

ORIGINAL STUDIES

ORIGINALNI NAUČNI RADOVI

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Original study
Originalni naučni rad
UDK 618.146-006.6-089.87(497.113 Novi Sad)“1993/2013“
DOI: 10.2298/MPNS1508227D

RADICAL HYSTERECTOMY IN SURGICAL TREATMENT OF INVASIVE CERVICAL CANCER AT THE DEPARTMENT OF GYNECOLOGY AND OBSTETRICS IN NOVI SAD IN THE PERIOD 1993-2013.

RADIKALNA HISTEREKTOMIJA U HIRURŠKOM LEČENJU INVAZIVNOG KARCINOMA GRLIĆA MATERICE NA NOVOSADSKOJ GINEKOLOŠKO-AKUŠERSKOJ KLINICI U PERIODU 1993–2013. GODINE

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Summary

Introduction. During the period from 1993 - 2013, 175 women with invasive cervical cancer underwent radical hysterectomy sec. Wertheim-Meigs at the Department of Gynecology and Obstetrics, Clinical Center of Vojvodina in Novi Sad. Indications for radical hysterectomy comprise histopathologically confirmed invasive cervical cancer in stages I B 1 – II B according to the International Federation of Gynecology and Obstetrics. **Material and Methods.** Stage of the disease or extent of the disease spread to the adjacent structures was assessed in accordance with the International Federation of Gynecology and Obstetrics staging system from 2009. Exclusion criteria were all other stages of this disease: I A and stages higher than II B, as well as the absence of definite histological confirmation of the cervical cancer (primary endometrial or vaginal cancer which infiltrates the uterine cervix). Prior the operation, the following had to be done: the imaging of pelvis and abdomen, chest X-ray in two directions, electrocardiography, internist and anesthesiological examination. **Results.** The patients' age ranged from 24-79 years (x : 46 years), and the operation duration was 120-300 minutes (x : 210 min.). Stage I B 1 was found in 64.6% of operated patients, 14.8% of the patients were in stage I B 2, 9.1% were in stage II A and 11.4 % were in stage II B. Blood loss during the operation ranged from 50-800 ml (on average 300 ml), and the number of removed lymph nodes per operation was 14-75 (x : 32). Intraoperative and postoperative complications developed in 6.8% of and 17.7% of patients, respectively. Recurrence was reported in 22 (12.5%) patients, most often in paraaortic lymph nodes (3.4%) and parametria (2.8%), while the overall 5-year survival rate was 87% until 2008. **Conclusion.** Wertheim-Meigs radical hysterectomy is a basic surgical technique for the treatment of initial stages of invasive cervical cancer. **Key words:** Hysterectomy; Uterine Cervical Neoplasms; Endometrial Neoplasms; Neoplasm Invasiveness; Obstetrics and Gynecology Department, Hospital; Gynecologic Surgical Procedures; Neoplasm Staging; Carcinoma + pathology; Diagnosis; Postoperative Complications; Blood Loss, Surgical; Lymph Node Excision; Recurrence; Survival Rate

