



ORIGINAL RESEARCH PAPER

Gynaecology

“ A COMPARATIVE STUDY BETWEEN INTRACORPOREAL LIGATION VERSUS BIPOLAR COAGULATION OF UTERINE ARTERY IN CASES OF TOTAL LAPAROSCOPIC HYSTERECTOMY ”

KEY WORDS: Intracorporeal Ligation, Bipolar Coagulation, Uterine Artery, Total Laparoscopic Hysterectomy

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BACKGROUND

Hysterectomy is the most frequently performed major gynecologic surgical procedure annually throughout the world.[1] The most common indication for hysterectomy is menorrhagia due to fibroids, followed by dysfunctional uterine bleeding.[2]. Regarding the procedure, three different approaches can be distinguished— abdominal, vaginal, and laparoscopic. Traditionally, abdominal hysterectomy (AH) has been used for Gynecological malignancy or if the uterus is enlarged. Vaginal hysterectomy (VH) was originally used only for prolapse, but it is now also used for dysfunctional uterine bleeding when the uterus is of fairly normal size.[3] Laparoscopic hysterectomy (LH) was introduced in 1988 and published in 1989 by Harry Reich as an alternative to abdominal hysterectomy. The first LH was set up as LH, as both uterine arteries were ligated laparoscopically, and most of the vagina opened laparoscopically. In 1992, already Reich described his foremost total laparoscopic hysterectomy (TLH).[3,4] However, in the 1990s, most gynecologists adopted the alternative laparoscopic-assisted vaginal hysterectomy (LAVH), an operation in which the upper blood supply to the uterus was ligated laparoscopically followed by a vaginal hysterectomy. Laparoscopic hysterectomy in general requires other technical skills than the vaginal or abdominal method.[4] Amongst all the standard approaches available, laparoscopic approach shows benefits of reduced intraoperative blood loss, smaller drop in hemoglobin level, shorter duration of hospital stay, speedier return to normal activities, tiny wound sizes, or abdominal wall infections. Few unspecified infections, however, at the cost of longer operating time and more urinary tract (bladder or ureter) injuries[5;6-10] have been documented in laparoscopic gynecological surgery.

Laparoscopic hysterectomy is considered as an alternative to abdominal hysterectomy when vaginal hysterectomy is contraindicated, with the advantages of avoiding a major abdominal scar and reducing recovery time. When it comes to laparoscopic hysterectomy, it was classified into 9 different methods in 1992 by the American Association of Gynecologic Laparoscopists [4]. A variety of associated operations can be distinguished. Garry et al. delineated this evolution of different LH procedures as follows. [3]

LAPAROSCOPIC ASSOCIATED HYSTERECTOMY CLASSIFICATION

1. Diagnostic laparoscopy with vaginal hysterectomy
2. Laparoscopic Assisted Vaginal Hysterectomy
3. Laparoscopic hysterectomy
4. Total Laparoscopic Hysterectomy
5. Laparoscopic supracervical hysterectomy including classical interstitial Semm hysterectomy
6. Vaginal hysterectomy with laparoscopic vault suspension or laparoscopic pelvic reconstruction
7. Laparoscopic hysterectomy with lymphadenectomy

8. Laparoscopic hysterectomy with lymphadenectomy and omentectomy
9. Laparoscopic radical hysterectomy with lymphadenectomy

Laparoscopic-assisted vaginal hysterectomy was a popular method in the early years of hysterectomy using laparoscopes. TLH was performed more frequently with advances in laparoscope equipment and the introduction of the uterine manipulator with colpotomizer and pneumooccluder balloon (RUMI). In addition, laparoscopic radical hysterectomy and lymphadenectomy are frequently performed for gynecologic malignancy. Recently, single port assisted and robotic assisted TLH have also been performed for the advantages of cosmetics and improved surgeon dexterity and surgical precision, respectively. Conventional bipolar electrocautery is commonly used because of its convenience, time savings and decreased blood loss, but thermal injury can occur in the surrounding tissue.[6] The term 'TLH with classical suture method' refers to a surgical procedure performed using only sutures and ligations with intracorporeal ties, without using any laser or electronic cauterization devices during laparoscopic surgery as in total LAPAROSCOPIC hysterectomy[7]. However, uterine artery suture ligation method for TLH is not as widely used as electric coagulation equipment because further advances in technology and surgical technique are required and operative time can take longer[8]. Several comparative studies already thoroughly compared the TLH in general versus conventional hysterectomy method. Unfortunately, very few proper randomized controlled trial comparing between intracorporeal suture ligation versus bipolar coagulation of uterine artery in cases of TLH, has been set up yet. Therefore, this study conducted in CNMC&H with aims to compare recorded data on two types of uterine artery cutting method with respect to operative characteristics, and adverse outcomes. The results could indicate whether a prospective study should be designed or not.

