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Case Report:

Darier-Ferrand Dermatofibrosarcoma of the Abdomen: Reconstruction Using Negative Pressure Wound Therapy with Locally Available Materials and Cover by Split Thickness Skin Graft

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Abstract

Background: Darier-Ferrand dermatofibrosarcoma (DFS) is a rare skin tumor. Darier-Ferrand dermatofibrosarcoma is characterized by frequent relapses, chronic development and low metastatic potential. Complete surgical resection with wide excision and systematic excision of a healthy anatomical barrier is considered like the gold-standard therapy. After Darier-Ferrand dermatofibrosarcoma's resection, it happened a skin defect, which was covering by several surgical techniques especially controlled wound healing with skin graft or flap. We report a case of Darier-Ferrand dermatofibrosarcoma multi-recurrence's skin defect treated by controlled wound healing using negative pressure wound therapy (NPWT) with local material.

Case Presentation: A 32-year-old Ivorian man. With a medical history of recurrent abdominopelvic DFS for 7 years, for which he had undergone two surgical excisions in another medical center. On physical examination, multiple tumours were observed extending from the abdominal wall in supra-umbilical region. After discussion in a multidisciplinary meeting, we opted for wide local excision with systematic excision of a healthy anatomical barrier. The abdominal wall reconstruction was made by controlled wound healing using NPWT with split thickness skin graft.

Conclusion: NPWT with local material is an good alternative for reconstructive surgery to cover the defect after DFS' surgical resection despite limits in low-income country.

Key Words: *Darier-Ferrand disease – Negative pressure wound therapy – Skin graft.*

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Introduction

Darier-Ferrand dermatofibrosarcoma (DFS) is a rare skin tumor, representing only 0.1% of malignant cutaneous tumor **[1]** (Fig. 1).

DFS is characterized by frequent relapses, chronic development and low metastatic potential **[1-4]**. It can occur at any location **[2,5-7]**. Many treatment methods were developed during late 1990s **[8,9]**; Therefore, Complete surgical resection with wide excision and systematic excision of a healthy anatomical barrier is considered like the gold-standard therapy **[1,5]**. After surgical resection, a skin defect resulted, which was covered by one of several surgical techniques especially controlled wound healing followed by skin graft or flap **[1,3,7]**. A classic dressing or negative pressure wound therapy (NPWT) allowed controlled wound healing **[10-14]**. We report a case of DFS with multiple recurrences and a skin defect treated by controlled wound healing using NPWT with local materials.

NPWT with local materials and technique:

Local materials were: Vaseline pads, autoclave-sterilised foam sponge, transparent plastic wrap, hypoallergenic adhesive tape, suction probe, surgical suction machine (Fig. 2).

Technique: After surgical resection, Vaseline pads and autoclave-sterilised foam sponge were cut to the size of the wound. The transparent plastic wrap is used to hold foam and to create a vacuum. A small hole is made through the transparent dressing to allow the suction probe to be inserted, with contact with the foam. Additional transparent plas-

tic wrap is then utilised to seal the hole made for the suction probe. The suction probe is connected to the surgical suction machine which was the vacuum source. The pressure was determined empirically according to the size of the wounds and measured by the manometer of the suction machine. The vacuum is turned on intermittently with a pressure between -80 and -160mmHg.

