



A CLINICAL STUDY OF POST BURN MARJOLINS ULCER OVER UPPER LIMB

Plastic Surgery

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ABSTRACT

Burns is considered as one of the major predisposing factors for development of marjolin's ulcer along with chronic wounds. Patients often neglect the importance of healing of burn wounds. This study was aimed at evaluation of marjolin's ulcer in upper limb in post burn patients. This is an Observational study conducted in the department of Burns and Plastic Surgery in a tertiary care burn centre for a period of 2 years. A total of 6 patients were included in the study presenting to the burns&plastic surgery department over period of two years from April 2023 to March 2025. The demographic profile, clinical presentation, duration of development of marjolin's ulcer following burns, management and survival were analysed. The various reconstructive options for excised defects were analysed and post operative patients were followed for a period of 6 months. Early management of burn wounds high vigilance for wounds not healing beyond 3 months, education of patients and care givers help in preventing this dreaded malignancy.

KEYWORDS

upperlimb, burns, marjolin's ulcer, reconstruction

INTRODUCTION

Marjolin's ulcer is a rare cutaneous malignancy which is considered as a variant of squamous cell carcinoma. It frequently arises from the chronic wounds of any etiology. It was first described in 1828 by French surgeon, JeanNicolas Marjolin, he described the ulcer formation over burn scar, although it was not recognised as malignant at that time⁽¹⁾. It was recognised as malignancy by Dupuytren and the term 'Marjolin's ulcer' was coined by Da Costa in 1903 for malignancies arising from burnwounds^(2,3). Marjolin's ulcer is a highly aggressive disease that develops from underlying chronic wounds and skin scars and almost 65% of these ulcers have been diagnosed on underlying burn scars⁽⁴⁾. Deep burn wounds are associated with chronic inflammation and healing processes is slow and secondary in nature with incidence rate of 1-2% in burn scars⁽⁵⁾. However, it may also develop from scar tissues of various other ethologies like chronic osteomyelitis, pressure sores, venous ulcers, chronic fistulas, chronic wounds, genital areas following fornier gangrene are also reported⁽⁶⁾.

Malignant degeneration of the lesion is slow with the latency period from the initial injury to the development malignancy varied in various studies the mean latency is usually 25-30 years with occurrence even after 50 years. Marjolin's ulcer can occur in any age group and is less common in children, marjolin's in sub-Saharan Africans occurred earlier and in younger patients⁽⁷⁾. Extremities are the most commonly involved sites followed by head and neck region and trunk. Squamous cell carcinoma is the most common histological variant, diagnosis is confirmed by histological examination of the tissue from the damaged site. The present study is an analysis of our experience on the presentation of marjolin's ulcer, diagnosis, treatment, outcome in a tertiary care hospital.

MATERIALS AND METHODS

AIM OF STUDY

To evaluate the age, gender distribution, presentation, reconstructive options of marjolin's ulcer of upper limb, outcomes following operative procedures, follow up were analysed.

This is an Observational study conducted in the department of Burns and Plastic Surgery in a tertiary care burn centre. A total of 6 patients were included in the study presenting to the burns&plastic surgery department over a period of two years from April 2023 to March 2025. Our institutional review board approved the study. The demographic profile, clinical presentation, duration of development of marjolin's ulcer following burns, management and survival were analysed. The present study included marjolin's ulcer over the upper extremity following burns. Histological examination of the tissue is considered as a standard for diagnosis of this rare entity. After obtaining informed consent, patients were explained about procedure, reconstructive options, follow up and were subjected to surgery with wide local excision of lesion with a 2 cm margin followed by various reconstructive options. Post surgery all patients were followed for a period of six months with clinical examination. All the details were documented and analysed as shown in below table.

Table-1

S. No	Age	Sex	Lesion Location	Duration (Years)	Procedure	Complication
1	61	M	Forearm	10	WLE with Skin Grafting	None
2	32	M	Elbow	2	WLE With Thoracoumbilic al flap	None
3	23	F	Proximal Forearm, Elbow	4	WLE with Skin grafting	None
4	38	M	Distal Forearm, Wrist	5	WLE with Groin flap and ssg cover	Flap distal tip necrosis.
5	50	M	Distal Forearm	4	WLE with Groin flap	None
6	56	F	Elbow, Dorsal surface	6	WLE with Thoracoumbilic al flap	Flap congestion

Table.1 showing Age, Sex, Distribution, Time from development of Marjolin's ulcer, procedure, complications.

RESULTS

In our present study a total of 6 patients were included and they were stratified according to age, gender, anatomical location over upper limb. Males were most commonly affected with 4 males (66%) and 2 females (33%) in our study. The patients' age group in our study was found to be in the range of 23 years - 61 years with the median age of presentation was found to be 43.3 years. All patients included in our study were post burn etiology with involvement of upper limb. The clinical profile of patients and reconstructive surgery done were described in the above table. The duration of time from the insult to development of marjolin's ulcer varied in the range of 2 years to 10 years with 2 being the minimum time interval for development of marjolin's ulcer following burns and 10 being the maximum duration. The mean duration in our study is 5.1 years. All patients were evaluated and after confirmation of histological diagnosis were subjected to wide local excision of the lesion with a 2 cm margin, following excision of marjolin's ulcer with clear margins in pathological report, defect developed post excision was reconstructed by various methods depending on the exposed underlying structures (Fig.1). Skin grafting was done in 2 patients, (Fig.2) (Fig.3) Thoracoumbilical flap in 2 patients (Fig.4) (Fig.5), Groin flap in one patient and Groin flap along with skin grafting in one patient (Fig.6). None of the patients in our study has lymph nodal spread. In the post operative period, one patient with groin flap and skin grafting developed flap tip necrosis, one patient with thoracoumbilical flap developed flap congestion for which flap take down was done. All patients were followed up for a period of six months with routine clinical examination of the surgical site during follow up period and none of them developed any recurrence.

