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Groin recurrence in patients with early vulvar cancer following superficial inguinal node dissection

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KEYWORDSEarly vulvar cancer;
Groin recurrence**Abstract Objective:** To investigate the causes of groin recurrence in patients with vulvar cancer who previously had negative nodes following superficial inguinal node dissection (SIND).**Material and methods:** Forty-one patients with squamous cell carcinoma of the vulva (stage I or II) were operated upon. The primary treatment was wide local excision with 2 cm safety margin and superficial inguinal lymphadenectomy. Six patients had ipsilateral and one patient had bilateral groin recurrence. Those patients were subjected to deep inguinal node dissection (one patient required bilateral node dissection).**Results:** The mean age at time of diagnosis was 59 years (range 51–68). The median follow-up period for all patients was 63 months (range 24–71) and that of the recurrent cases was 20 months (range 12–38). The mean depth of invasion of the recurrent cases was 5.5 mm (range 5–5.9 mm) and the mean diameter of the primary tumor in recurrent cases was 3.8 cm (range 3–4.5 cm). All recurrent cases had a high grade of the primary tumor. The median interval to recurrence was 21 months (range 12–57). The groin recurrence rate after negative SIND was 17% (7/41 patients). The mean number of nodes resected per groin was eight (range 1–17). The nodes ranged in size from 0.2 to 4.0 cm.**Conclusion:** Carcinoma of the vulva with the following criteria (size of tumor is greater than 3 cm, depth of invasion greater than 5 mm, and high grade tumors) is at high risk of recurrence.

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Open access under [CC BY-NC-ND license](http://creativecommons.org/licenses/by-nc-nd/4.0/).**Introduction**

Surgical management for women with invasive vulvar carcinoma over the past 30 years has been increasingly more conservative, with surgeons seeking to reduce morbidity while improving survival. Several investigators have described surgical techniques that reduce the radicality of the primary tumor resection and the extent of groin dissection [1–3].

In 1979, DiSaia et al. combined some of these innovations by proposing radical local excision and superficial inguinal lymph node dissection for selected patients [4]. These authors

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described the superficial lymph nodes as the “sentinel nodes” of the vulva on the basis of their anatomical location. Following this report, many gynecologic oncologists limited groin dissection to the superficial inguinal lymph nodes only.

Groin relapse in patients who had negative nodes at superficial inguinal lymphadenectomy is uncommon, but, when it occurs, it carries a very poor prognosis [3]. Several mechanisms might account for groin relapse following negative superficial inguinal lymphadenectomy. (a) Presence of micrometastasis in the superficial inguinal nodes that could be missed by conventional histologic analysis of the resected nodes. (b) Operative failure is another possibility where superficial nodes that contain micrometastasis were not resected. (c) Also in transit tumor emboli in lymphatic channels that are unresected in true node negative patients have been reported as a possible mechanism [5].

The aim of this retrospective study is to investigate the causes of groin recurrence in patients with early vulvar cancer who had negative nodes following superficial inguinal node dissection.

Patients and methods

Forty-one patients with squamous cell carcinoma of the vulva were operated upon and followed up regularly for a median period of 63 months (range 24–71 months). Patients who had clinical and surgical stage I or II disease (clinically N0, and no inguinal lymph node enlargement according to CT scan of the region), where the depth of invasion was greater than 1 mm, the primary treatment was consisting of radical wide excision with 2 cm safety margin and superficial inguinal lymphadenectomy as described by DiSaia et al. [4] with multiple individual modifications [6]. This is the standard practice at the author’s institute in stages I and II vulvar carcinoma. The technique of sentinel lymph node mapping was not performed in these cases.

