

INITIAL EXPERIENCES OF EXTENDED PELVIS LYMPHADENECTOMY IN RADICAL CYSTECTOMY PATIENTS FOR TREATMENT INVASIVE BLADDER CANCER

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ABSTRACT

Background: From the long time before the standard lymphadenectomy is the part of radical cystectomy surgery for treatment invasive bladder cancer. Some new research show the good result of extended pelvic lymphadenectomy in improving postoperative survival.

Objective: Report initial experiences of extended pelvic lymphadenectomy during radical cystectomy for invasive bladder cancer.

Material and method: Prospective descriptive study on 14 extended pelvic lymphadenectomy patients from January 2013 to March 2014 at Hue Centre Hospital.

Results: Mean of age: 60.57 ± 11.5 year old (48 - 77). Female / male: 3/11. Lymph nodes metastasis 2/14 patients, 1 obturator lymph nodes positive and 1 common iliac vessels lymph nodes positive. Mean of pelvic lymphadenectomy time: 80 ± 35 min (70 - 90). Mean of blood loss during extended pelvic lymphadenectomy: 85 ± 50 ml (50 - 150).

Conclusion: Extended pelvic lymphadenectomy should be performed for all radical cystectomy patients to improve postoperative survival and it is safe when performed at a good surgery centre with experienced surgeon.

Keywords: Extended pelvic lymphadenectomy; Invasive bladder cancer; Radical cystectomy

I. BACKGROUND

Bladder cancer is a malignant disease forefront of the urinary system, and ranked fourth in the men's cancer. The disease is less common in women than men. 90% of bladder cancers are transitional cell carcinoma and approximately 70% of bladder cancer are non muscle – invasive, 30% had muscle invasive. In a recent study shows that radical cystectomy and pelvic lymphadenectomy with adjuvant chemotherapy has an important role on the outcome of treatment and survival. Approximately

25% of lymph node metastasis at the time of radical cystectomy, autopsy showed lymph node metastasis rate higher than about 30-40%, lymph node metastasis is a bad sign of disease progression risk, recurrence and surgical lymphadenectomy plays an important role [2], [5], [7]. The changes in the AJCC - TMN staging in 2010 for bladder cancer showed the importance of expanding lymphadenectomy location, patients with a positive regional pelvic lymph nodes are classified pN1, the more positive lymph nodes are classified pN2 and the common

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iliac lymph node metastases are classified pN3. So extensive pelvic lymphadenectomy can help in the classifying stage lymph node metastasis and prognosis accurately for additional treatment after surgery for patients [9], [17]. According to many authors For negative lymph node cases, the number of removing nodes and the expansion of regional lymphadenectomy is an important measure of evaluating surgical outcomes and prognostic value [11], [12], [14].

Radical cystectomy and standard lymphadenectomy was performed as a standard surgical at Hue central hospital from 2003, while the extended pelvic lymphadenectomy was performed only recently because of the complex technical requirements and time prolonged surgery. The recent international study showed many advantages of extended pelvic lymphadenectomy but in our country has less research so we performed this study to present the initial experience of extensive pelvic lymphadenectomy in patients who having radical

cystectomy treatment of invasive bladder cancer.

II. MATERIAL AND MENTHOD

2.1. Subjective: patient with Invasive bladder cancer from pT2a to pT2b have indication of radical cystectomy and extended pelvic lymphadenectomy at Hue centre hospital from January 2013 to March 2014.

2.2. Method: Prospective descriptive study.

Surgical Technique

Limits of extended pelvic lymphadenectomy is defined as follows : a proximal limit is at bifurcation of the abdominal aorta . Lateral limit is genital femoral nerve . The distal limit is the highest deep inguinal lymph node (Lymph node of Cloquet) . Outer walls are the hypogastric vessels including the obturator fossa . Inter wall is the bladder , the visceral lymph nodes is removed with fat tissue, peritoneal viscera and bladder en bloc. The nodes are divided into nine groups and three levels according to anatomic location as shown in Figure 1 [8].

