

# Rare presentation of breast carcinoma in an old burn scar

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## ABSTRACT

Malignancies from old burn scars (BSs) have been documented in literature but are rarely encountered in our day-to-day practice. Adenocarcinoma is an extremely uncommon while squamous cell carcinoma is the most common malignant entity seen as BS neoplasm. Breast cancer arising from an old BS is rarely reported in literature. Till now, to the best of our knowledge, only four cases have been reported in literature. Here, we are reporting an interesting case of 38-year-old female with a history of burn injury on her chest wall including left breast and axilla 20 years back which was left to heal secondarily, i.e., without any active intervention. Later, she developed an ulceroproliferative growth over her left breast for which she consulted a local physician. A diagnosis of infiltrating ductal carcinoma breast of the left side was made after biopsy and was referred to our hospital. Metastatic workup was negative, i.e., chest X-ray posteroanterior view, ultrasound sonography abdomen and pelvis with blood investigations were found to be normal. Right side breast, axilla, and supraclavicular region along with abdomen were found to be normal. Clinically, she was staged as T<sub>4b</sub>, N<sub>0</sub>, M<sub>0</sub>, Stage III B carcinoma breast left side. She was managed with upfront surgery, i.e., a simple mastectomy followed by adjuvant chemotherapy and radical radiotherapy. After completing the radical treatment, she was kept on tamoxifen 20 mg once daily for 5 years. At present, the patient is doing well with locoregional complete response after 6 years of regular follow-up.

**Key words:** Adenocarcinoma, breast carcinoma, burn scar, radiotherapy

## INTRODUCTION

Carcinomas arising in old burn scars (BSs) are rare.<sup>[1]</sup> It is well documented in literature that malignant neoplasm may arise in old BSs.<sup>[2]</sup> Most of the literature of BS malignancies have indicated predominately of the squamous cell variety. Adenocarcinoma (AC) is an extremely rare malignancy arising in BS with only four cases have been reported in literature till date.<sup>[3-6]</sup> Celsus was the first to note the development of malignancy in old BSs in 100 BC.<sup>[7]</sup> Steffen gave a detailed description of the evolution of the term Marjolin's ulcer in reference to BSs.<sup>[8]</sup>

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BS malignancies frequently demonstrate variable cellular morphology, suggesting the potential of malignant degeneration which exists, not only in the scar and the superficial epithelium, but also in the adnexal elements and the adjacent subcutaneous tissue. That is the reason why it is expected to find many histological types of BS malignancies including squamous cell, AC, and basal cell lesions. Apart from these common epithelial post-BS cancers, sarcomas also have been reported from time to time. Melanomas, malignant fibrous histiocytomas, liposarcomas, and verrucous carcinomas have also been noted in rare instances. Finding it rare and informative, we are presenting the case report.

## CASE REPORT

A 38-year-old female reported to the radiotherapy (RT) outdoor with complaints of an ulceroproliferative growth

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over the left breast area for the last 2 months. On enquiring further, she told that she had an accidental burn injury on her chest wall along with left breast 20 years back for which she had not taken any treatment and was healed by the conservative management. The family history was negative for cancer. She had not having any significant medical comorbidity.

On clinical examination, BS was seen all over the anterior chest wall, extending from the lower neck up to the upper abdomen as well as left breast and axilla [Figure 1]. A 3 cm × 3 cm ulceroproliferative lesion was noted in the left breast with the involvement of overlying skin without any fixation to the chest wall. There was no axillary or supraclavicular lymphadenopathy on the same side. Opposite breast and axilla were found to be normal. Biopsy from the growth of the left breast revealed infiltrating ductal carcinoma (Nottingham histological Grade III; Score 3 + 3 + 3 = 9) [Figure 2]. Immunohistochemistry (IHC) was not done due to financial constraints. However, other investigations done for metastatic workup were all negative. She was assessed clinically as T<sub>4b</sub>, N<sub>0</sub>, M<sub>0</sub>, Stage III B. A simple mastectomy on the left breast was done on May 26, 2009 [Figure 3]. Postoperative histopathology report was consistent with the previous biopsy report.