Superficial inguinal lymphadenectomy was performed. Lymphatic-bearing tissue between the superficial (Camper’s) fascia and the cribriform fascia was removed through a lazy-S incision. Flaps were created in all directions. Dissection began distally with division of the saphenous vein. The fat pad with the saphenous vein was reflected superiorly, with the lateral border of dissection being the lateral margin of the sartorius muscle. The fat pad from the inguinal ligament was retracted inferiorly. Dissection over the femoral triangle was done from lateral to medial. The femoral vessels were not exposed during the dissection. The junction of the saphenous vein with the femoral vein was identified and divided. All patients had negative lymph nodes proved by histopathological examination. Patients did not receive radiotherapy or chemotherapy. Seven patients subsequently developed recurrent disease in the groins. The median time to recurrence was 21 months.

Those seven patients are the focus of this study. They were investigated by CT scan of the abdomen to exclude liver metastasis or abdominal nodes, CT scan of the pelvis and groin areas to exclude the presence of iliac nodes and to detect roughly the state of the femoral vessels, CT scan of the chest to exclude lung metastasis. Colored Doppler ultrasound was also routinely done to all recurrent cases to show the patency of the femoral vessels. The recurrent cases had been subjected to deep inguinal nodal dissection (1 patient required ilioinguinal nodal

dissection due to the presence of associated iliac nodes). Femoral nerve resection was done in 1 patient. Sartorius muscle transposition was done to protect the vessels after complete resection in all cases. Two patients required reconstruction of the skin defect using myocutaneous flaps. Histopathological study of the resected specimens was done. In addition, more slides were reviewed from the paraffin block of the previously resected superficial nodes (5 sections from every case) to exclude possibility of missed micrometastasis. The initial pathologic diagnosis of the SIND and primary tumor was confirmed by review of all original hematoxylin and eosin (H&E)-stained slides regarding the depth of invasion and grade. Two recurrent cases received postoperative radiotherapy to the groin as they had heavy nodal infiltration. One patient received postoperative chemotherapy due to the presence of iliac and groin nodes.

Results

The mean age at time of diagnosis was 59 years (range 51–68). The median follow-up period for all patients was 63 months (range 24–71) and that of the recurrent cases is 20 months (range 12–38). The mean depth of invasion of the recurrent cases was 5.5 mm (range 5–5.9 mm) and the mean diameter of the primary tumor in recurrent cases was 3.8 cm (range 3–4.5 cm). The mean number of nodes resected per groin was eight (range 1–17). The nodes ranged in size from 0.2 to 4.0 cm. All the recurrent cases had a high grade of the primary tumor. The median interval to recurrence was 21 months (range 12–57). The groin recurrence rate after negative SIND was 17% (7/41 patients). None of the patients had an associated recurrence at the primary site of the tumor.

Postoperative specimens showed nodal tissue in 6 patients and fibroadipose tissue with no nodal material in one patient. Four patients had nodal recurrence under the cribriform fascia; one of them had ilioinguinal disease. Two patients had nodal recurrence above and under the cribriform fascia. The additional H&E-stained slides were reviewed at intermediate and high-power magnification. There was no evidence of micrometastases in the newly sectioned slides or in the initially diagnosed nodal slides.

Survival; three patients died of distant disease within 12 months, two had intra-abdominal disease and one had extensive locoregional skin nodules. Three patients have no evidence of disease at last follow up.

Discussion

Surgical approaches to the inguinal lymph nodes in patients with vulvar cancer have changed over time. The majority of patients with early vulvar cancer have negative lymph nodes. Inguinofemoral lymphadenectomy adopted as the standard surgical approach at the start of the 20th century is associated with a high risk of wound break down and lymphoedema. Modern surgical techniques, antibiotics and closed suction drainage have reduced the wound complications however the lymphoedema remains as an essentially untreatable complication which occur in 25–40% of cases [7].

DiSaia et al. [4] initially reported the modified inguinal dissection to include superficial inguinal lymphadenectomy. Subsequent studies have demonstrated that lymphadenectomy to

superficial inguinal nodes reduces lymphoedema incidence by 50% [8,9].

