WOUND HEALING COMPLICATIONS AFTER RADICAL VULVECTOMY-TREATMENT WITH THE USE OF VACUUM-ASSISTED CLOSURE (VAC)

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ABSTRACT
Cancer of the vulva accounts 3-5% of gynaecologic malignancies. In 90% it is a squamous cell carcinoma. The most common location is labia majora. Surgical treatment of vulvar cancer is often followed by complications in wound healing process. The aim of this work is to present advantages of negative-pressure drainage used in postoperative therapy of the wound.
A patient diagnosed with a cancer of the vulva underwent radical vulvectomy with bilateral lymphadenectomy. Postoperatively, complex wound failure was observed and the patient was treated with vacuum-assisted closure therapy (VAC). After 10 days, the use of VAC resulted in amelioration of the wound state.
Vacuum-assisted closure aims to reduce total time of wound healing, hospitalization and nursing work. Additionally, it enables to ameliorate patient’s general state. It is a safe and successful method used worldwide and it should be considered to be introduced in gynaecologic patients after.
BACKGROUND

Vulvar cancer occurs relatively rarely, as it represents 3-5% of all gynecological cancers. Although it is diagnosed mostly among older women (mean age is approximately 70 years) [1,2,3], in the past decade this malignancy has been observed also in younger patients. In 90% it is a squamous cell carcinoma, rarely a melanoma, basal cell carcinoma or Bartholin glands carcinoma [2, 4]. In Poland, in 2009 there were 436 new cases of diagnosed vulvar cancer and it was 0.63% of all malignancies among women [5]. 232 patients died because of this tumor in the same year and this puts vulvar cancer on the 27th place as the reason of mortality because of malignancies [6]. Clinical reviews and biological studies enabled to determine some risk factors for vulvar cancer. Human papilloma virus infection, conditions as lichen sclerosus and squamous dysplasia, low socioeconomic level, cigarette use, multiple sexual partners, were evaluated as associated with vulvar cancer [4, 7].

Cancer of the vulva is mainly diagnosed in advanced stages (III or IV clinical stage), and in 50-60% of cases the delay of treatment is a result of late admission to the gynaecological clinic [8]. It is often preceded by pain, itching, swelling or a visible macroscopic change that lasts for few months. Itching is the most frequent symptom, it is presented by 70% of the patients [9]. Pain often indicates a higher stage of clinical advance, because it almost never occurs in early stages. Pain during urination or pain during sexual intercourse occurs more rarely. The signs may also include sores, lumps, and ulcers in the vulva, skin changes in the vulva, or color changes of the skin. The diagnostic process should include gynaecologic evaluation, which includes checking the vulva, the perineal area, the clitoris, the urethra, the Bartholín’s glands. Colposcopy and proctoscopy should be performed. A CT scan should be done in order to check the possible infiltration of surrounding tissues.

Treatment is based on surgery and it may rely on wide local excision, partial vulvectomy or radical vulvectomy with bilateral lymphadenectomy. The range of the operation depends on the clinical stage of the malignancy. In non-operative tumors, or when they spread to the lymph nodes and/or pelvis, a radiation therapy is performed and it may be introduced before or after the surgery. Chemotherapy is used in cases with widespread metastases or combined with the radiotherapy [10].

Radical vulvectomy may be complicated by complex wound failure (CWF). It is defined as incisional separation in which the skin edges are no longer apposed; incomplete dehiscence or superficial separation, which involves the disruption of the skin, subcutaneous tissue, and sometimes fascia; complete dehiscence, which involves the disruption of the peritoneum; or evisceration or burst abdomen [11]. A safe and successful method of treating the CWF and helping the wound in cicatrization is the vacuum-assisted closure (VAC). The mechanism of action consists of producing a negative pressure in the wound. A polyurethane sponge is put on the wound, it is covered by the foil and the entire dressing is connected with the device, where the subatmospheric pressure is set at approximately 100-200 mmHg. This method enables to increase proliferation and neoangiogenesis, causes mechanical stress, stimulates granulation of the tissue, decreases bacterial colonization and helps in evacuation of the wound fluid [11]. Through all of these mechanisms both mental and physical state of the patient ameliorates.

In this work, a case of a patient after radical vulvectomy postoperatively treated with the use of vacuum assisted closure is presented.

CASE REVIEW

On 23rd August 2016, a 75-year old patient was admitted to the Gynaecology Department. The only presenting symptom was pain of the vulva. Her past medical history involved hypertension and hysterectomy at the age of 25 years.

On physical examination, an exophytic tumor size of 6 cm on the left labia majora and 3 smaller changes on the lower part of labia minora, on the upper part of left labia majora and lower part of right labia majora were found. She was diagnosed with vulvar cancer and the treatment of radical vulvectomy with bilateral inguinal lymphadenectomy was proposed to be performed on 25th of August 2016. The surgery was postponed because of abnormalities found in the coagulation test.

On 25th August 2016, the patient underwent a surgical consultation and palpable inguinal lymph node on the left side was found. A fine needle biopsy under USG control was performed and the material was sent to the pathologic examination. Two days later, a swab from the vaginal and vulvar area was made and the results revealed single Enterococcus faecalis and Staphylococcus spp.

After 2 days a Computed Tomography of the abdominal cavity and lesser pelvis showed enlarged left inguinal lymph nodes with the possibility of metastatic character with no infiltration on the bladder or the rectum.

