



CASE SERIES OF MARJOLIN ULCER WITH EMPHASIS ON MARJOLIN ULCER DEVELOPED IN HYSTERECTOMY SURGICAL SCAR WOUND

Pathology

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ABSTRACT

Introduction- Marjolin ulcer is chronic ulcerating skin malignancies occurring in preexisting inflamed and ulcerated wound or scar tissue. Marjolin ulcer (MU) arising from lower extremity with burn injury or trauma is considered as the most common example and trunk is the least common location. We emphasize that hysterectomy surgical wound is the extremely rare preexisting lesion for development of Marjolin Ulcer. Histopathologically, Squamous cell carcinoma (SCC) is the most common malignant entity found followed by Basal cell carcinoma (BCC) and other neoplasms. **Material & Methods-** Retrospective analysis of total six cases from the period of one and half year were included in the study, where malignancy has arisen in the hysterectomy suture wound, chronic ulcerated wounds and burn scar. Tissues were fixed, processed by paraffin embedding techniques and stained by routine H&E staining along with IHC markers wherever necessary. **Result-** Four were in seventh decade with female dominance. The latency period varied from four to twenty years. Histopathologically, five out of six cases showed Squamous Cell Carcinoma and one diagnosed as basal cell carcinoma. Three of the six cases had history of burn while the two were developed in the setting of chronic ulcerated wound and one was after the traumatic wound. **Conclusion-** Marjolin ulcer is very aggressive tumor though sometimes it may be treated as inflammatory, ulcerative lesion. In patients with complaints of chronic wounds which are not responding to conventional antibiotic treatment, suspicion of malignancy is always kept. Biopsy & histopathological examination is mandatory in such cases. A case of SCC arising in hysterectomy wound scar which has mentioned in our study is an extremely rare entity.

KEYWORDS

Marjolin ulcer, Squamous Cell Carcinoma, hysterectomy wound, burn.

INTRODUCTION-

Marjolin ulcer is named after French surgeon Jean Nicolas Marjolin. In past it was referred as Squamous Cell Carcinoma arising in burn scar, later on included all skin malignancies arising within damaged tissues.(1) Marjolin ulcer is chronic ulcerating skin malignancy occurring in preexisting inflamed and ulcerated wound and very rarely hysterectomy scar tissue. Marjolin ulcer (MU) arising from lower extremity with burn injury or trauma is considered as most common example and trunk is the least common location. Histopathologically, Squamous cell carcinoma (SCC) is the most common malignant entity found followed by Basal Cell Carcinoma (BCC) and other neoplasms. (1-6)

MATERIAL & METHODS-

Total six cases from January 2024 to June 2025 (one and half year period) were studied. It was record based cross sectional study done in tertiary care centre. Clinical history, radiological findings, gross examination and detailed microscopic study was done. In clinical history, particulars about past history of trauma, burn, surgical procedure and long term infected wound were taken into consideration. Latency period between initial injury and development of malignancy was determined. Tissues were fixed in 10% formalin, processed by routine paraffin embedding techniques and stained with conventional Haematoxylin & Eosin staining. Immunohistochemical (IHC) markers were applied wherever necessary. Final diagnosis was done in most of cases on H&E stained sections. IHC markers- p16, CK5, CD34, S100, SMA, BerEP4 & Ki67 were done in two challenging cases.

RESULT:

Total six cases were studied. Age group for these patients were ranging from youngest female 23 years to oldest male patient aged 79 years. Out of six cases, majority four were in seventh decade.

Out of six, four cases were females and remaining two were males.

Main etiopathological factors were burn in three cases, chronic wound due to injury in two cases and previous hysterectomy surgical scar wound in one case. The latency period varied from four years to twenty years.

Locations were thigh in two cases, one case each of knee, back, anterior abdominal wall & scalp respectively.

Case 1: In the Hysterectomy case, clinically surgical scar wound showed dehiscence & nodular thickening with suspected clinical diagnosis of granulation tissue. Debridement was done. We received multiple, irregular, grey white, nodular masses totally measuring 65x55x30 mm. (Figure 1)

Case 2: In a case of chronic ulcer over back, clinically the lesion was large, ulcerative with reddish granular surface and irregular blackish border measuring 320x100 mm. The lesion was extended toward left lateral aspect of trunk. We received edge biopsy which consisted of grey brown tissue bit measuring 20x10x5 mm. (Figure 2)

Case 3: A 75 years female with history of burn and lesion over back side of left thigh, we received both incisional edge biopsy and later wide excisional biopsy. Excisional biopsy consisted of skin covered ulcerative mass measuring 170x110x40 mm. External surface showed large ulcerative growth measuring 140x65 mm, margins were elevated. On serial slicing, grey white ulceroproliferative tumor was noted. Maximum tumor thickness was 19 mm. Sections from all surgical margins and from the tumor were taken. (Figure 3)

Case 4: Thigh lesion with history of burn in 70 years male which was clinically diagnosed as a pyoderma gangrenosum. We received incisional biopsy which consisted of two greyish brown tissue bits, together measured 20x10x10 mm.

