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**Surgical treatment of verrucous carcinoma of the vulva –
15-year experience and literature review**

Хируршко лечење верукозног карцинома вулве –
15 година искуства и преглед литературе

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Surgical treatment of verrucous carcinoma of the vulva – 15-year experience and literature review

Хируршко лечење верукозног карцинома вулве – 15 година искуства и преглед литературе

SUMMARY

This paper seeks to present surgical procedures, results and complications of treatment of verrucous carcinoma (VC) of the vulva treated in at Gynecological and Obstetric Clinics within the Faculty of Medicine, University of Novi Sad (Serbia), as well as literature review of surgical treatment of VC. During the period of 15 years (2005 to 2019), we performed 76 surgeries of vulvar cancer, 9 (11.8%) due to VC of the vulva. In surgical treatment of VC vulva, we performed complete surgical excision of the tumor (3), complete surgical excision of the tumor with defect coverage using VY fasciocutaneous skin flap (2), simplex vulvectomy (2), radical hemivulvectomy (1) and radical vulvectomy (1). We came across 2 main complications (22.2%): suture bleeding within 12 hours after excision in 1 patient (11.1%) and lower extremity lymphoedema after inguinofemoral lymphadenectomy with ligation of the great saphenous vein in 1 patient (11.1%). In total number of 9 treated patients survival rate was 88.8% (8 patients) with death rate of 11.1% (1 patient) within 12 months after surgery. In 3 patients (33.3%) after surgery, the disease returned: 1 – residual tumor after surgery, 1 – relapse on the other side 1 year after surgery, 1 – newly developed invasive squamous cell carcinoma 10 years after primary surgery.

Keywords: verrucous carcinoma; vulva; vulvar cancer; vulvectomy

САЖЕТАК

У овом раду имамо намеру да представимо хируршке захвате, резултате и компликације хируршког лечења верукозног карцинома (ВК) вулве лечених на Гинеколошким и акушерским клиникама Медицинског факултета Универзитета у Новом Саду (Србија), као и преглед литературе о хируршким интервенцијама у лечењу ВК вулве. Током периода од 15 година (од 2005. до 2019) обавили смо 76 операција карцинома вулве, 9 (11,8%) због ВК вулве. У хируршком третману ВК вулве спроводили смо потпуну хируршку ексцизију тумора (3), потпуну хируршку ексцизију тумора са корекцијом дефекта помоћу V-Y фасциокутаног режња (2), симплекс вулвектомију (2), радикалну хемивулвектомију (1) или радикалну вулвектомију (1). Сусрели смо се са две главне компликације (22,2%): крварење из шавова у року од 12 сати након ексцизије код 1 болесника (11,1%) и лимфедем доњег екстремитета након ингвинофеморалне лимфаденектомије са лигацијом велике вене сафене код 1 болесника (11,1%). У укупном броју од 9 лечених болесника стопа преживљавања била је 88,8% (8 болесника) са стопом смрти од 11,1% (1 болесник) у року од 12 месеци након операције. Код 3 болесника (33,3%) након операције болест се вратила: 1 – резидуални тумор након операције, 1 – рецидив с друге стране годину дана након операције, 1 – новоразвијени инвазивни планоцелуларни карцином 10 година након примарне операције.

Кључне речи: верукозни карцином; вулва; карцином вулве; вулвектомија

INTRODUCTION

Verrucous carcinoma (VC) was first described as a separate histomorphological entity by Ackerman in 1948 [1]. The most common localization of VC is in the nasopharynx and oropharynx but it also occurs in the organs of the anogenital region: anus, rectum, bladder, scrotum, vulva, vagina and cervix [2]. Verrucous carcinoma is a locally destructive malignant neoplasm with low metastatic potential and has a long growth period[3]. The pathogenesis of VC is directly related to the mutation of the HPV type 6 virus that causes benign condylomas