She was offered adjuvant cyclophosphamide, doxorubicin, and 5-fluorouracil chemotherapy regimen, cyclophosphamide (500 mg/m<sup>2</sup>), doxorubicin (50 mg/m<sup>2</sup>), and 5-fluorouracil (500 mg/m<sup>2</sup>). On 3 weekly basis, she received 6 cycles of above-mentioned chemotherapy regimen (July 2009–October 2009). She had also received adjuvant RT in the form of external beam RT with cobalt 60 (50 Gy/25# at 200 cGy/# in 5 weeks).

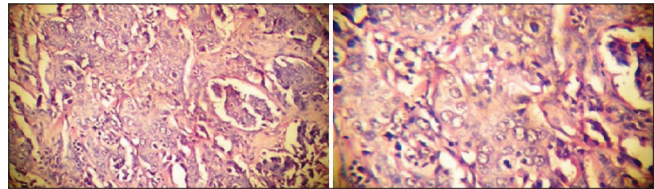
The patient successfully completed her RT course in November 2009. At the end of her RT, she was assessed clinically and found only Grade II skin reactions as maximum acute RT toxicity, which was subsided with local symptomatic treatment. She was discharged with tamoxifen 20 mg tablet orally once daily empirically and was advised to follow-up in RT outpatient department as per schedule. After completing 5 years of successful hormonal therapy without any untoward side effects, tamoxifen was stopped. At present, the patient is doing well after 6 years of follow-up.

## DISCUSSION

Cancers arising in old BS are rare. The average latent period for the development of a postburn malignancy is 30 years.<sup>[1,9]</sup> Squamous cell carcinoma is the most common tumor arising in an old BS (71%) followed by basal cell carcinoma (6%), malignant melanoma (5%), and sarcomas (4%).<sup>[11]</sup> AC arising



**Figure 1:** Preoperative photograph of patient showing extensive burn scar on the chest involving lower neck, bilateral breast, and upper abdomen



**Figure 2:** Section showing sheets of malignant cells with pleomorphism, open nuclear chromatin, and prominent nucleoli. There is also a desmoplastic reaction. Features are those of infiltrating ductal carcinoma (×200)



**Figure 3:** Postoperative photograph of patient showing sutures *in situ* along with burn scar

in post-BS is extremely rare. An extensive literature search revealed four cases of AC arising in BSs, out of which one was a metastatic AC in a burnt arm from a lung primary, while three were reported as AC arising in the previously burnt breast/mammary area.<sup>[4-6]</sup>

Severe burns, which were allowed to heal without any skin grafting, are especially prone to develop cancer. Malignant transformation rarely occurs in grafted skin, and hence, rapid epithelization and so prompt skin grafting should be

promoted.<sup>[5,9]</sup> A previously published study suggests, based on the glandular origin of the neoplasm, both sweat gland cancer and breast cancer should be considered.<sup>[4]</sup> The two neoplastic types are embryologically and pathologically indistinguishable, which makes exact interpretation of the slides impossible. Carcinoma of both the breast and cutaneous appendages are known to exhibit a striking IHC similarity.

Today, one would expect to see fewer cases of BS neoplasms since the current standard of care requires early excision and grafting. Emphasis should be directed toward greater vigilance in patients who have burn wounds healing by secondary intention, wounds not healing appropriately, and fragile BSs that ulcerate easily. These patients should seek medical attention quickly and not delay definitive treatment as has been seen in the past.

Due to the low prevalence of neoplastic lesions in BSs, there has been disagreement regarding their clinical features, methods of treatment, and hence prognosis.

## CONCLUSION

Our recent experience, similar to the scant previously published data, reinforces prior conclusion that BSs demand a high index of suspicion for detecting the presence of an underlying malignant neoplasm. The literature and our study suggest that breast cancer may occur after severe thermal injury. Breast lesions in this or a similar clinical scenario should be considered malignant until proven otherwise, and a tissue diagnosis must be pursued without

delay. In the present situation, all breast cancers derived from an old BS should be treated with the same guidelines as for nonburn malignancies until some consensus is developed for treating such rare entity. For this, a more number of cases and longer follow-up are essential for consistent and fruitful results.

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### Conflicts of interest

There are no conflicts of interest.

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