Sažetak

Uvod. U toku 20-godišnjeg perioda (1993–2013.), kod 175 žena sa invazivnim karcinomom grlića materice urađena je radikalna histerektomija po metodi Verthajm-Megz na Klinici za ginekologiju i akušerstvo Kliničkog centra Vojvodine u Novom Sadu. Indikaciju za radikalnu histerektomiju predstavljala je histopatološka potvrda invazivnog karcinoma grlića materice u stadijumu IB 1–IIB prema *International Federation of Gynecology and Obstetrics*. **Materijal i metode.** Procena stadijuma i proširenosti bolesti na okolne strukture vršena je primenom sistema stadiiranja *International Federation of Gynecology and Obstetrics* iz 2009. godine. Kriterijumi za isključivanje iz istraživanja obuhvatili su sve druge stadijume bolesti: IA i stadijume preko IIB kao i odsustvo definitivne histopatološke potvrde karcinoma grlića materice na definitivnom preparatu (primarni karcinom endometrija ili vagine koji je zahvatio grlić materice). Pre operacije insistirali smo na sprovođenju imidžing metoda dijagnostike karlice i abdomena, rendgenskom snimku pluća u dva pravca, elektrokardiogramu, internističkom i anesteziološkom pregledu. **Rezultati.** Uzrast pacijentkinja kretao se 24-79 godina (x : 46 god.), vreme trajanja operacije iznosilo je 120-300 minuta (x : 210 min.). U stadijumu IB 1 bilo je 64,6% operisanih, 14,8% u stadijumu IB 2, 9,1% u stadijumu IIA i 11,4% u stadijumu IIB. Gubitak krvi u toku operacije kretao se 50-800 ml (u proseku 300 ml), broj uklonjenih limfnih čvorova bio je 14-75 (x : 32). Zabeležili smo 6,8% intraoperativnih i 17,7% postoperativnih komplikacija. Recidiv bolesti evidentiran je kod 22 (12,5%) pacijentkinje, najčešće u paraaortalnoj grupi limfnih čvorova 3,4% i u predelu parametrija 2,8%, dok je ukupno petogodišnje preživljavanje iznosilo 87% do 2008. godine. **Zaključak.** Radikalna histerektomija po metodi Verthajm-Megz predstavlja osnovnu hiruršku tehniku u lečenju početnih stadijuma invazivnog karcinoma grlića materice. **Ključne reči:** Histerektomija; Karcinom grlića materice; Karcinom endometrija; Invazivnost karcinoma; Ginekološko-akušerska klinika; Ginekološke hirurške tehnike; Stadijumi neoplazmi; Karcinom + patologija; Dijagnoza; Postoperativne komplikacije; Gubitak krvi, hirurški; Ekscizija limfnih čvorova; Rekurentnost; Stopa preživljavanja

Abbreviations

FIGO	– the International Federation of Gynecology and Obstetrics
WHO	– the World Health Organization
MR	– magnetic resonance
CT	– computed tomography
US	– ultrasound

Introduction

The basic principles of invasive cervical cancer treatment are precisely defined and depend on the stage, which is determined in accordance with the contemporary International Federation of Gynecology and Obstetrics (FIGO) classification [1, 2]. The choice of surgical procedure is planned depending on the performed diagnostic procedures, which include histopathological cancer diagnosis, rectovaginal gynecological examination, magnetic resonance (MR) examination of pelvic organs and parametria, cystoscopy, rectosigmoidoscopy etc. [3]. The degree and extent of radicality has to be adjusted to the tumor size and volume, presence of lymphovascular invasion, risk of local and lymphogenic dissemination and expected adjuvant therapy [4]. While performing radical surgical procedures, autonomous urinary bladder innervation and vascularization of ureters should be preserved, and parametrial lymph nodes should be removed. The choice of therapeutic procedure is planned individually for each patient depending on the presence of different factors, including the age and general health of the patient, factors regarding malignant tumor, institution where the therapy is administered, as well as the selection of patients [5]. Prognosis of further course and the treatment outcome is based on the detailed histopathological report, which should consist of precise information on the histological type, degree of cellular differentiation, tumor dimensions, depth of stromal invasion, lymphovascular space, tumor propagation beyond the cervix and presence of metastases in other organs, number and infiltration of lymph nodes by groups, length and condition of parametria, length of vaginal cuff, condition of resection margins of the vagina and parametria, the shortest distance between tumor and resection margins [6, 7]. The aim of the study was to present the results of the Wertheim-Meigs surgical treatment of invasive cervical cancer at the Department of Gynecology and Obstetrics, Clinical Center of Vojvodina in Novi Sad in the period from 1993 to 2013.