[4,5]. Prognosis of VC of vulva depends on size of the tumor and presense of local invasion of the surrounding organs of the anogenital region [6,7]. Before any procedure, beside external genital organs it is necessary to evaluate organs of the lower genital system (vagina, cervix, urethra and anus). Complete surgical excision of tumors with histopathologically confirmed negative edges (minimum 5-8 mm.) is a standard therapeutic procedure used in the treatment of VC vulva as it provides good local control of the disease [2,4]. The most common complications of surgical treatment are bleeding, infection and skin necrosis, as well as dehiscence of the wound, which can prolong hospitalization and occur more frequently in tumor masses that engulf large areas of the skin or infiltrate surrounding organs [8 -10]. The aim of this work is to present the surgical procedures, results and complications of surgical treatment of VC vulva in the 15-year period (2005-2019.) at the Clinic for Gynecology and Obstetrics and Institute of Oncology of Vojvodina within the Faculty of Medicine, University of Novi Sad (Serbia) as well as a literature review related to the surgical treatment of verrucous vulvar carcinoma.

METHODS

We summarized different techniques, results, complications and patient outcomes of surgical treatment of VC vulva in the 15-year period (2005–2019) at the Clinic for Gynecology and Obstetrics and Oncology Institute of Vojvodina.

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Written consent to publish all shown material was obtained from the patients.

RESULTS

In the period of 15-year, approximately 15,000 different gynecological surgeries were performed at the Clinic of Gynecology and Obstetrics and Institute of Oncology of Vojvodina

within the Faculty of Medicine in Novi Sad, of which 76 (0.5%) were due to vulvar cancer. In the group of surgically treated women with vulvar cancer, 9 (11.8%) cases were due to verrucous carcinoma (VC). All patients were operated after the usual preoperative preparation, which included bowel preparation 24 hours before surgery, administration of 0.3-0.6 i.j. Fraxiparin 2 hours before surgery and lower extremity bandage. Before surgery, 1-2 gr. cephalosporin was administered and a Foley urinary catheter was placed. Preoperatively, for all patients, two transfusion units of decanted erythrocytes were reserved. After surgery, the tumor tissue was sent for histopathological analysis. The patients range was from 27-79 years old. Table 1. shows the localization of the VC in the vulva region, the type of used surgical procedure, the occurrence of recurrence, complications and the outcome of treatment. Figure 1. shows the different localizations of verrucous carcinoma in the vulva region. Application of a local fasciocutaneous skin flap to cover the defect after extensive surgical excision of labia majora VC is shown on the Figure 2. Figure 3 (A) shows a residual tumor 6 weeks after complete surgical excision of vulvar cancer. Figure 3 (B) shows relapse of verrucous cancer on the other side of the vulva 12 months after radical surgical excision using V-Y fasciocutaneous skin flap.

DISCUSSION

Depending on the localization, the magnitude of the change, and the pathohistological finding of tumor tissue biopsies a surgical procedure is individually planned for each patient. Basic surgical principle for treatment of VC of vulva involves complete removal of tumor with histopathologically confirmed negative edges (minimum 5-8 mm.) [3]. This is not always easy to achieve especially if the surrounding organs (rectum, urethra, vagina) are involved. In these cases different skin-muscle flaps are applied to cover the skin defects on the vulva by the principles of plastic and reconstructive surgery [8]. Bratila et al. describe the coverage of a surgical defect in the perineum by applying a skin graft after removal of the VC [9]. In a paper published by Campaner et al. is shown radical surgical excision of VC vulva with V-Y fasciocutaneous flap without postoperative complications [2]. Minor dehiscence and necrosis of the vulva after excision of the VC vulva have been reported in the literature [8]. In our practice we applied the fasciocutaneous V-Y skin flap in 2 (22.2%) patients and no complications were observed in the postoperative period. In the other surgical techniques 1