Case 5: Ulceroproliferative lesion in case of previous history of burn. Clinically there was large ulceroproliferative growth with contracture of skin located over popliteal area of left knee which measured 150x70 mm. For histopathological examination, received grey white tissue bit measuring 12x10x8 mm. (Figure 3)

Case 6: Scalp lesion in a 23 years lady, clinically there was a ulcerative lesion measuring 65x55x12mm. Ultrasonographical diagnosis was suggestive of infective/ inflammatory etiology and clinically it was diagnosed as granuloma of scalp. Here, we received both small incisional as well as excisional biopsies. The later was consisted of partially skin covered tissue measured 80x80x25mm, external surface

showed fungating growth measured 65x55x12mm, cut surface was grey white. (Figure 4)

Histopathologically, five out of six cases diagnosed on conventional H & E staining as Squamous Cell Carcinoma of varying from well to poorly differentiated SCC. In a case of ulcerative lesion over back, initially differential diagnoses were made as BCC and Melanoma. On IHC, BerEP4 immunomarker was strongly and diffusely positive. So final diagnosis was given as Basal Cell Carcinoma of back. In Squamous Cell Carcinoma, three were well differentiated, one was moderately differentiated SCC. In case of hysterectomy scar wound IHC (p16, CK5, CD34, S100, SMA, Ki67) was prepared. Diagnosis was confirmed as a moderate to poorly differentiated SCC.

Table 1: Detailed Data Of The Marjolin Ulcer Cases

Case s	Age (Years) & gender	Location	Cause	Latency period (Years)	Histopathological diagnosis (On H&E)	IHC	Final diagnosis
1	40/F	Anterior Abdominal Wall	Hysterectomy Scar wound	6	SCC	p16(+), CK5(+), Cd34(-), S100(-), SMA(-), Ki67 (high)	Mod to poor diff SCC
2	77/F	Back	Chronic Ulcerative Lesion	4	1. BCC 2. Malignant Melanoma	BerEP4	BCC
3	75/F	Left thigh	Burn	20	Well diff SCC	-	Well diff SCC
4	70/M	Left thigh	Burn	9	Well diff SCC	-	Well diff SCC
5	79/M	Left Knee	Burn	10	Mod. Diff SCC	-	Mod. Diff SCC
6	23/F	Scalp	Trauma	1 year	Well diff SCC	-	Well diff SCC

(F- Female, M- Male, diff- differentiated, Mod- moderately, SCC- Squamous Cell Carcinoma, BCC- Basal Cell Carcinoma)

Discussion: Marjolin Ulcer is a rare condition where malignancy arise most commonly in burn scar and other in chronically infected wound, traumatized skin, venous stasis ulcer, pressure ulcer and osteomyelitis. (2,3,7-10)

In the present study, preceding lesions or etiopathological factors were burn followed by traumatic wound & hysterectomy surgical scar wound. Burn injury appears to be the most commonly reported cause across all other studies. Kiran B.K. et al (1) reported burn (62%), trauma (33%), discoid lupus (3%); Copcu E. et al (3) reported flame burns (68%) and scalding (29%); burn (100%) was noted by Mousa Ak et al (18); and burn (87%) by Fahim EH et al (19) Here it is emphasized that SCC arose in hysterectomy scar wound is the only case encountered in our study.

Marjolin ulcer usually seen in fifth decade (4,5) with male preponderance. (1,11,12) However, in some studies like Kale V. et al (2024) (6), who also observed a female predominance with an age range of 28–81 years (6). In our case series, four out of six cases were in seventh decade with female predominance. In contrast, other studies

including Kumar B.K. et al (1), Copcu E. et al (3), Mousa Ak et al (18), and Fahim EH et al (19) reported a male predominance, with age ranges varying widely. Fahim EH et al's (19) study reported broad age range including paediatric cases ie. children as young as 2 years old.