Material and Methods

Indications for radical hysterectomy include histopathologically confirmed invasive cervical cancer in FIGO stages I B 1 – II B. The stage of the disease or the extent of the involvement of the adjacent structures was assessed in accordance with the FIGO staging system from 2009, whereas the histopathological analysis was performed by a pathologist based on the World Health Organization (WHO) histopathological classification of malignant cervical tumors. Proper indications for radical hysterectomy are the FIGO stages I B1 - I II A,

although this operation can also be performed in stages I A 2 and initial II B. Chemotherapy is nowadays administered first in stage I B 2, and if a reduction and decrease of tumor size occurs, surgery is performed [8, 9]. Criteria for data analysis in our study included patients who underwent Wertheim-Meigs radical surgery with histopathologically confirmed cervical cancer in the FIGO stages I B 1, I B 2, II A and II B. The exclusion criteria were all other stages of this disease: I A and stages higher than II B, as well as the absence of definite histological confirmation of the cervical cancer (primary endometrial or vaginal cancer which infiltrates uterine cervix). Our study included 175 patients with invasive cervical cancer in the FIGO stages I B1 – II B, who had been operated at the Department of Gynecology and Obstetrics, Clinical Center of Vojvodina in the period 1993-2013. Radical hysterectomy was always preceded by detailed preoperative preparation and conversation with the patient regarding the nature of the disease, technical aspects of the surgery, risks and possible complications. The patients had to sign the informed consent form thus confirming to accept the risks of operative treatment. Prior to the operation, the following procedures had to be done: the imaging of pelvis and abdomen, chest X-ray in two directions, electrocardiography (ECG), internist and anesthesiology examination. MR examination of pelvis was used because it is the best diagnostic tool for evaluating parametria. This examination was combined with computed tomography (CT) or abdominal ultrasound (US) examination for precise evaluation of kidneys, liver and paraaortic lymph nodes. If a higher grade of the disease (FIGO st. II B – IV) was suspected, an additional diagnostic test was performed, including cystoscopy, rectosigmoidoscopy or CT urography. During the preoperative preparation, the patients' laboratory blood (urea, creatinine, hepatic parameters) and urine tests had to be normal, together with sterile urinoculture and normal vaginal smear. Immediately before the operation, the patients were administered antibiotics (Cephalosporin of II or III generation, dose of 1-2 gr. IV), anticoagulant protection by subcutaneous administration of heparin or fraxiparine and "bandaging" of lower extremities by elastic bandages or compressive stockings up to the level of thighs [10]. Following the completion of surgical treatment and definite histopathological report, all patients were presented to the consilium of gynecologic oncologists at the Department of Gynecology and Obstetrics or Institute for Oncology in Sremska Kamenica. Depending on the presence of negative prognostic factors, the patients were administered adjuvant therapy in accordance with the standard protocols: conventional external beam radiation therapy or internal radiation therapy (brachytherapy), chemotherapy or their different combinations.

Surgical Technique - Wertheim-Meigs Radical Hysterectomy

In general, the applied surgical approach was lower midline laparotomy with correct hemostasis,

which enabled opening of all layers of the anterior abdominal wall. If needed, in obese patients, or when it was necessary to expand radical hysterectomy with additional paraaortic lymphadenectomy, incision was expanded by umbilicus upwards towards xiphoid process. After accessing the pelvic organs, placing automatic anterior abdominal wall retractor (retractor sec. Balfour) and isolating bowels from the operative field, the uterus was held by the sawtooth forceps in the region of uterine body. The peritoneum was then cut using electrocauter in the region of round ligament and inserted towards the urinary bladder, thus the avascular layer was reached and the urinary bladder was displaced downwards, with careful hemostasis. Peritoneal incision was then extended bilaterally from the round ligament upwards to the projection of iliac blood vessels, on the right to the insertion to the cecum, and on the left to the sigmoid colon. Retroperitoneal space was reached by forceps and the iliac blood vessels (external iliac artery and vein) were bluntly separated from the ureter, located medially and adjacent to peritoneum. The origin of the uterine artery crossing the ureter on its way to the lateral uterine wall was localized. Below and under the uterine artery there were superficial and deep uterine veins, which opened into internal iliac vein, and together with uterine artery passed through the lateral part of parametrium, dividing the paravesical and pararectal space. Further on, bilateral lymphadenectomy i.e. bilateral removal of the iliac and obturator lymph nodes was performed. The upper borderline of lymphadenectomy was 3-4 cm above the bifurcation of the common iliac artery and vein, whereas the lower borderline was the opening of the deep circumflex iliac vein. What had to be done after the completely performed lymphadenectomy was to isolate and separate the following elements: external iliac artery and vein, obturator nerve, iliopsoas muscle, as shown in **Figure 1**. After lymphadenectomy, the uterine artery was ligated at the level