(11.1%) patient underwent radical hemivulvectomy, in 2 (22.2%) patients was performed simplex vulvectomy, and in 3 (33.3%) patients complete surgical excision of the VC into the healthy area. In 1 (11.1%) patient radical vulvectomy was performed with bilateral inguinal-femoral lymphadenectomy, because of the suspicion of invasive squamocellular carcinoma of the vulva in histopathological examination of the biopsy specimen prior to surgery, which again was not confirmed at the definitive pathohistological examination. Dissection of lymph nodes in VC is still controversial. In literature review in 50 surgically treated patients with VC 17 (34%) lymphadenectomies were performed and in all cases lymph nodes without metastases [10]. Similar results are presented in other studies. Lui et al. in their paper show the results of treatment of 24 patients with VC vulva who underwent unilateral or bilateral lymphadenectomy also with negative lymph nodes [4]. In 1 (11.1%) patient radical vulvectomy was performed with bilateral inguinofemoral lymphadenectomy, because it was suspected to be an invasive squamocellular carcinoma of the vulva on the histopathological examination of the preoperative biopsy, which was not confirmed at the definitive pathohistological examination. The same patient developed a new invasive squamocellular carcinoma of the vulva 10 years later, affecting the perineum and anus, and treatment included radiotherapy treatment that led to complete tumor regression. In 1 (11.1%) patient there was a residual tumor that was re-treated with extensive electroexcision without recurrence in the period of 6 weeks after treatment. In 1 (11.1%) patient 12 months after radical surgical excision and covering the defect with the V-Y fasciocutaneous flap, a relapse developed on the other side of the vulva resulting in repeated surgical excision. Of complications, we noted bleeding 12 hours after VC excision between stitches in 1 (11.1%) patient and lower extremity lymphedema after inguinal lymphadenectomy with ligation of the saphenous vein also in 1 (11.1%) patient.

CONCLUSION

The following surgical procedures were applied in the surgical treatment of VC vulva: complete surgical excision of the tumor (3), complete surgical excision of the tumor with defect using VY fasciocutaneous flap (2), simplex vulvectomy (2), radical hemivulvectomy (1) and radical vulvectomy with inguinofemoral lymphadenectomy (1). From the record of 12 months after surgery of all 9 (100%) operated patients, survival rate was 88,8% (8 patients),

while death rate was 11,1% (1 patient). In 3 (33.3%) patients after surgery, the disease returned (1 - residual residual tumor after surgery, 1 - relapse on the other side 1 year after surgery, 1 - newly developed invasive squamous cell carcinoma 10 years after primary surgery). In 2 patients (22,2 %) with residual VC and relapse, we applied re-surgical treatment, while in the patient with newly acquired invasive cancer, radiotherapy treatment was applied.

Conflict of interest: None declared.

Paper accepted

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Table 1. Verrucous carcinoma: tumor localization in the vulva region, recurrence, surgical procedure, complications and treatment outcome

| Case N° | Localization on vulva | Surgical procedure | Relaps | Complication | Treatment outcome |
|---------|------------------------------------|--|--|-------------------------------------|--|
| 1 | Labia majora | Complete surgical excision to healthy tissue | No recurrence | No complications | 7 years alive |
| 2 | Perineum | Complete surgical excision + V-Y fasciocutaneous skin flap | No recurrence | No complications | 3 years alive |
| 3 | Whole area of vulva | Complete surgical excision to healthy tissue | Residual tumor 6 weeks after surgery | Bleeding 12 hours after the surgery | 12 years alive |
| 4 | Labia minora | Radical vulvectomy with bilateral inguinofemoral lymphadenectomy | Development of new invasive squamocell cancer 10 years later | Lower limb lymphedema | 15 years alive |
| 5 | Whole area of vulva | Complete surgical excision to healthy tissue | No recurrence | No complications | 8 years alive |
| 6 | The right half of the vulva | Complete surgical excision+ V-Y fasciocutaneous skin flap | Recurrence on the other side 12 months later | No complications | 1 year alive |
| 7 | The right half of the vulva | Radical hemivulvectomy | No recurrence | No complications | 1 year alive Loss to follow up after 1 year |
| 8 | The left side of the labia majora | Simplex vulvectomy | No recurrence | No complications | 4 years alive |
| 9 | The right side of the labia majora | Simplex vulvectomy | No recurrence | Local vulva tissue infiltration | Deceased from colonic cancer after 1 year |