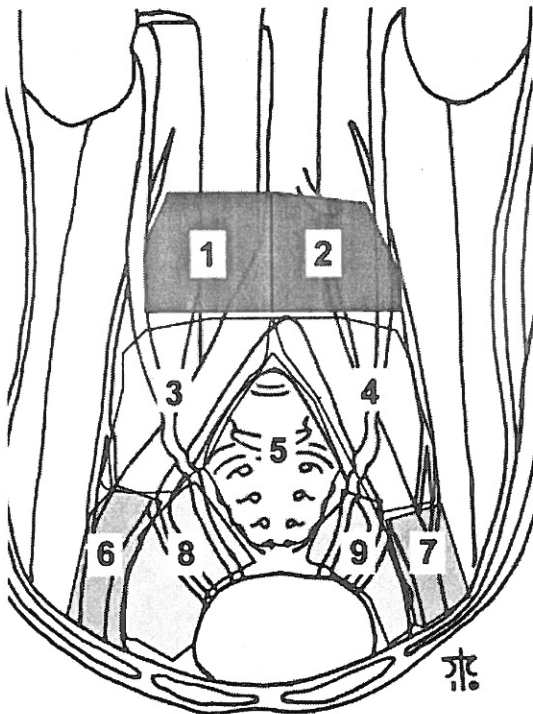


Figure 1: Lymph node packets: (1) paracaval, (2) para-aortic, (3, 4) right (R) and left (L) common iliac, (5) presacral, (6, 7) R and L external iliac, (8, 9) R and L obturator/internal iliac

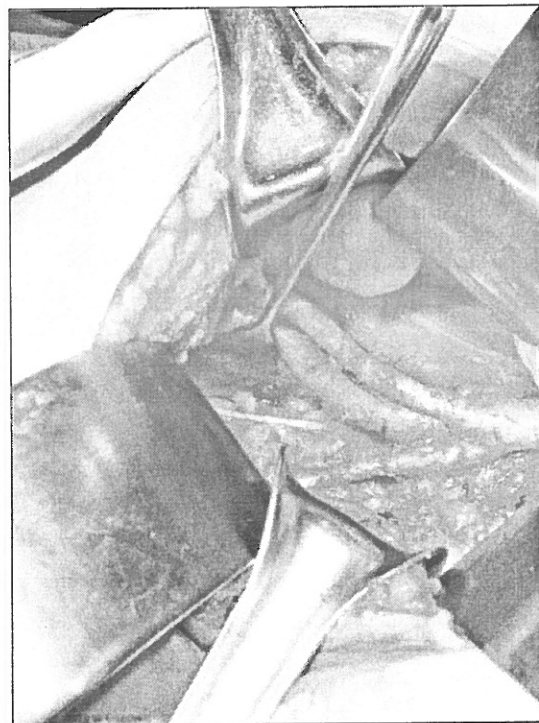


Figure 2: Lymph node packets 6,8

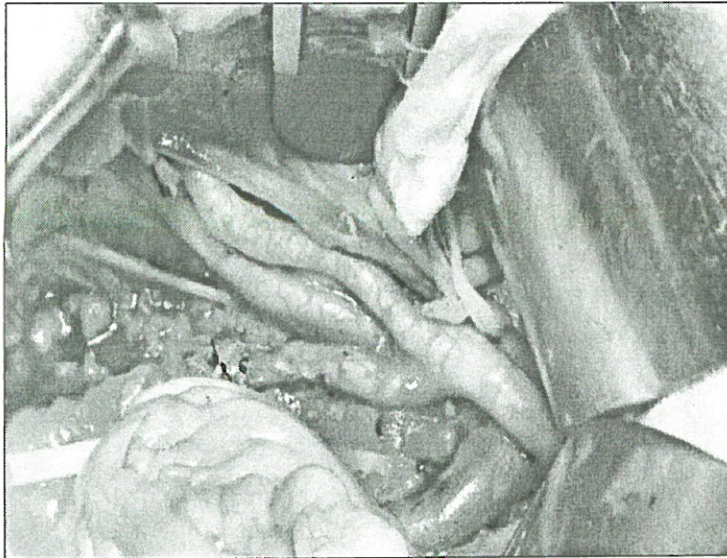


Figure 3: Lymph node packets 3,4

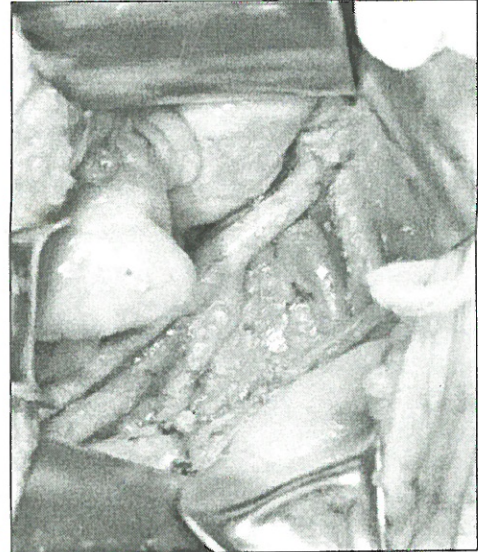


Figure 4: Lymph node packets 1,2

Specifically lymphadenectomy for each region are as follows:

Para -aortic lymph nodes and para -vien cava nodes are removed from aortic bifurcation up to 1-2 cm of that site, at least to get to from the aortic bifurcation may up to the level of the inferior mesenteric artery. The other group agreed with the nodes grouped by Nguyen Van An, apart from obturator nodes and internal iliac nodes are put into the same group [1], [8], [19].