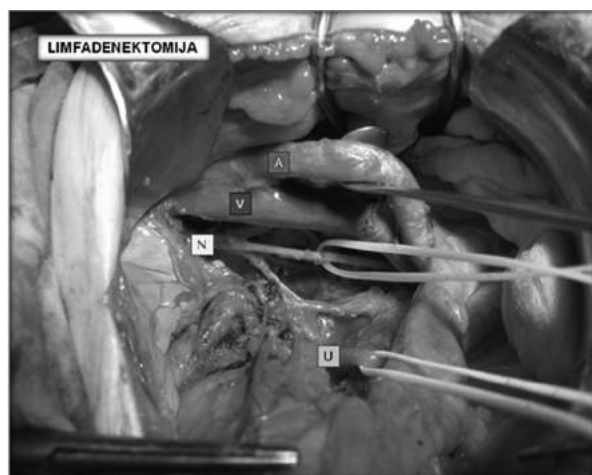
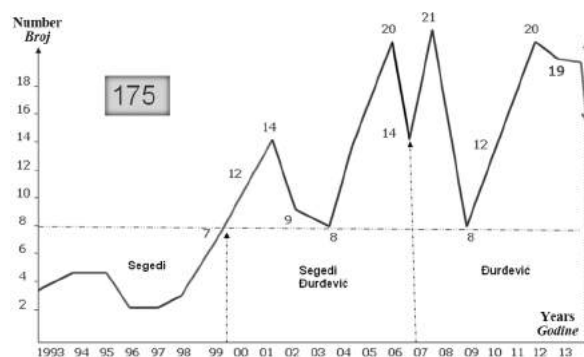


Figure 1. Precisely separated elements after lymphadenectomy: external iliac artery and vein, obturator nerve
Slika 1. Precizno razdvojeni elementi nakon limfadenektomije: arterija i vena ilijaka eksterna, opturatorni nerv

of junction with the internal iliac artery, and the ureters were extricated from the tunnel through the lateral portion of parametrium. This was done by pulling the cut and ligated uterine end of uterine artery aside, the ureter was separated from the junction with the peritoneum, and the tip of closed scissors was inserted into the tunnel above the ureters. The scissors were placed towards the urinary bladder, while the ureters were gently and bluntly pushed downwards. Next, the finger was inserted into the tunnel in order to expand it, and the ureter was pushed downwards. The right angle clamp was inserted into the tunnel and directed to the surface, and two identical moves were enough to extricate the ureter from its tunnel up to the level of ureterovesical junction, with clamping, cutting and ligating parts of parametrium. The next move was to cut the peritoneum in the region of posterior vaginal wall, and extricate the rectum. Depending on whether the adnexa should be preserved or not, bilateral adnexectomy was performed by double ligation and cutting of the suspensory ligament of the ovary. The lateral and posterior portions of the parametrium with sacrouterine ligaments and paravaginal tissue were caught with Wertheim clamps, cut and ligated. The vagina was opened several millimeters above the bladder junction and ureter orifice, cut around the whole circumference, and the specimen (uterine body and cervix with part of the vagina and parametrium) was removed and sent to histopathological analysis. The vagina was then sutured by a single or continuous suture using slowly absorbable synthetic material of "0" thickness, and the drains were placed [11].