On 31st August 2016, a radical vulvectomy with bilateral superficial and deep inguinal lymphadenectomy was performed. The operating field was prepared. A technique of triple incision was used to open the area between the sartorius muscle and the adductor muscles of the thigh and the muscle fascia was dissected. After tying the great saphenous vein, the superficial and deep inguinal lymph nodes were removed en bloc with the muscle fascia [Fig. 1.]. The drains were inserted. The subcutaneous tissue and the skin were sutured. Then, after marking the line of incision, the vulva was removed by typical technique and the bleeding vessels were tied up. The vaginal mucous membrane and skin were sutured. A dressing was put on the wound.

The pathologic examination revealed planoepithelial carcinoma, tumor’s margins were not infiltrated by cancer. In two biggest left inguinal lymph nodes metastases were present.

During next few days the patient was in good general state, the laboratory parameters were normal, she didn’t have fever.
3 days after the surgery, the patient complained of pain in the perineal area. Swelling, burning perineum, and the presence of serous liquid were observed. An antibiotic therapy was applied. During next few days an inflammatory process in the wound started. Patient’s mental state deteriorated, she was worried about her wound’s state and her general condition. A swab of the wound’s area revealed single Enterococcus faecalis, numerous Proteus mirabilis ESBL (-) and numerous Proteus vulgaris. The patient was suffering. Additionally, a putrid and purulent secretion from the wound was observed. On 15th September 2016, the patient had the vacuum-assisted closure dressing applied. Under general anesthesia, the wound was opened and cleaned. The VAC dressing was put on [Fig. 2.], [Fig. 3.]. The subatmospheric pressure was set at 150-200 mmHg. On 22nd September the Foley catheter was removed and after few days an unsealing of the VAC system occurred, because the urine concentrated under the dressing. The Foley catheter was re-applied and the VAC system was replaced by the standard dressing with gentamycin. On 6th October the VAC system was put on and it was taken off after one week. The therapy ameliorated wound’s appearance, healing, and asepsis. The wound was gradually diminishing and patient’s condition alleviated. The patient was released from the hospital after 58 days of hospitalization (49 days after the surgery) in good general condition [Fig. 4.].

DISCUSSION

The type of a surgery is really individual and depends on many prognostic factors. A radical vulvectomy is an extremely big challenge for the doctors and it is connected with a wide range of complications mainly including difficulties in wound healing and long hospitalization. In 2013 Lin J. et al. observed in their study a decrease in the number of complications concerning cicatrization to 22.5%. Earlier, those complications occurred in 40-50% of cases. The authors suggested that this decrease may be a result of better postoperative health care [12]. A control of wound’s inflammation and its proper treatment still remains a problem of present gynaecologic oncology. The vacuum-assisted therapy has been proved to be a safe and effective method of wound healing and it has been described in the literature. Narducci et al. presented the results of using the VAC system in 30 patients after radical vulvectomy and they compared them to 24 patients who had been treated with standard dressings. The authors underlined, that the VAC therapy provides suction of unpleasant-smelling secretions and through this mechanism improves the patient’s comfort. In addition, advantages such as reduction in wound’s healing time, reduction in nursing work and smaller costs of hospitalization were observed. There weren’t statistically important differences in the total time of hospitalization and in the survival. However, they reported vestibular stenosis after the VAC therapy in few patients. Although it isn’t a severe problem for older women, in younger patients it may result in deterioration of their comfort. This complication can be treated surgically, but it is better to prevent it by using a vaginal dilator right after finishing the VAC therapy till the beginning of sexual intercourse [5].

Schimp et.al after observation of 27 patients, assessed that the VAC therapy is a safe method that can be used in gynecologic oncology patients [11].

Furthermore, in 2006 Denzinger examined patients who underwent inguinal lymphadenectomy in the case of penile cancer. The patients were divided into two groups: those treated with conventional methods and those who had the VAC system put on. The results showed a reduction in wound’s healing time among patients from the second group. However, patients treated with the negative-pressure therapy, more often complained of pain connected with the change of dressing [13].

The limitation in the use of VAC system in the treatment of wounds located in the perineal and vaginal area, are the challenges connected with hermetic closure and the risk of contamination. Wounds in this field are surrounded by moist tissues and have irregular shapes and these factors limit the possibility of tight suction which is needed for vacuum-assisted closure. In addition, a permanent exposure to urine and faeces may inhibit wound’s healing. One strategy to address the challenge of moist and irregular surfaces is to apply the primary adhesive tape widely, so that it incorporates the vaginal opening with or without including the anal opening. Another strategy is to apply a material like Eakin Cohesive Seals, to create a uniform, dry surface on which adhesive tap can be applied. Aviki et al. reviewed a case of wound treatment with the use of VAC and a waterproof Eakin seal in the area anterior to the anal opening. The initial application of vacuum-assisted closure on the wound didn’t contain the Eakin Seal. Soon after its placement, the patient had passage of loose feces, which contaminated her wound and required immediate washout and vacuum-assisted closure replacement. After this event, authors incorporated the use of the waterproof seal anterior to the anal opening and started the patient on Imodium to prevent passage of loose feces. After use of the described technique, there were no subsequent issues with passage of feces or urine resulting in wound contamination [14].

CITE THIS AS


ABBREVIATIONS

VAC – vacuum-assisted closure
CWF – complex wound failure
CT – computed tomography
ESBL – extended-spectrum beta-lactamases

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Fig. 2. The VAC dressing put on the wound after left inguinal lymphadenectomy.

Fig. 3. The VAC dressing put on the wound after left inguinal lymphadenectomy.

Fig. 4. Wound’s appearance after cicatrization (last day of hospitalization).
FIG. 3. THE VAC DRESSING PUT ON THE WOUND AFTER LEFT INGUINAL LYMPHADENECTOMY.

FIG. 4. WOUND’S APPEARANCE AFTER CICATRIZATION (LAST DAY OF HOSPITALIZATION).