THE AIM OF THIS STUDY WAS TO DETERMINE-

Whether uterine artery ligation is a better alternative to bipolar coagulation or it is just a supplementary armamentarium which can be used in some special cases of TLH like , multiple fibroid, endometriosis, where many aberrant vessels are met with during surgery.

Apart from hemostasis it is also our objective whether suture ligation of uterine artery is really a better alternative for to protect Urological injuries.

To assess the factors modifying outcome of the surgery.

In this study two method has been compared to determine whether uterine artery suture ligation is complementary or supplementary or alternative of uterine artery coagulation in cases of TLH. The ultimate goal is to compare

1. morbidity and mortality
2. blood loss
3. intra-operative complication
4. post operative complication
5. pain scoring
6. ureteric injury
7. time duration
8. hospital stay

ENDOMETRIOSIS
 MULTIPLE FIBROID
 H/O PREVIOUS CAESARIAN SECTION
 H/O PREVIOUS ANY SURGERY DUB
 ADENOMYOSIS

We Have Exclude Following Conditions:-
 malignancy
 severe PID
 pelvic tuberculosis

in between uterine artery ligation and uterine artery bipolar coagulation in cases of total laparoscopic hysterectomy.

A comparative observational study was conducted over a sample size of 60 patients who underwent TOTAL LAPAROSCOPIC HYSTERECTOMY\

GROUP A: 30 Patients undergoing uterine artery suture ligation

GROUP B: 30 Patients undergoing uterine artery bipolar coagulation

A total of 60 patients who met the all mentioned criteria and give informed consent were included in the study.

The patients were selected randomly and divided into two groups A & B.

A Study group was allocated to uterine artery suture ligation group and B Study group was allocated to uterine artery bipolar coagulation group. Sampling done based on the following inclusion and exclusion criteria.

we have performed suture ligation on following conditions like

The main parameters used for comparison are :-

- a) Intraoperative blood loss Method use: 40 Swabs were weighed in their dry state. Then weigh the blood soaked swabs soon after the procedure. Subtract the dry weight of any unused swabs from the total dry weight. Then subtract the weight of the blood soaked swabs. 1 ml of blood weighs approximately 19mg. To this value, amount of blood in the suction apparatus was added to estimate the total blood loss
- b) Time taken for surgery- this is the time duration of surgery from the time of incision till the end of the procedure and is noted by the assistant.
- c) Intra-operative injury- Any injury to bowel, bladder or ureter is noted.
- d) Postoperative blood transfusion if any is noted.
- e) Pain perception on day 3 The woman scored their postoperative pain on a 10 cm visual analogue scale and the results compared.
- f) Duration of hospital stay is noted in both groups and compared. Patients were followed up till the date of discharge.
- g) Incidence of vaginal leakage of urine, time taken for full recovery & any post-operative pain or other complication in follow up period.

RESULTS

TABLE - 1 : AGE

	GROUP		Total	p Value	Significance		
	ELECTRO- COAGULATION	2-0 VICRYL					
AGE	36-40	6(20)	0(0)	6(10)	0.009	Significant	
	41-45	11(36.67)	20(66.67)				31(51.67)
	46-50	13(43.33)	10(33.33)				23(38.33)
Total	30(100)	30(100)	60(100)				

(all numbers in table within brackets are mentioning percentages)

GROUP	AGE IN YEAR	
ELECTRO- COAGULATION	Mean	43.93
	Median	44.50
	Std. Deviation	3.47
2-0 VICRYL	Mean	44.60
	Median	44.00
	Std. Deviation	2.11

TABLE - 2 : URETERIC INJURY

		GROUP		Total	Pvalue	Significance
		ELECTRO- COAGULATION	2-0 VICRYL			
URETERIC INJURY	B\L URETER	3(10%)	0(0%)	3(5%)	0.001	Significant
	LEFT URETER	4(13.33%)	0(0%)	4(6.67%)		
	NOTHING SIGNIFICANT(NS)	20(66.67%)	30(100%)	50(83.33%)		
	RIGHT URETER	3(10%)	0(0%)	3(5%)		
Total	30(100%)	30(100%)	30(100%)	60(100%)		

(all numbers in table within brackets are mentioning percentages)