Results

During the period from 1993 to 2013, 175 women with invasive cervical cancer underwent Wertheim-Meigs surgery at the Department of Gynecology and Obstetrics, Clinical Center of Vojvodina in Novi Sad. **Graph 1** shows the trend analysis of radical hysterectomy. The patients' age ranged from



Graph 1. Trend analysis of radical hysterectomy at the Department of Gynecology and Obstetrics in Novi Sad in the period 1993-2013

Grafikon 1. Trend primene radikalne histerektomije na Klinici za ginekologiju i akušerstvo u Novom Sadu, period 1993–2013. godine

Table 1. Stage of the disease (FIGO), degree of cell differentiation (Gr), lymphovascular invasion (LVI) and histopathological classification**Tabela 1.** Stadijum bolesti (FIGO), stepen ćelijske diferencijacije (Gr), limfovaskularna invazija (LVI) i histopatološka klasifikacija

Characteristics Karakteristike	Period: 1991-2013./Vremenski period: 1991-2013. god.	
	Number/Broj	%
FIGO stage of the disease FIGO/Stadijum bolesti		
I B 1	113	64.6
I B 2	26	14.8
II A	16	9.1
II B	20	11.4
Degree of cell differentiation/Stepen diferencijacije ćelija		
Gr 1	96	54.8
Gr 2	59	33.7
Gr 3	20	11.4
Lymphovascular invasion/Limfovaskularna invazija		
Positive/Pozitivna	110	62.8
Negative/Negativna	65	37.2
Histopathology/Histopatologija		
Planocellular carcinoma/Planocelularni karcinom	134	76.6
Adenocarcinoma/Adenokarcinom	29	16.6
Other types/Ostali tipovi	12	6.9
Total/Ukupno	175	100%

24 to 79 years (x : 46 years), and the length of operation was from 120 to 300 minutes (x : 210 min.). The basic characteristics of the patients (FIGO stage of the disease, degree of cell differentiation and histopathological type of tumor) are shown in **Table 1**. Lymphovascular invasion was present in 110 (62.8%) operated patients, and absent in 65 (37.2%). Blood loss during the operation was 50-800 ml (300 ml on average), and the number of lymph nodes removed per operation was 14-75 (x : 32). Positive lymph nodes with the presence of metastases were

confirmed in 35 (20%) operated patients, which led to administration of adjuvant radiotherapy. In 12 (6.8%) patients in the FIGO stage I B 1, complete paraaortic lymphadenectomy was performed during the operation, and positive lymph nodes were detected in 5 patients. Three (1.7%) patients with cervical cancer in the FIGO stage I B 1 (2) and II B (1) were pregnant. Radical hysterectomy with "fetus in utero" was performed in 14th and 22nd gestational week in 2 (1.1%) patients, and 1 (0.6%) patient underwent Cesarean section in 35th gestational week, followed

Table 2. Intraoperative and postoperative complications of Wertheim-Meigs radical hysterectomy**Tabela 2.** Intraoperativne i postoperativne komplikacije radikalne histerektomije po metodi Verthajm-Megz

Complications/Komplikacije	Period/Vremenski period 1991–2013.	
	Number/Broj	%
Intraoperative/Intraoperativne		
Injury of ureter/Povreda uretera	1	0.5
Injury of urinary bladder/Povreda mokraćne bešike	2	1.1
Injury of intestines/Povreda creva	1	0.5
Injury of blood vessels/Povreda krvnih sudova	6	3.4
Injury of n.obturatorius/Povreda n.obturatoriusa	2	1.1
Total/Ukupno	12	6.8%
Postoperative/Postoperativne		
Infection of abdominal wound/Infekcija trbušne rane	5	2.8
Dehiscence of abdominal wound/Dehiscencija trbušne rane	4	2.2
Necrosis of vaginal fornix/Nekroza forniksa vagine	4	2.2
Uroinfection sepsis/Uroinfekcija/sepsa	6	3.4
Pneumonia/Pneumonija	1	0.5
Pulmonary thromboembolism/Tromboembolija pluća	1	0.5
Vesicovaginal fistula/Vezikovaginalna fistula	2	1.1
Lymphocysts/Limfociste	7	4
Ileus/Ileus	1	0.5
Total/Ukupno	31	17.7%