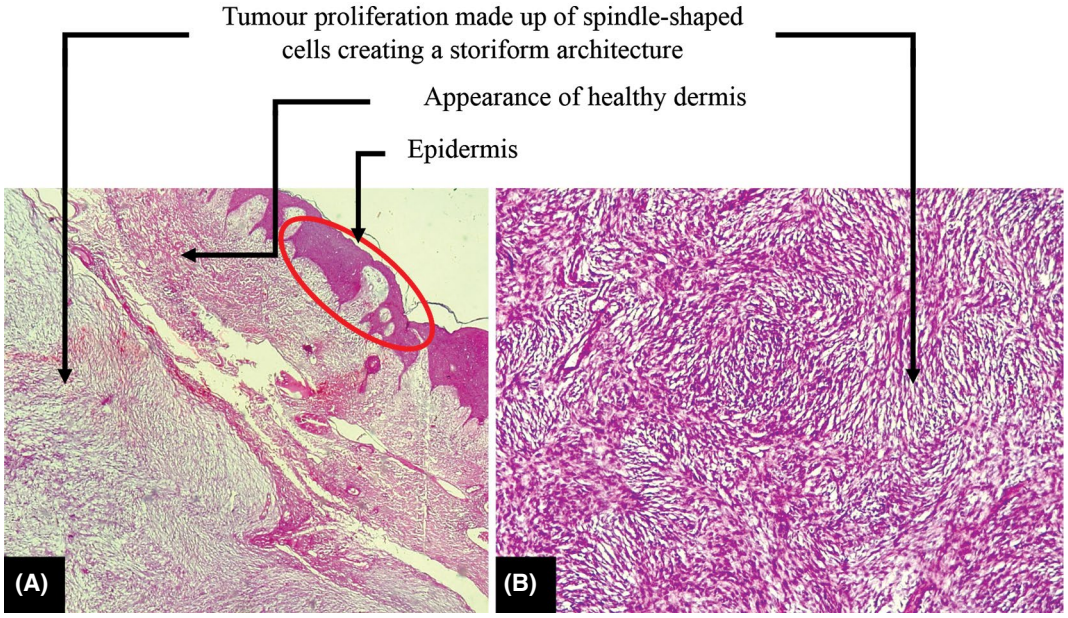

Fig. (1): (A HEx4; B HEx40): Dermal tumour proliferation infiltrating deep into the adipose lobules. It forms a storiform architecture consisting of spindle-shaped or elongated cells bordered by hyaline sheets (microscopy of a Darrier-Ferrand dermatofibrosarcoma protuberans).

Fig. (2): Local material using for NPWT.

Case Report

We present the case of a 32-year-old Ivorian man, unemployed. With a medical history of recurrent abdominopelvic DFS for 7 years, for which he had undergone two surgical excisions in another medical center. He had never had a report of histological examination of the excised tumour.

The patient was in a good general condition; afebrile and hemodynamically stable. On physical examination, multiple tumours were observed extending from the abdominal wall in supra-umbilical region (Fig. 3).

A computed tomography scan of the abdomen revealed multiple subcutaneous and infiltrative tumour masses of the anterior abdominal wall without crossing the fascia of the rectus abdominis muscles. No lymph nodes or distant metastasis were found.

After discussion in a multidisciplinary meeting (plastic surgery, oncology, Visceral surgery) we opted for wide local excision with systematic excision of a healthy anatomical barrier (Fig. 4).

The excised specimen measured approximately 28 cm × 19 cm × 3 cm in the greatest dimensions. The safety margin was 5 cm. The post-operative course was uneventful. The histology report confirmed DFS diagnosis and showed clear margins. The abdominal wall reconstruction was made by controlled wound healing using NPWT followed by a split thickness skin graft (Fig. 5).

Satisfactory granulation tissue was formed; 16 days post-operatively. A split thickness skin graft was carried out (Fig. 6).

Follow-up was every 6 months for two years, then once a year. The patient progressed well during 4 years of follow-up (Fig. 7).

Fig. (3): Abdominal Darrier-Ferrand dermatofibrosarcoma protuberans.

Fig. (4): Surgical resection with systematic excision of a healthy anatomical barrier.

Fig. (5): NPWT with locally available material.

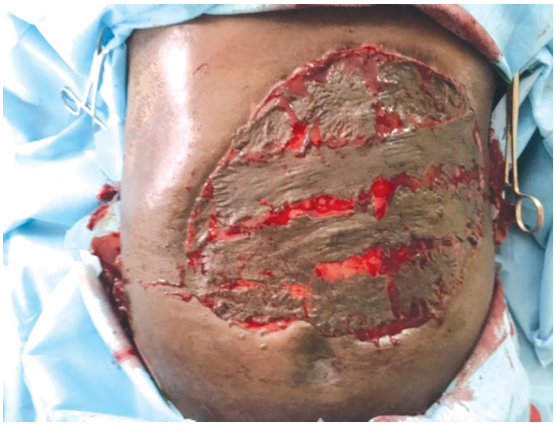

Fig. (6): Split thickness skin graft on granulation tissue.

Fig. (7): No recurrence after 4 years' follow-up.

Discussion

NPWT with local materials is a good alternative for the treatment of loss of cutaneous and subcutaneous tissues secondary to DFS; in distant areas of a low-income country. NPWT is an important therapeutic option for the treatment of wounds, with a fairly high level of evidence **[15,16]**. NPWT's indications are essentially traumatic and infectious wounds **[17,18]**. Tumoral wounds can be treated by NPWT **[19]**. NPWT's major drawback is the cost. Even if it is with affordable cost for developed countries; under health insurance, it is expensive for a low-income country where health insurance is not available for everyone **[20,21]**. low-income country such as Ivory Coast used NPWT with local materials; their indications were infectious and traumatic wounds exclusively **[17,21,22]**. In our case

report it was about a tumoral wound. granulation tissue formation completed in the 3rd week. this was found in the literature **[18]**. NPWT's selection requirements was: aetiology, tumour measurement and patient's financial income. This local adaptation whose cost for all sessions less than US$ 40 US, allowed to offer everybody a satisfactory healthcare quality about acute and chronic wound. However, NPWT with local materials has limits which are: no self-sufficiency, Sealing and depressurisation deficiency and limitation of patient mobility. As regards post-operative follow-up, we can speak of a definitive absence between 3-5 years **[1,7,9]**. Very true in our case we had a 4-year follow-up, DFS Locally malignant with no lymph nodes or distant metastasis with wide local excision with systematic excision of a healthy anatomical barrier allowed us to suggest a possible cure.

Conclusion:

NPWT with local materials, after resection of DFS of traumatic or infectious aetiologies, is a good alternative for reconstructive surgery to cover the defect after DFS' surgical resection, despite limits in low-income country.

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