In MU, most common locations are on lower and upper extremities followed by head & neck; and rarely on trunk. (1,5,13) The predilection for extremities, particularly lower limbs, likely due to burn exposure and trauma in those regions. Kumar B.K. et al (1) reported most cases in the lower extremity (60%), followed by the upper extremity and head-neck regions. Copcu E. et al (3) observed lesions predominantly in the extremities (59%) and scalp (19%). Kale V. et al (6) also noted a preponderance for extremities (7/8 cases). Mousa Ak et al (18) highlighted the lower extremity (68%) as the most affected site. Fahim EH et al (19) reported a similar trend with lower limbs involved in 63% of cases. In the present study, we found three cases of MU on lower extremity (thigh & Knee) followed by two cases of MU on trunk (anterior abdominal wall & back) and a single case of scalp lesion.

MU can be developed as acute form when duration of injury to appearance of malignancy is less than twelve months and it is described as chronic form when malignancy appears after period of more than one year. (5,7,14,15)

Latency period is given as the occurrence of malignancy from the initial injury or from the first encounter of the causative factor. Kale V. Et al. (6) have split latency period into the time between original injury to the development of ulcer and period between transformation of the ulcer into the malignancy. In our study, latency period varied from one year to twenty years. However, it is difficult to determine time of malignant transformation for clinicians as well as patients.

The most common histopathological type of malignancy found in MU is Squamous Cell Carcinoma followed by Basal Cell Carcinoma and other neoplasms. (1-6) Rarely co-existence of two malignancies like SCC & BCC can occur. (2,4,16) In the literature it was mentioned that melanoma and sarcomas like dermatofibrosarcoma, liposarcoma as a Marjolin ulcer have found. (1,2,4)

In the present study, histopathologically five out of six cases were diagnosed as SCC and in one case initially differential diagnoses were considered as BCC and Malignant Melanoma. In this case, immunohistochemically BerEP4 was immunopositive for the tumor cells, so the final diagnosis was made as Basal Cell Carcinoma.

In first case of hysterectomy scar wound, histomorphology showed foci of poorly differentiated tumor cells. For confirmation IHC was done. Markers p16, CK5 were immunoreactive with increased ki67 index and CD34, S100 and SMA were immunonegative. The final diagnosis was confirmed as moderate to poorly differentiated SCC.

The present study identified both Squamous Cell Carcinoma (SCC) and Basal Cell Carcinoma (BCC) as histological outcomes. Kumar B.K. et al. (1) reported SCC in 85% of cases, BCC in 10%, and Dermatofibrosarcoma Protuberans (DFSP) in 5%. Similarly, Copcu E. et al. (3) documented SCC in 76%, BCC in 19%, and basosquamous carcinoma in 5% of cases. Kale V. et al. (6) noted a 100% prevalence of SCC. These findings collectively highlight SCC as the most frequently encountered histological subtype, consistent with its well-established association with Marjolin ulcers and other malignancies arising in post-traumatic or burn-related scars. BCC and basosquamous carcinoma appear less frequently but are notable variants.

Table 2: Comparison Of The Demographical Factors & Histopathological Diagnosis Of Present Study With Other Various Studies.

	Age (Years) & gender	Location	Cause	Latency period (Years)	Histopathological diagnosis
Present Study (n=6)	23-79, F>M	Lower extremity (50%), Trunk (Anterior Abdominal Wall & Back) (33.34%) & scalp (16.66%)	Burn (50%), Chronic wound due to injury (33.34%), Hysterectomy Scar wound (16.66%)	1-20	SCC (83.34%) & BCC (16.66%)
Kumar BK et al (2024) (n=27) ⁽¹⁾	35-70, M>F	Lower (60%) & upper extremity (18%), Head neck (4%)	Burn (62%), Trauma (33%), Discoid lupus erythematosus (3%)	-	SCC (85%), BCC (10%), DFSP (5%)
Copcu E. et al (2003) (n=31) ⁽³⁾	15-67, M>F	Upper & lower Extremity (59%), Scalp (19%), trunk (19%), Nose (3%)	Burn- Flame (68%), scalding (29%), chemical (3%)	11-38	SCC (76.18%), BCC (19.06%), Baso squamous Carcinoma (4.76%)

Kale V. et al (2024) (n=8) (6)	28-81, F>M	Upper lower Extremity (87.5%), trunk (12.5%)	Burn (87.5%), Trauma (12.5%)	3-50	SCC (100%)
Mousa Ak et al (2022) (n=19) (18)	32-75, M>F	Lower extremity (68%), upper extremity (16%), Trunk (11%), scalp (5%)	Burn (100%)	10-65	SCC (94.74%), Basosquamous Ca (5.26%)
Fahim EH et al (2022) (n=30) ⁽¹⁹⁾	2-80, M>F	Lower extremity (63%), Upper extremity (33%), Head, neck & face (3%)	Burn (87%), trauma (13%)	3-50	SCC (77%)