TABLE - 3 :POSTOPERATIVE COMPLICATION

		GROUP		Total	Pvalue	Significance
		ELECTRO- COAGULATION	2-0 VICRYL			
POSTOPERATIVE COMPLICATION	NS	20(66.67)	30(100)	50(83.33)	0.001	Significant
	URINARY LEAKAGE P/V	10(33.33)	0(0)	10(16.67)		
Total		30(100)	30(100)	60(100)		

(all numbers in table within brackets are mentioning percentages)

TABLE- 4 :3RD POSTOPERATIVE DAY PAIN SCORING

	GROUP	Total		Pvalue	Significance
		ELECTRO-COAGULATION	2-0 VICRYL		
3rd POSTOPERATIVE DAY PAIN SCORING BY VAS METHOD	3	4(13.33)	6(20)	0.001	Significant
	4	11(36.67)	19(63.33)		
	5	4(13.33)	5(16.67)		
	6	11(36.67)	0(0)		
Total		30(100)	30(100)		

(all numbers in table within brackets are mentioning percent)

TABLE- 5 : OPERATIVE TIME DURATION

GROUP	OPERATIVE TIME DURATION (Min)	
ELECTRO-COAGULATION	Mean	111.00
	Median	110.00
	Std. Deviation	18.17
2-0 VICRYL	Mean	160.33
	Median	155.00
	Std. Deviation	19.38
	P Value	<0.001
	Significance	Significant

Mean operative time duration in group A = 160.33{+/-}19.38 min

Mean operative time duration in group B =111.00{+/-}18.17 min

P value is <0.001 which is highly significant

TABLE- 6 : INTRA OPERATIVE BLOOD LOSS

GROUP	INTRA OPERATIVE BLOOD LOSS (ML)	
ELECTRO-COAGULATION	Mean	179.33
	Median	180.00
	Std. Deviation	31.04
2-0 VICRYL	Mean	107.00
	Median	110.00
	Std. Deviation	13.17
	p Value	<0.001
	Significance	Significant

DISCUSSION

A newborn baby(operative laparoscopic surgery)who was born in 1980s in the hand of Harry Reich, has evolved rapidly worldwide, not only for patients with benign gynecologic disease, but also for patients with malignancies [2,3]. The proportion of laparoscopic hysterectomies has been increasing compared with hysterectomies performed through a laparotomy.

This study was conducted in CNMC&H. This study was a prospective observational study during the period of JULY 2017- JUNE 2018. A total of 60 patients who have met the all mentioned criteria and give informed consent were included in the study. For random allocation of patients into groups there are 2 cards. One card marked with A & another card with B, the patients were asked to draw a card blindly Group A were allocated for uterine artery 2-0 vicryl suture ligation groups & Group B for uterine artery bipolar coagulation

The mean age of group A and group B groups were 44.60{+/-} 2.11 year and 43.93{+/-}3.47 years.

In our country, it has been found that due to poor socioeconomic condition, early marriage, lack of awareness about genital health, lack of proper medical management women suffers from various uterine pathogenic states leading to gynaecological symptoms which run undetected and untreated. Ultimately culminating in serious pathology needing hysterectomy which otherwise could have been

treated conservatively if detected earlier. In this study majority of patients belongs to age group 36-50 years in both the groups since incidence of menstrual disorders is more during this age group.

Coming to surgical history, there were 7(23.33%) cases of previous C.S. in the group A whereas there were 5(16.67%) cases of previous CS in the group B . P value is .116 which is not significant.

In this study diagnosis reveals that 7 patients(23.33%) have fibroid, 16 patients (53.33%) have HMB ,14 patients(46.67%) have Adenomyosis and 12(40%) patients have severe dysmenorrhoea in the vicryl group, whereas the incidence of the same is 8 patients (26.67%), 14 (46.67%), 6(20%),15(50%) in the bipolar group respectively.

In the present study the most common indication is HMB(50%) & SEVERE DYSMENORRHOEA(45%) respectively.

Mean duration of surgery for group A & group B is 160.33min mints & 111.00 min mints respectively with p value <0.001. The differences in duration of surgery between the two groups were statistically significant. that means uterine artery suturing is a time consuming procedure than uterine artery coagulation in cases of total laparoscopic hysterectomy and it mainly depends on surgeon's expertise.

In this study, GROUP A shows considerable advantages over GROUP B with respect to blood loss. Mean blood loss in 2-0 VICRYL Groups is 107 ml & BIPOLAR Groups is 179.33 ml. The blood loss between the two groups compared & the p value obtained <.001 which is statistically significant. GROUP A shows lesser intraoperative blood loss compared to GROUP B

In this study it has been found that in postoperative period 10 patients(33.33%) of group B complained of urinary leakage per vaginally for which thorough investigations and urological intervention was performed by urologists in subsequent followup visit. p value was 0.001 which is significant.

