

Primary Internal Iliac Artery Ligation – An Effective Technique For Surgical Hemostasis In Wertheim’s Hysterectomy

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Abstract : Objective: Lessening intra-operative blood loss by the technique of bilateral internal iliac artery ligation as 1st step in Wertheim’s Hysterectomy. **Methods:** 20 cases of early Stage Cancer Cervix, who underwent Wertheim’s hysterectomy over period June 09 to Dec 12 in CRG Hospital, Ujjain and Base Hospital Delhi Cantonment, were studied. The demographic data, hemoglobin before and after surgery, and requirement of intra-operative blood transfusion, were studied. **Results :** 80% patients had less than 200ml intra-operative blood loss. **Conclusion :** Alleviating troublesome bleeding during dissection of lymph nodes and ureteric tunnel by primary ligation of internal iliac artery is a statistically proven optimum technique of Wertheim’s Hysterectomy. [Roy P K et al NJIRM 2013; 4(6) : 145-147]

Key words: Carcinoma cervix, Wertheim’s Hysterectomy, Bilateral internal iliac artery ligation, lessening intra-operative blood loss.

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Introduction: As Diagnosis of Cancer Cervix in early stages has increased due to widespread screening by PAP smear¹; the surgical rate of Wertheim’s Hysterectomy has gone up. As incidence of this malignancy is higher in developing countries², especially among the low socio-economic, anemic, hypoproteinemic, multiparous women, there is requirement of a technique which will give best of surgical results. This paper discuss about lessening intra-operative blood loss by the technique of bilateral internal iliac artery ligation as a first step in Wertheim’s hysterectomy.

The routine technique of doing Wertheim’s hysterectomy comprises of lymph node dissection 1st and later on ligating the Uterine arteries³, but often while dissecting the Internal iliac lymph nodes and paracervical Lymph nodes, and ureteric tunnel the blood loss from the small vessels are annoying and create hindrance in the surgery. The primary ligation of Internal Iliac Arteries on both sides was carried out in 20 cases in CRGH Ujjain, and Base Hospital Delhi Cantonment, in the period June 2009 to Dec 2012. This study projects the advantages and disadvantages of the above technique i.e. primary ligation of Internal Iliac Arteries on both sides as a first step.

Review of Literature: Historical background of ligature of internal iliac artery for control of hemorrhage is not clear, though operation was

popular in UK and US before 1900³. Howard Kelly was first to use ligation of Internal Iliac artery in the treatment of intra-operative bleeding from cervical cancer before this technique was used for control of hemorrhage^{4,5}. Studies advocated that bilateral ligation of internal iliac arteries significantly improve the chances of reducing pelvic pulse pressure and facilitate hemostasis^{6,7,8,9}. Prophylactic ligation to reduce blood loss has been used with favorable outcomes in radical procedures like Wertheim, Radical Vulvectomy and Abdominoperineal resection of carcinoma of the rectum^{4,7,10}.

Aims and Objectives of Study: This study has been conducted to assess effects of bilateral Internal Iliac artery Ligation during Wertheim’s hysterectomy and assess its role in reducing peri-operative blood loss and incidence of post-op blood transfusion. In addition, it helps in keeping the surgical field virtually bloodless making surgery easier.

Methods: Twenty case files of women with early Stage Ca Cx, who underwent Wertheim’s hysterectomy over two year period (June 09 to Dec 11) in CRG Hospital , Ujjain, and Base Hospital Delhi Cantt, were studied. The demographic data, hemoglobin before and after surgery, requirement of intra-operative blood transfusion, were studied.

All patients had pre-operative MRI scan performed to know the LVSI extent.

Results and Observations: Results of this study is as recorded below

Table 1 : Characteristics of study subjects (n = 20):

Age	Less than 30 yrs	4
	More than 30 yrs	16
Literacy	Higher Secondary and above	2
	Below Higher Secondary	18
Parity	Nulliparous	1
	2 & below	5
	More than 2	14
Socio-economic Status	Annual income less than Rs 5000/-	16
	Annual income more than Rs 5000/-	4

4 subjects were below 30 & 16 subjects were above 30 years of age. 18 subjects were illiterate. 14 subjects had parity more than 2, only 1 was nulliparous. Most of the subjects belonged to low socio-economic group.

Table 2: Haemoglobin before and after surgery

Hb in gm%		>10	8 – 10	< 8
No of cases	Before Surgery	16	4	Nil
	After surgery	14	6	Nil

Of the 16 subjects had pre-op Hb more than 10 gm% 14 subjects maintained it more than 10 gm%, 4 pts had Hb between 8-10 gm%. (No cases with Hb < 8 gm% were operated, as they were elective surgeries & general built up of pts pre-operatively was done)

Table 3 :Requirement of blood transfusion:

Pre-operative Hb in gm%	Intra-operative blood transfusion	Post-operative blood transfusion
>10 (16 cases)	1	2
8 – 10(4 cases)	2	2
< 8 (Nil)	Nil	Nil

Subjects with pre-op Hb more than 10 gm% , 1 case received intra-operative blood transfusion & 2 cases received post-op blood transfusion. 4 subjects with pre-op Hb 8-10gm% 2 cases received intra-operative blood transfusion & 2 cases received post-op blood transfusion on 1st POD.

Estimated Intra-operative blood loss estimated by the number of swabs soaked during surgery & the amount of collection in suction jar, was more than 200ml in 4 cases, whereas in 16 cases the bleeding was less than 200ml.

19 subjects that had undergone Wertheim's hysterectomy were in stage I(a&b) & 1 subject was in stage II(a).

Discussion: Internal iliac artery ligation is a procedure that every pelvic surgeon must be able to perform. It is relatively simple operation when performed by a surgeon having adequate knowledge of pelvic anatomy. Main underlying principle in ligation of the internal iliac artery for control of pelvic hemorrhage is the conversion of an arterial pressure circulation into a venous pressure circulation. Unilateral ligation of the internal iliac artery, decreases the pulse pressure distal to point of ligation by 77%,while bilateral ligation decreases the pulse pressure by 85%[7][8][9]. As a result of the reduction in the pulse pressure, blood clots begin to form at the site of bleeding from damaged vessels. Blood supply to the pelvis continues via extensive collateral circulations. Unfortunately, the procedure is not popularly performed by many qualified surgeons doing pelvic surgery. We found no statistical difference in hemoglobin level of subjects before and after surgery (P = 0.09).The average duration of surgery was two hours and fifteen minutes, which is not a lengthy operation. 80% patients had less than 200ml intra-operative blood loss. Only 35% required post-operative blood transfusion.

Conclusion : In radical gynecological surgeries before dissecting the different planes it is easy to access the internal iliac artery & hence in these cases Internal Iliac Artery Ligation was performed as a first step. Earlier this team was performing Uterine Artery Ligation, but at the time of dissection of ureteric tunnel and lymph nodes troublesome bleeding was encountered often and hence this study was performed. No long term complications of internal iliac artery ligation was encountered in the study group. Though the rich collateral circulation takes over and circulation is restored to most of the tissues, the transient period of decrease in circulation following Internal

Iliac Artery Ligation would eliminate the trip hammer effect [1][4] and was significant in the form of decrease blood loss during surgery and requirement of intra-operative and post-operative blood transfusion.

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