Table 3. Localization of recurrence and lethal outcome
Tabela 3. Lokalizacija recidiva i letalni ishod

Recurrence and lethal outcome/ <i>Pojava recidiva i letalni ishod</i>	Period/ <i>Vremenski period</i> 1991–2013.	
Recurrence/ <i>Recidivi</i>	Number/ <i>Broj</i>	%
Lymph nodes iliaci communis/ <i>Limfni čvorovi iliaci comunis</i>	1	0.5
Lymph nodes glutealis sup./ <i>Limfni čvorovi glutealis sup.</i>	1	0.5
Paraortic lymph nodes/ <i>Paraaortalni limfni čvorovi</i>	6	3.4
Parametria/ <i>Parametriji</i>	5	2.8
Obturator fossa/ <i>Obturatorna jama</i>	2	1.1
Liver metastases/ <i>Metastaze u jetri</i>	3	1.7
Lung metastases/ <i>Plućne metastaze</i>	2	1.1
Diffuse metastases/ <i>Difuzne metastaze</i>	2	1.1
Total/ <i>Ukupno</i>	22	12.5%
Lethal outcome/ <i>Letalni ishod</i>	24	13.7%

by radical hysterectomy in the same act. The distribution of intra and postoperative complications is shown in **Table 2**, and the incidence of recurrence and lethal outcome are given in **Table 3**. One (0.6%) patient in the FIGO stage I B 2 was administered a single dose of internal radiation therapy (brachytherapy) preoperatively, while 6 (3.4%) patients in stages I B 2–II B, were administered 3 series of neoadjuvant chemotherapy preoperatively. The overall 5-year survival in the period from 1993 to 2008 (103 patients) was recorded in 90 (87%) patients.

Discussion

Ernst Wertheim performed the first radical hysterectomy in Vienna in 1898. Having isolated the whole length of ureters, he removed broad portions of parametria and enlarged lymph nodes [12]. In the 1930s, Joe V. Meigs, an American surgeon from Boston, applied the original concept of Wertheim's operation, adding the complete and selective removal of pelvic lymph nodes [9]. Since then, different surgical schools (German, American, English and Japanese) have developed this surgical technique, numerous and different modifications of basic operation have been made, and there have been several attempts to make an anatomical classification of the surgical technique. Although there are different classifications, the Piver-Rurledge one from 1974 is the most widely used [13]. A famous Japanese surgeon, Shingo Fuji said "there is still no consensus about radical hysterectomy-it has not been clearly defined what this term refers to" [14]. However, references suggest that radical hysterectomy has to be individually adjusted, and it always has to include adequate resection of parametria i.e. surrounding connective tissue and lymph nodes removal. Contemporary surgical trends imply sentinel lymph nodes technique, application of laparoscopic and robotic surgery in order to minimize surgical trauma and morbidity, as well as to improve patients' recovery, and it is most often used in small tumor, up to 2 cm in the largest diameter (FIGO stage I B 1) [15, 16]. Large tumors over 4 cm confined to the

cervix (FIGO stage I B 2), as well as infiltration and propagation to surrounding structures, which classifies the disease into a higher stage (FIGO II A-II B), still pose a surgical problem [17].