Pain after surgery is a critical issue because of its connection to length of hospital stay, time to return to normal activities and patient satisfaction. This study demonstrated that postoperative pain on day 3 after surgery was significantly lower in the 2-0 vicryl group compared with the bipolar coagulation group.

In this present study the pain scoring of vicryl and coagulation is maximum scoring was 6 which was mostly(36.67%) in group b , but on the other hand minimum scoring was 3 which was mainly (20%) in group a . p value of this study parameter is 0.001 which is significant. the difference in the pain rating score between the two groups was found to be statistically significant with a p value 0.001.

With respect to intra-operative injury the incidence of bilateral ureteric injury was happened in 3 (10%)patients, left ureteric injury was in 4 (13.33%)patients and right ureteric injury was in 3 (10%)patients. All of these injuries were happened in study group B. which was statistically significant. Ureter injury was detected during post-operative period. In

all cases of ureteric injury the ascending branch of the uterine artery was nicked during the lateral dissection of bladder and in spite of all precaution, thermal damage could not be prevented to the ureter. Thus the complication rate was high in BIPOLAR COAGULATION

The mean hospital stays in all the above study between the groups A & B were 4.93(+/-)0.98 days and 6.60(+/-)2.75 days with statistical significant p value 0.042. So in this study vicryl group shows less hospital staying than coagulation group. Many factors are responsible like postoperative pain, ureteric injury.

In this study intraoperative complications like bladder injury was happened in only 2 patient(6.67%) of group B (bipolar coagulation) which was statistically no significant as the p value is 0.492. The injury was managed intracorporeal laparoscopic suturing by 1-0 prolene and foley's catheter was kept insitu for 20 postoperative days with few conservative medication .

In this study delayed postoperative patients complaints was also put in consideration and was found that 10(33.33%)patients of group B complained of urinary leakage vaginally and only 7 (23.33)patients complained of pain at the port sites.This urinary leakage was managed in the outdoor basis with the help of urologists and pain was subsided by medication. This delayed complications had a statistical significance and p value was .002 which is significant.

CONCLUSION

We have conducted a study in the department of obstetrics and gynecology, calcutta national medical college &hospital to compare between uterine artery 2-0 vicryl suture ligation and bipolar coagulation in total laparoscopic hysterectomy with the following aims:

- a) Whether uterine ligation is a better alternative to bipolar coagulation or it is just a supplementary armamentarium which can be used in some special cases of TLH like , multiplefibroid,endometriosis,where many abarrent vessels are mate with during surgery.
- b) Apart from hemostasis it is also our objective whether suture ligation of uterine artery is really a better alternative for to protect Urological injuries.
- c) To assess the factors modifying outcome of the surgery. we have found that,TLH with uterine artery 2-0 vicryl ligation is associated with less blood loss, less postoperative pain and less hospital staying when compared to uterine artery bipolar coagulation. Intraoperative ureteric injury is more in bipolar coagulation group. also when it comes to the delayed complications and urological intervention ,uterine artery suturing is much superior than bipolar coagulation thus considering the intraoperative blood loss, intraoperative ureter injury, postoperative pain, postoperative complications,hospital staying & patient's all over healthy outcome after 2weeks, it can be concluded that intracorporeal uterine artery 2-0 vicryl suture ligation may be suitable alternative to uterine artery bipolar coagulation in cases of total laparoscopic hysterectomy though operative time consumption is greater in total laparoscopic hysterectomy with uterine artery 2-0 vicryl ligation than uterine artery bipolar coagulation

FROM THE PRESENT STUDY, IT CAN BE CONCLUDED THAT:

- 1) intraoperative blood loss in uterine artery suturing is significantly less than uterine artery bipolar coagulation in TLH.
- 2) postoperative pain is significantly less in uterine artery suturing compared with uterine artery bipolar coagulation in TLH.

- 3) Hospital staying is less in uterine artery suturing compared with uterine artery bipolar coagulation in TLH.
- 4) Intraoperative ureter injury in most common in uterine artery bipolar coagulation in TLH.
- 5) Intraoperative time duration is greater in uterine artery 2-0 vicryl ligation though it totally depends on surgeon's expertise skill in TLH.

Thus it can be concluded that in TLH with uterine artery 2-0 vicryl ligation is feasible, safe with respect to less intraoperative blood loss, less postoperative pain, less hospital staying and less other intra-operative & postoperative complications like ureteric injury ,urinary leakage per vaginally and urological interventions with compared to the uterine artery bipolar coagulation in TLH. Though it is a time consuming operative technique and depends substantially on surgeon's expertise skill.

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