Common iliac nodes: Bifurcation of abdominal aorta - the origin of the internal iliac artery and external iliac arteries - genital femoral nerve.

External iliac nodes: Limit by where dividing of common iliac artery, pelvic floor, genital femoral nerves, external iliac arteries.

Obturator nodes and internal iliac nodes: Limit by external iliac arteries nerves seal - pelvic floor - the pots inside - bladder - pelvic vascular bundles in.

Presacrum lymph nodes: The nodes located before promontory is limited by aortic bifurcation - common iliac artery.

We removed whole lymph nodes, fats, fibrous tissue around vascular bundle. We compare

the time of extended lymphadenectomy with standards, assessment and monitoring of the postoperative complication related to extensive pelvic lymph node curettage, the results of lymph node metastasis.

III. RESULTS

3.1. General Characteristics

Means of age : 60.57 ± 11.5 (48-77).

Rate of female / male : 3/11 .

Means time of lymphadenectomy : 80 ± 35 min (70-90)

Surgical time : 283.5 ± 25.7 min (235- 290)

Blood loss during surgery : 50 ± 85 ml (50 -150)

In this series of patients, only one patient have to blood transfusion during surgery (250ml erythrocyte) due to blood loss during radical cystectomy because of the very large tumor and angiogenesis, not blood loss during lymphadenectomy.

3.2. Postoperative histopathology

All the 14 patients are performed extended pelvic lymphadenectomy during radical cystectomy successful. We removed nine group of lymph nodes be classified into 3 levels according to Dorin.

Table 1: List of patients and histopathological classification and TNM staging (UICC - EAU 2010).

SN	Name of patient	Age	Sex	N of Doc	Histopatho - TMN	Date of Sur
1	Nguyen Thi Th	62	Fema	1305401	TCC,T2aNoMo, Gr2	31/01/2013
2	Mai Van B	48	Man	1317656	TCC, T2aNoMo, Gr1	03/04/2013
3	Nguyen L	77	Man	1322503	TCC, T2bNoMo, Gr2	10/04/2013
4	Phan Thanh Q	64	Man	1326996	TCC, T2bNoMo, Gr2	02/05/2013
5	Pham Xuan S	65	Man	1324512	TCC,T2aNoMo, Gr1	06/05/2013
6	Pham Thi S	55	Fema	1338406	TCC, T2aNoMo, Gr2	05/06/2013
7	Hoang Van N	59	Man	1342355	TCC,T2bNoMo,Gr2	19/06/2013
8	Vo Trong L	66	Man	1343242	TCC, T2bN1Mo, Gr2	26/06/2013
9	Tran Thi M	77	Fema	1347713	TCC, T2aNoMo, Gr2	10/07/2013
10	Nguyen Van P	50	Man	1371602	TCC, T2bN3Mo,Gr2	25/09/2013
11	Dang Duc Th	48	Man	1384661	SqCell,T2bNoMo,Gr2	20/11/2013
12	Phan Ba H	54	Man	1355623	TCC, T2bNoMo, Gr2	21/11/2013
13	Bui Van Ph	53	Man	1416395	TCC, T2aNoMo,Gr2	26/02/2014
14	Vo Ch	70	Man	1419157	TCC, T2bNoMo, Gr2	06/03/2014

Table 2: Characteristic of tumeur.

Characteristic of tumeur		n=14
Histopathology	Transitional cell carcinoma	13
	squamous cell carcinoma	1
TMN stage	T2a	6
	T2b	8
Cell differentiation	Grade 1	2
	Grade 2	12
Lymph node metastasis	Left oturater nodes (+3/5)	1
	Left common iliac nodes (+1/2)	1
Number of Tumeur	One tumeur	9
	≥ 2 tumeur	5
Size of Tumeur	< 3	8
	≥ 3	6
Tumeur	Primary tumeur	9
	Recurence tumeur	5

Histopathological results mainly transitional cell carcinoma, only 1/14 patient is squamous cell carcinoma .One case had obturator lymph node metastasis (+ 3/5 nodes) and one case had common iliac lymph node metastasis (+1/2 nodes)

IV. DISCUSSION

Detection of lymph node metastasis in radical cystectomy with pelvic lymphadenectomy treatment for invasive bladder cancer is a sign of poor prognosis, lymphadenectomy procedure removes microscopic metastases of lymph node. Many authors agreed that The proximal limit of standard lymphadenectomy is at distal common iliac arteries or ureters crossing common iliac vessel, including lymph nodes at fossa of Marcille [8], [11]. The expansion of regional lymphadenectomy up to the common iliac vascular bundle, the presacrum and bifurcation of aorta help taking away as many nodes plays an important role in the results of surgical lymphadenectomy for treatment of invasive bladder cancer, however, extend to where it is still debate.