(F- Female, M- Male, SCC- Squamous Cell Carcinoma, BCC- Basal Cell Carcinoma, DFSP- Dermatofibrosarcoma protuberans)

Treatment: One case of SCC found in burn injury over left thigh and a case of scalp lesion were treated with wide local excision. Microscopically, all surgical margins including base were free of tumor invasion in both cases. Remaining four cases follow up could not be done. In all cases, we did not receive lymph node biopsy for microscopic examination of metastasis.

In case of marjolin ulcer, there is no widely accepted and standardised definition, pathophysiology, classification and staging. (5)

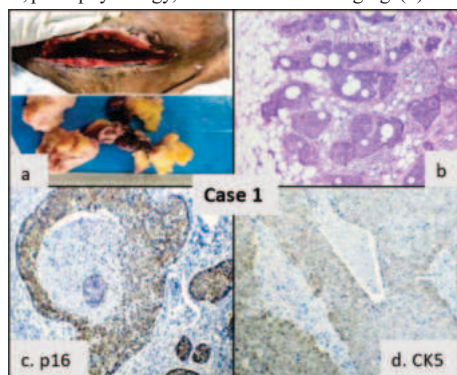


Figure 1: Case 1. a. Hysterectomy suture wound showing dehiscence & Gross-multiple, irregular, grey white, nodular masses b. Moderate to poorly differentiated SCC. c. p16 strong immunoreactive. d. CK5 positive

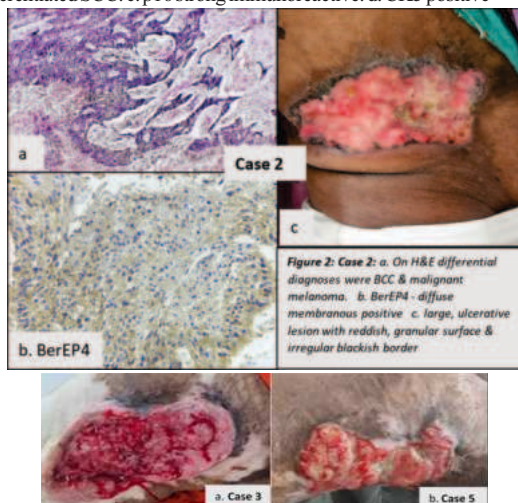


Figure 2: Case 2: a. On H&E differential diagnoses were BCC & malignant melanoma. b. BerEP4 - diffuse membranous positive c. large, ulcerative lesion with reddish, granular surface & irregular blackish border

Figure 3: a. Case 3- Large ulcerative lesion over back side of left thigh. b. case 5- Large ulceroproliferative growth with contracture of skin over popliteal area of left knee.

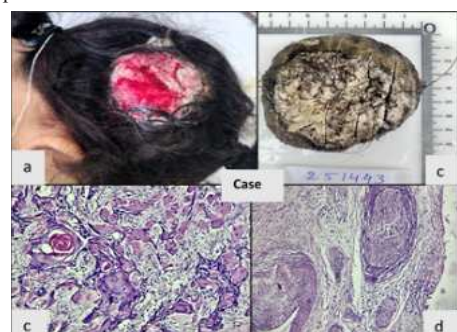


Figure 4: Case 6- a. Ulcerative lesion over scalp b. Gross- skin covered tissue, external surface- fungating growth, cut surface- grey white. c. well differentiated SCC d. Perineural & vascular invasion by tumor cells

Prognosis: Histological types of malignancy arising in marjolin ulcer are more aggressive, rapidly spreading and have poor prognosis than their conventional forms. (1-3,10) In general, mortality rate of MU is about 21%. (2,8,14,17)

Prevention: MU is more common in cases of improper wound care and wound healing by secondary intention. The development of MU can be avoided by taking proper, early wound care by surgical intervention with skin grafting.

CONCLUSION:

Marjolin ulcers are rare and aggressive malignant tumors though sometimes it may be clinically mistaken and treated as inflammatory, ulcerative lesion. Thorough clinical examination, biopsy with histopathological examination is mandatory. Early diagnosis and prompt surgical management with adjuvant therapy are required to prevent missed diagnosis, recurrences, and high mortality in such malignancies.

To the best of our knowledge, Marjolin ulcer arising in abdominal wall surgical wound (trunk) in female is not yet recorded in the literature.

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