This study shows the results of Wertheim-Meigs radical hysterectomy (or Piver class II/III) performed at the Department of Gynecology in Novi Sad by 2 surgeons, Segedi and Đurđević, who operated 175 patients during the last 20 years. The average patients' age was 46 years, the average duration of operation was 3.5 hours, while the average blood loss was 300 ml. The majority of operated patients (64.6%) had initial FIGO stage I B 1 of the disease, and planocellular type of cancer (76.6%) and well differentiated Gr 1 tumors (54.8%) were the most common. On average, 32 lymph nodes were removed per operation. Intraoperative complications developed in 6.8% of the patients. All injuries were immediately recognized and successfully treated without any sequelae. The surgical suture Vicryl 3/0 and 2/0 was used for urinary bladder and small intestine, while Prolen 5/0 with round needle was used for blood vessels and nerves. In the case of ureter injury, a urologist was called to perform reimplantation of ureter into the urinary bladder without a sequela. The most common postoperative complications (total of 17.7%) were infections of abdominal wound, vaginal fornix, uroinfections and pneumonia. Until 2007, peritonization of operative field was performed after operation, and vacuum drains were placed bilaterally into obturator fossa. They were removed after the drainage was below 25 ml/24 h. In this period, the incidence of lymphocysts increased. Peritonization of operative field has not been performed since 2007, and a single drain of diameter 26–28 mm was placed into Douglas recessus. In the period of 3 months following the surgery, 3 patients underwent redo surgery and drainage of chronic lymphocysts. One cyst was accompanied with infection and high temperature, and 4 were treated by an interventional radiologist, who placed a drainage catheter. In postoperative period, 2 (1.1%) patients developed a vesicovaginal fistula on the 7th postoperative day after the urinary

Foley catheter had been removed. Spontaneous closure of the fistula occurred in 1 patient six weeks after the catheter had been placed, while another patient underwent surgical treatment after 3 months. Recurrence was reported in 22 or 12.5% of patients, most commonly in the region of paraaortic lymph nodes (3.4%) and parametrium (2.8%), while distant metastases in lungs and liver were detected in 3.9% of cases. In this study, 62 (35.4%) patients were in the FIGO stages I B 2 - II B, where the risk of lymphogenic dissemination is high, and despite the administration of adjuvant therapy (chemo and radiotherapy), recurrence can be expected. In this group of patients, 5 (2.8%) were in the FIGO stage I B 1, 4 (2.3%) were in the stage I B2, 3 (1.7%) were in the stage II A and the remaining 10 (5.7%) were in the stage II B. With complete documentation and imaging reports (CT, MR), all patients were presented to the consilium of gynecologic oncologists who were to make decision about adjuvant therapy. Of 24 (13.7%) operated patients with lethal outcome, 2 patients had had recurrent disease and 2 patients passed away due to urosepsis in the postoperative period.

Metastases in lymph nodes are the most important prognostic factor in patients with cervical cancer [18]. Lymph node metastases in the pelvic and/or paraaortic region have negative impact on the survival rate of patients with invasive cervical cancer [19]. Numerous retrospective studies state that the 5-year survival rate in the patients in the FIGO stages I B-II B of cervical cancer, without confirmed lymph node metastases is 80-100% compared to 47-78% in patients with positive pelvic lymph nodes [20, 21]. In our study sample, positive lymph nodes with metastases were detected in 35 (20%) operated patients, which led to administration of adjuvant radiotherapy. Recurrence in pelvic lymph nodes occurred in 2 (1%) cases, in the common iliac and superior gluteal groups, which had not been removed during the operation. The analysis of some studies has shown that the average 5-year survival rate of patients with positive paraaortic lymph nodes, who received radiotherapy with extended field is 42% [23, 24] that being shorter by 15% compared to the patients with positive pelvic metastases, and less by 47% compared to the patients with negative pelvic lymph nodes. In our study, there were 6 (3.4%) cases of recurrence in paraaortic lymph nodes confirmed by MR examination, which led to lethal outcome in all patients. Paraaortic lymphadenectomy, which is not a standard procedure within radical hysterectomy, was performed in 12 (6.8%) patients in the FIGO stage I B 1, and positive lymph nodes were found in 5 patients [22, 25].