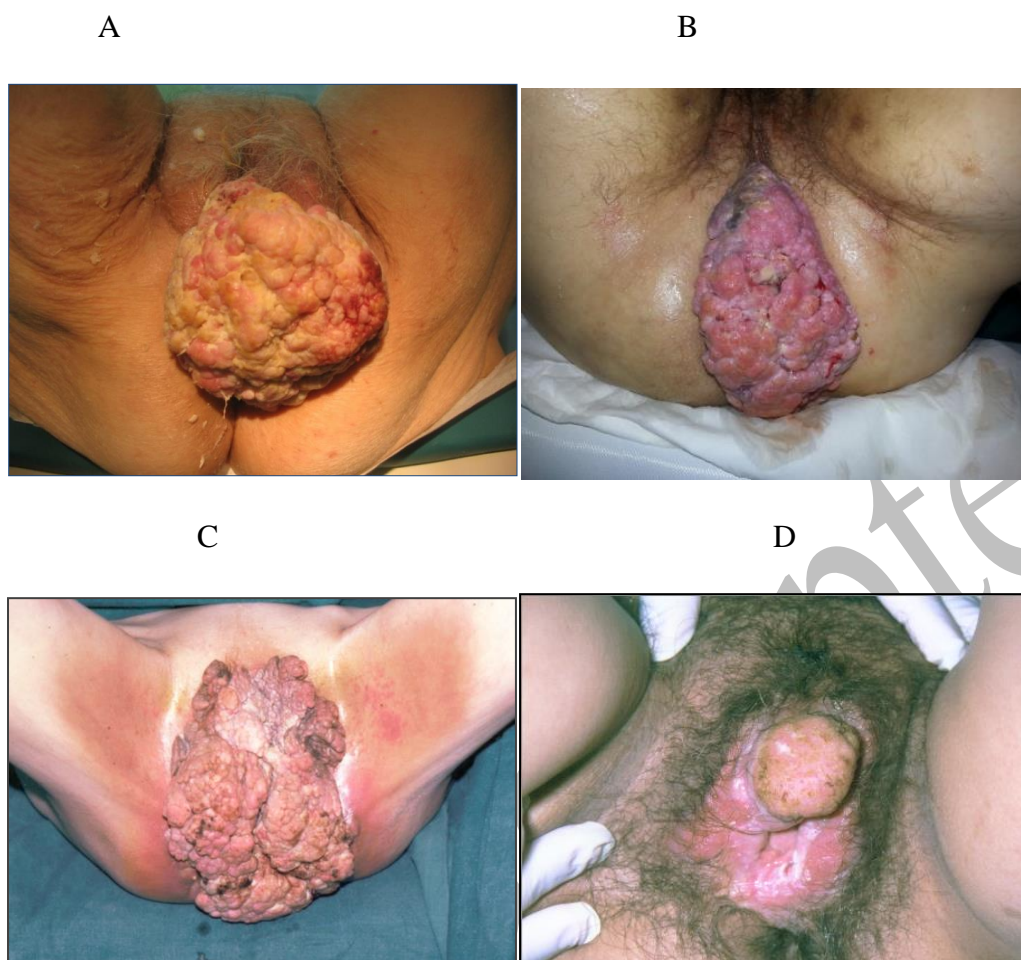


Figure 1. Different localization of verrucous carcinoma in the vulva: A – labia majora on the left; B – perineum; C – entire region of the vulva; D – labia minora on the right

