Hospital,Narhe Pune.The Blood Loss Was studied in study group and was compared with control group. Result-vasopressin given paracervically during total laparoscopic hysterectomy results in good surgical haemostasis. Conclusion-Routine use of Paracervical vasopressin injection durind TLH should be considered.Safe dose, concentration and technique should be used to prevent cardiac complications.*

KEYWORDS : vasopressin,total laparoscopic hysterectomy,paracervical

Introduction-

Hysterectomy is one of the most common gynecological surgeries worldwide. Now a days laparoscopic hysterectomy is preffered over conventional abdomional & vaginal hysterectomy for advantage of shorter hospital stay, early ambulation & rapid postoperative recovery & less pain. Common indication for TLH are leiomyoma, dysfunctional uterine bleeding refractory to medical management, early cancer cervix. Leiomyoma is most common indication of hysterectomy. Myomatous uteri have an increased number of arterioles and venules and may involve significant blood loss. The average volume of blood loss during TAH (performed via laparotomy, also referred to as open hysterectomy) is 200 to 800 mL [2-4] and for laparoscopic hysterectomy is 80 to 250 ml [5,6]. Surgical hemorrhage may result in anemia, hypovolemia, and coagulation abnormalities. Bleeding can be prevented or decreased with mechanical or pharmacologic methods. Vasopressin is a synthetic Antidiuretic, nine amino acid peptide secreted from the posterior pituitary. Its two primary functions are to retain water in the body and to constrict blood vessels.. drug used to help decrease blood loss at the time of gynecologic surgery; although very little is know about the optimal dosage and administration.

Material & methods-

This is prospective study done at Shrimati Kashibai Navale Medical College& General Hospital, Narhe, Pune from January 2015 to April 2016. After obtaining ethical comitee approval 20 patienrts were selected preoperatively & randomly allocated in two groups. One group was given injection vasopressin (Brand Name - Pitressin) 5 units Vasopressin diluted in 50 mL of Saline paracervically before starting surgery After informing the anesthesia team. All surgeons who enroll patients into our study are experienced laparoscopic surgeons. The procedure is done according to surgeon preference using various energy modalities such as bipolar or Harmonic Scalpel® (Ethicon Endo-Surgery, Cincinnati OH).

Then estimating blood loss at the end of hysterectomy To evaluate whether volume of dilute Vasopressin administered during minimally-invasive hysterectomy affects blood loss. Three parameters were collected to assess this outcome: Hematocrit change (%) pre and post-operatively; subjective surgeon's visualisation of operative field, operative time, intraoperative events, complication, switch over to abdominal hysterectomy, objective calculation of blood loss: Suction canister fluid will be measured. The calculation for estimated blood loss will be as follows: EBL = [total suction canister volume] - [volume of irrigation used] - [volume of vasopressin solution injected /2]

Secondary outcome measured is any intra or post operative complication if any occurred was noted.

As per routine, preoperative blood samples to assess hematocrit levels will be taken no greater than 2 weeks prior to surgical date; if no preoperative laboratory studies have been obtained a sample will be drawn on the day of surgery. Postoperative blood samples to assess hematocrit will be taken no sooner than 4 hours after surgery for patients who are discharged the same day; for patients who are monitored overnight in hospital, the lab will be drawn on postoperative day #1

Patient kept in ward for 4 days and followed in OPD on day 7 to note any postoperative complaints

- The inclusion criteria : Dysfunctional Uterine Bleeding and ADENOMYOSIS (uterine size upto 12 wks only) and are willing to accept randomization.
- The exclusion criteria: suspected malignancy or history of adverse reaction or allergy to vasopressin, and active cardiovascular or pulmonary disease that would indicate a contradiction to use of vasopressin.

Observation–

Parameter	Group 1	Group 2	P value
Mean Preop haemoglobin(gm/dl)	10.8	10.5	>0.05
Mean Postop haemoglobin (gm/dl)	10.2	9.6	>0.05
Estimated blood loss	30ml	70ml	>0.05
Operative time	80 minutes	125 minutes	<0.05
Subjective assessment of surgeon	Clear	Fairly clear	-

Intraoperative events	1 patient suffered from hypertension (>160/100 mm Hg) stopped procedure for 10 min & then after controlling BP restarted	1patient suffered from increased pCo2 procedure stopped & restarted after 10 min	-
Complications	Nil	Nil	-
Conversion to laparotomy (open)	1 case converted to open abdominal hysterectomy due to technical difficulty. (difficulty in reaching vault as pneumoperitoneum could not be maintained)	1 case converted to open abdominal hysterectomy due to operative difficulty.(loss of clarity as uterine vessel was severed)	-
Post operative follow up on Day 7	Patients stable and comfortable	Patients stable and comfortable	-

Two patients required repeat vasopressin administration due to loss of field clarity.

- In patient who were administered vasopressin had less operative time because of increased filled clarity.
- Although blood loss was clinically seems to be reduced but statistically not significant ($p > 0.05$)
- Operative time difference was statistically significant($P < 0.05$)
- We have to convert one patient to abdominal hysterectomy due to uterine vessel bleeding while other completed abdominally due to technical problem of maintaining pneumoperitoneum.
- On day 7 patients of both groups are stable and comfortable.

Discussion:

Local administration of vasopressin to the uterus is a safe and effective hemostatic technique for controlling regional blood flow from the utrine artery to peripheral blood vessels, without having a significant effect on systemic circulatory dynamics. Shimanuki *et al*.[1] studied the effect of vasopressin on local and general circulation during laparoscopic surgery. Systolic/diastolic blood pressure tended to increase immediately after vasopressin administration, but the increase was not significant. Vasopressin is effective in preventing blood loss and reducing the need for blood transfusion during myomectomy. Frederick *et al*.[2] conducted a study as early as in 1994 to assess the efficacy of intramyometrial vasopressin for minimizing bleeding and its sequelae at myomectomy. A randomized placebo-controlled trial was done. Myomectomy was done after the intramyometrial injection of either 20 units vasopressin diluted to 20 ml in normal saline or placebo (20 ml NS). The use of vasopressin resulted in median blood loss of 225 ml compared to 675 ml in the placebo group.

Sizzi *et al*.[3] conducted an Italian multicenter study of complications in 2050 laparoscopic myomectomies, which had the use of vasoconstrictive agent in 37% cases to reduce the operative time. The conclusion was that the operating time for the enucleation of a fibroid was reduced with the use of vasoconstrictive agent. Laparoscopic myomectomy, when performed by an experienced surgeon, can be considered a safe technique with an extremely low failure rate and good results in terms of pregnancy outcome.

There are concerns regarding use of vasopressin in laparoscopic myomectomy. Local intramyometrial infiltration of low-dose vasopressin may cause lethal cardiopulmonary complications. Hobo *et al*.[6] reported bradycardia and cardiac arrest caused by intramyometrial injection of vasopressin during a laparoscopically assisted myomectomy. Vasopressin was used at a total dose of 11 units (0.2 units/ml). The patient was successfully resuscitated.

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Laparoscopic Myomectomy with Aquadissection and Barbed Sutures

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