Compared to the results of radical hysterectomy in 230 operated patients at the Department of Gynecology in Novi Sad, performed from 1969 to 1975, published by Petar Drača, a significant decrease in early complications and complications of urinary system is observed [24]. According to Drača's results, early postoperative infections of urinary system (cy-

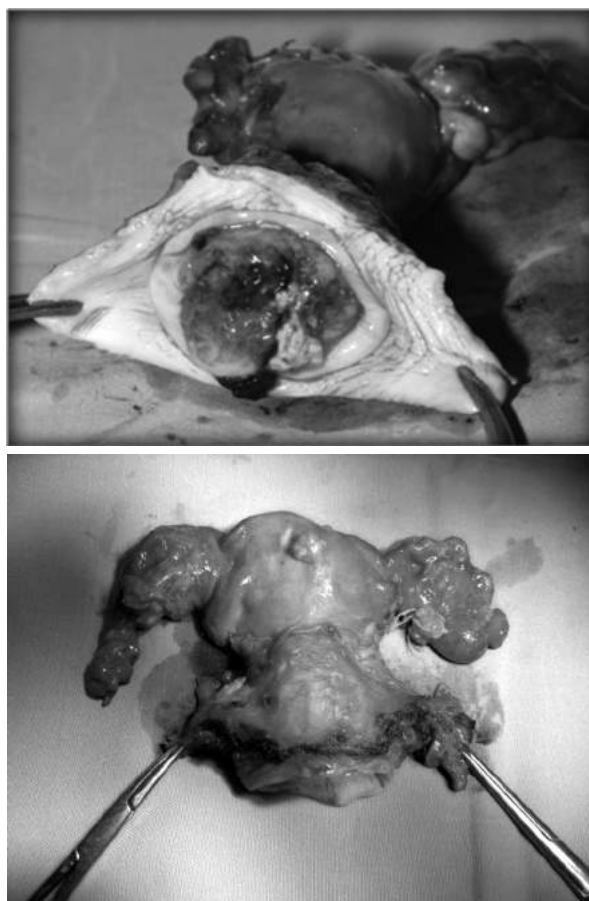


Figure 2. Uterus with ovaries and Fallopian tubes, part of parametria and vaginal cuff after Wertheim-Meigs radical hysterectomy

Slika 2. Materica sa jajnicima i jajovodima, delovima parametrija i manžetnom vagine posle radikalne histerektomije po metodi Verthajm-Megz

stitis, pyelonephritis) developed in 43.9 %, which is significantly higher compared to our results (3.4% of uroinfections). Drača reported 7 (3%) cases of ureterovaginal, 1 (0.4%) case of vesicovaginal and 2 (0.8%) cases of rectovaginal fistulas. In our study, there were also 2 (1.1%) vesicovaginal fistulas. The 5-year survival rate in 103 patients operated before 2008 was 87% in our study sample, regardless of the stage of the disease, whereas it was 85.1% in the FIGO stage I and 62.4% in stage II in the Drača's study sample. This difference in results can be explained by improved surgical technique and sharp preparation of blood vessels and ureter in our study, as well as by the absence of preoperative irradiation therapy [25, 26].

Conclusion

Wertheim-Meigs radical hysterectomy or Piver class II/III is a basic surgical technique for the treatment of initial stages of invasive cervical cancer.

Resection of the surrounding connective tissue-parametrium is obligatory besides the removal of uterus, upper third of vagina, lymph nodes of iliac and obturator region. Depending on the extent of parametrial dissection, Piver-Rutledge classification places radical hysterectomy in II or III class of radicality, with about 90% of all operations performed in Europe being classified between classes II and III. Contemporary references strongly suggest that the extent of surgical dissection should be individually adjusted to each case, depending on the size and volume of the tumor,

presence of lymphovascular invasion risk of local and lymphogenic dissemination and expected adjuvant therapy (radio and/or chemotherapy). In our study, we showed results of treatment after radical hysterectomy in 175 patients with cervical cancer in the International Federation of Gynecology and Obstetrics stage I B1-II B. Intraoperative and postoperative complications developed in 6.8% and 17.7% of operated patients, respectively, and recurrence occurred in 12.5% of cases, while the overall 5-year survival rate in the period until 2008 was 87%.

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Rad je primljen 17. IV 2014.

Recenziran 31. X 2014.

Prihvaćen za štampu 9. II 2015.

BIBLID.0025-8105:(2015):LXVIII:7-8:227-233.