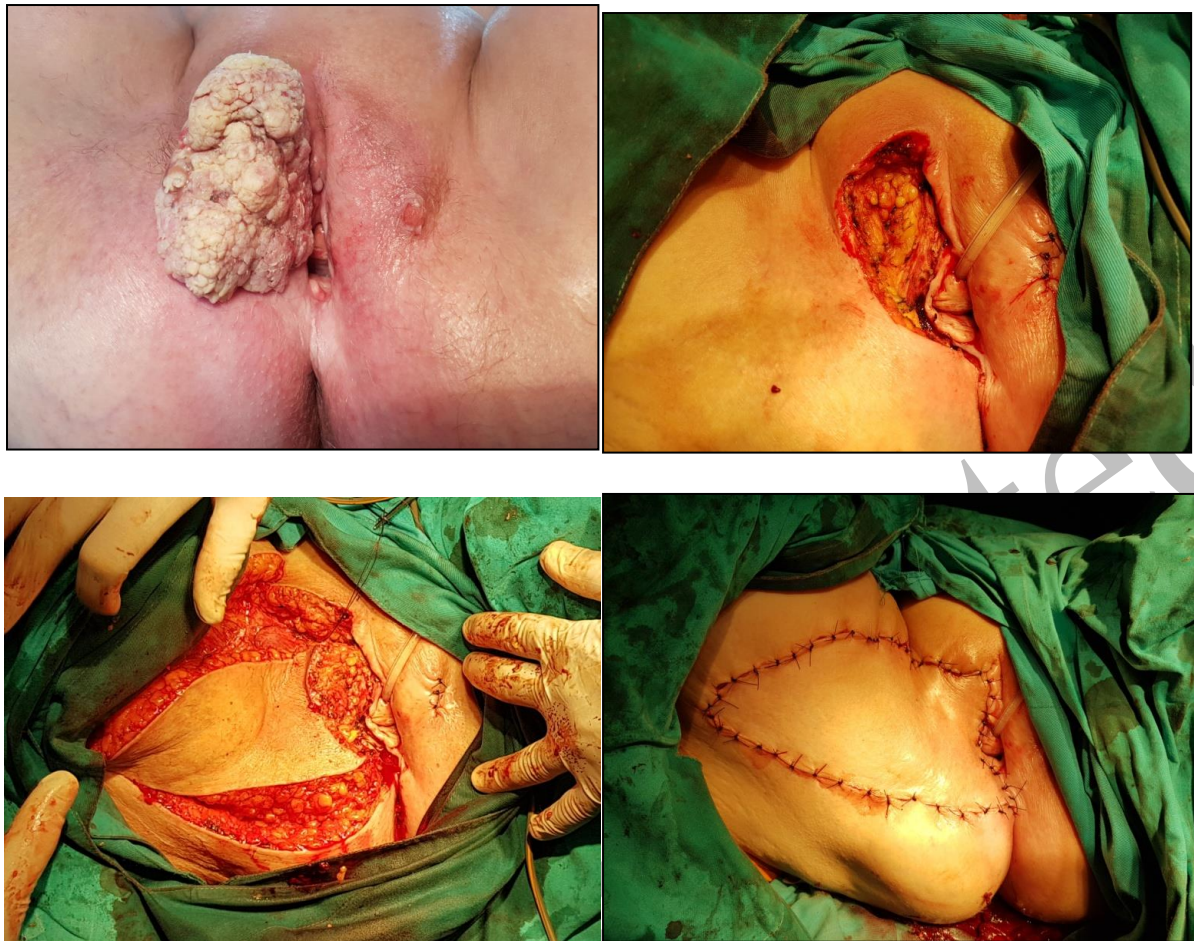


Figure 2. Radical surgical excision of right ventricular verrucous carcinoma with defect coverage using V-Y fasciocutaneous skin flap

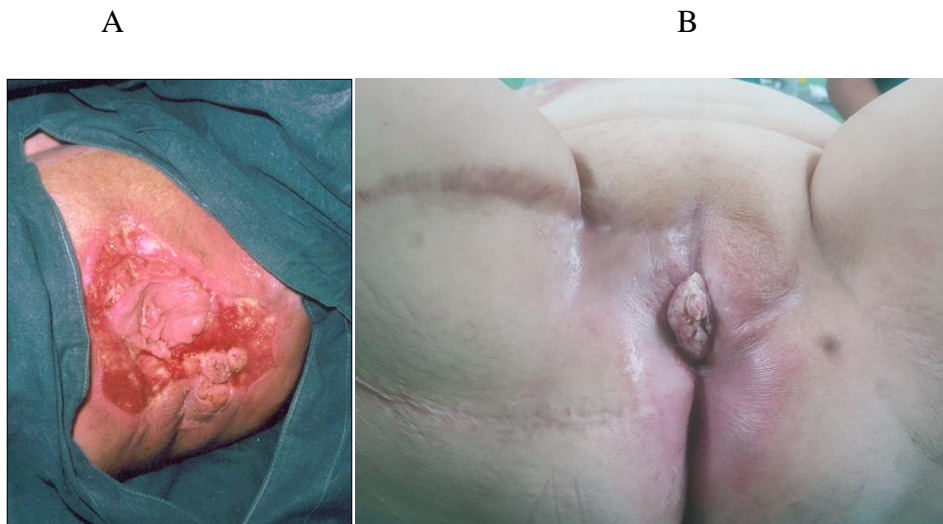


Figure 3. A – Residual tumor six weeks after complete surgical excision of vulvar carcinoma; B – recurrence of verrucous carcinoma on the other side of the vulva 12 months after radical excision and coverage of the defect with V-Y skin flap