Leadbetter and Cooper initially said no need for extensive pelvic lymphadenectomy to the level of the abdominal aorta, and it is not considered part of cystectomy procedure. Some other authors think that expansion up to the position inferior mesenteric artery significantly increased surgical time and complications such as bleeding, neurological damage, lymphocelle...[3], [6], [15], [20]. But the fact that many studies show that extensive lymphadenectomy to the level of the inferior mesenteric artery can be performed safely, further evidence suggests that the lymphatic spread from bifurcation of aorta to inferior mesenteric arteries is common metastatic location and it was effectively removed by surgery. The importance of extended lymph node curettage is attested in a study by Bochner, of which one-third of patients had common iliac lymph node microscopic metastasis at the time of cystectomy.

Whatever position extended lymphadenectomy debatable, but the authors come to a consensus that lymphadenectomy position to the higher number of lymph nodes removed as much, and patients with lymph node metastasis increased. Leissner compare the average number of lymph nodes removed when extensive lymphadenectomy and standard

lymphadenectomy of 25 nodes compared with 14 nodes, in this study he also comparing survival after 5 years without recurrence of localized tumor is 85 % for extended and 63 % for standards lymphadenectomy, and survival rates after extensive lymphadenectomy is also improved for both groups of patients with lymph node metastasis and no lymph node metastases, local recurrence rate decreasing the number of lymph nodes removed as much [10], [12], [13], [14], [15], [18]. All patients in our group were performed lymphadenectomy before cystectomy in order to wait frozen section results of the group lymph nodes and shorten the time of surgery and release the risk of bleeding during cystectomy due to control the arteries branch that supply blood to the bladder. The arteries are the branch of internal iliac artery, its were legated during lymphadenectomy. We dissected and expressed two ureters while the common iliac lymph node groups removed, both sides of bladder cell are free during removing obturator lymph node groups and Marcille' fossa. so extended lymphadenectomy time increase compared with the standard, but we shorten the time of cystectomy stage. The result is total operating time has not increased much. The rate of positive lymph nodes in our research was 14.3% (2/14), lower than the overall results of the authors in Vietnam and the world (20 -25%), this result may be due to our patients hospitalized in the early stage mainly pT2. So if we only removed obturator lymph nodes groups (limited lymphadenectomy) or performed standar lymphadenectomy, we would miss one case of common iliac lymph node. Heidenreich et al reports have shown complication rates for extended pelvic lymphadenectomy in bladder cancer about 7%, the lymphocelle that is most common (2-4%), the rest is deep-vein thrombosis, pulmonary embolism, lymphedema was recorded. To reduce or to prevent PLND-associated morbidity, several authors have provided advice regarding meticulous surgical techniques. First, in-stead of using clips, which are often turned

away during subsequent surgery, all the lymphatic vessels coming from the lower extremities are tied using ligatures. Second, all lymphatics lateral to the external artery are saved. Third, two drains are placed in each side of the pelvis and are not removed until the total amount of fluid is < 50 ml in 24 hours. Fourth, low molecular weight heparin is injected into the upper arm to avoid damaging lower extremity lymphatics [15]. Brossner and colleagues compared two groups of patients with extensive and standards pelvic lymphadenectomy showed increased surgical time when performed extensive pelvic lymphadenectomy but no differences were statistically significant complications in the two groups [5]. In our research group has not recorded these complications may be due to the number of

patients is small group and tumour mainly in early stages T2, lymph nodes does not invade to blood vessels and around tissue.

V. CONCLUSION

Etended pelvic lymphadenectomy in radical cystectomy can be performed safely in the large centers with experienced surgeons.

Location lymphadenectomy higher the number of lymph nodes to get more and increased patients with lymph node metastasis.

Extended pelvic lymphadenectomy help increase survival time in patients with invasive bladder cancer by removing these microscopic metastatic lesions and help planning early chemotherapy for patients with lymph node –positive.

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