To avoid this complication, this technique has been adopted in our practice in stages I and II vulvar carcinoma. Follow up of patients having early vulvar cancer and negative nodes at superficial node dissection in this study showed a recurrence rate (17%). This finding is relatively high in comparison with other studies [10,11,15]. Kirby et al. [15] reported an inguinal recurrence rate of 4.6% (3/65 patients) after negative superficial inguinal lymphadenectomy in stages I and II vulvar cancer.

Groin relapse in patients who had negative nodes at superficial inguinal lymphadenectomy is uncommon, but when it occurs it carries a very poor prognosis. Most of the patients with groin recurrence die of disease [3]. Gershenwald et al. [12] reported that 80% of patients with groin recurrence in a negative nodal basin in melanoma patients had associated metastatic disease identified with groin relapse which is not the case in vulvar carcinoma [15]. More than half of the cases in this study died of disease progression. This raises the question about the role of adjuvant chemotherapy and radiotherapy to such patients. Greater number of patients is needed to specify the role of adjuvant therapy after groin relapse and to report about the 5 year and overall survival.

Mary et al. [5] retrospectively studied the causes of groin relapse in 9 out of 104 patients following negative nodes after superficial inguinal lymphadenectomy for stages I and II vulvar cancer. Comprehensive histologic studies did not reveal evidence of micrometastasis in the selected nodes. An explanation of the causes of relapse may be a micrometastasis in missed superficial inguinal lymph nodes during lymphadenectomy procedure. This is in contrast to Gershenwald et al. [12] who investigated the causes of regional nodal failure in melanoma patients and found that regional nodal recurrence was the result of occult metastatic disease that was not identified using conventional histologic evaluation methods. In the present study, comprehensive retrospective histologic study of superficial lymphadenectomy specimens of the patients who experienced inguinal recurrence did not show any micrometastasis in the previously resected superficial inguinal lymph nodes, however, with immunohistochemistry examinations, the detection of micrometastasis in a previous pN0 node could be as high as 45% [13]. Our study revealed that groin recurrence occurred in tumors having the following criteria (high grade, diameters larger than 3 cm and depth of invasion more than 5 mm) and it was not associated with local recurrence. Patients having tumors with lower criteria experienced no inguinal recurrence.

Some reports suggested that a wide variety in the published reports describing different approaches with the same name, superficial inguinal lymphadenectomy may explain varieties in groin relapse rate [14]. Our standard technique at SIND in the present study is to remove nodes above the cribriform fascia without exposure of the femoral vein. Two patients had recurrent nodes superficial and deep to the cribriform fascia, which may be a missed node in the superficial group that might have given metastasis to the deep group of lymph nodes. One patient out of seven in this study had a recurrence in the adipose tissue of the groin which may be due to field failure despite negative nodes. Kirby et al. [15] reported an inguinal recurrence rate of 4.6% (3/65 patients) after negative superficial inguinal lymphadenectomy in stages I and II vulvar

cancer. Univariate and multivariate analysis of the small sample size did not discover a risk factor as age, lesion size, and margin status, site of tumor and stage, which was a predictive of recurrence either in the inguinal region or vulva.

To date, there has not been a prospective trial comparing superficial inguinal lymphadenectomy to inguino-femoral lymphadenectomy in patients with early stage vulvar cancer. Gynecologic Oncology Group (GOG) trial 74 reported groin relapses in about 5–7% of patients with negative nodes on superficial inguinal lymph nodes [8] and is now conducting the largest prospective trial evaluating modified radical hemivulvectomy and ipsilateral superficial lymphadenectomy patients compared to historical controls who underwent a radical en-bloc vulvectomy and bilateral inguino-femoral lymphadenectomy.

Conclusion

The causes of groin recurrence after negative SIND are not defined, however it has been noticed that groin recurrence occurred in tumors having the following criteria (size of tumor is greater than 3 cm, depth of invasion greater than 5 mm, and high grade tumors). Further studies on a large number of patients are needed to investigate the causes and specify the role of deep inguinal node dissection in tumors with the above mentioned criteria.

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