DISCUSSION

Marjolin's ulcer is a rare type of cutaneous malignancy which is associated with previous insult, particularly burns. Non healing wounds particularly following burns or any other etiology should be thoroughly evaluated to rule out any underlying malignancy. The chronic wounds must be considered as malignant unless proved by histological examination. There are many theories proposed for the development of malignancy but none of them could alone explain all conditions. Toxin theory which proposes that chronic inflammatory process leading to tissue damage produces toxins which may be carcinogenic⁽⁵⁾. The lower limb was the most common site of Marjolin's ulcer and previous history of burn was the most common predisposing factor. The other various theories proposed where cocarcinogen (Friedwald and Rouse) theory, chronic irritation (Virchow's) theory, implantation (Ribet's) theory, immunologically privileged site (Castillo and Goldsmith) theory, toxin (Treves and Pack) theory, environmental and genetic theories^(4,5). Recent studies had shown association of Marjolin's with HLA DR4 and mutations of Fas and p53 genes⁽⁷⁻¹¹⁾. Studies had shown decreased reduction or absent Langerhan cells in burn wounds which lead to decreased immunosurveillance^(12,13). In our present study a total of 6 patients were included, of which 4 patients were male while 2 patients were females which is similar to various studies where males are most commonly affected, males are three times more susceptible to these conditions when compared to females. Male predominance is due to increased risk of genetic mutations from environment exposure and increased physical activities in men. Marjolin's can occur at any group and most of the studies show malignancy affecting in the fifth decade of life which is similar to our study with mean age group of presentation of 43.3 years. Classification of Marjolin's ulcer based on the criterion of time distinguishes acute and chronic forms of this condition. The term acute ulcer refers to malignant transformation occurring within 12 months from primary lesion and considered as chronic if occurring beyond 12 months of primary lesion⁽¹⁴⁾. In our study, mean duration post burn for development of marjolin's is 5.1 years with a range of 2-10 years. Hence all the patients in present study were of chronic. The risk of malignant transformation in a chronic wound is 0.1-2.5%⁽¹⁵⁾. In various studies, Squamous cell carcinoma (SCC) is the most common histological variant, followed by Basal cell carcinoma (BCC). Other histological types observed were melanoma, sarcoma and other neoplasm⁽¹⁶⁾. In our present study squamous cell carcinoma is the most frequent histological type identified during diagnoses.

The clinical signs which help in identification of malignant transformation in chronic wounds are nodule formation, induration, ulceration. In the present study lesions confined to the upper extremity only were included. Due to repeated movements of limb, decreased lymphatic and blood supply following burns predispose for formation of non healing wound, the location of lesions in our study also proves this with most of the lesions located at joint surfaces which are subjected to repeated movements. Histological variant of SCC has worst prognosis when compared to other types hence aggressive management of marjolin's ulcer is necessary for the prevention of recurrence. Lymph node dissection should be considered in patients with susceptible or positive nodes. All patients in our study underwent wide local excision (WLE) with a 2cm margin. None of the patients had any involvement of lymph nodes. Post excision of tumour, repair and reconstruction is done in order to improve the quality of life of patients. Skin grafting is considered ideal following excision as recurrence can be identified early. However, if vital structures are exposed like bone, vessels, nerves, tendons flap cover should be considered. In our study, 2 patients (33%) underwent Skin grafting, 2 patients (33%) Thoracolumbal flap cover, 1 patient (16%) with groin flap, 1 patient (16%) with groin flap and skin grafting cover. Complication rate in our study was 33% with one patient of thoracolumbal flap developed flap congestion and flap takedown was followed by skin grafting, one patient with groin flap and skin grafting developed distal tip necrosis of flap, for which flap advancement done and flap settled well. All patients were followed up for a period of six months with clinical examination and none of them developed any recurrence during followup. Marjolin's ulcer has a very short recurrence time^(17,18). However, none of the patients in our study has recurrence. The main reason for this is the smaller number of patient population and the shorter duration of follow-up. Prevention of this malignancy can be done by early excision and grafting of the chronic wounds post burn, education of health care workers and patient care givers for early identification of malignant transformation of the chronic wounds. Biopsy should be considered in all chronic

wounds that don't heal beyond three months. In conclusion, chronic non healing ulcers in burn patients should be thoroughly evaluated. Upper extremity is one of the most common site of occurrence of lesion. Repeated trauma, decreased blood supply of skin following burns is a predisposing factor. This observational study at our institute showed that Marjolin's ulcer is predominantly seen in males, Surgery followed by reconstruction improve the outcomes of patients. High risk of suspicion for chronic wounds help us to prevent this dreaded malignancy.

CONCLUSION

Marjolin's ulcer is a preventable malignancy. Burn is one of the most important predisposing factors in the development of marjolin's. Regular follow up post burn injury, biopsy for chronic non healing wounds, early detection and cover of wounds, play a vital role in prevention of marjolin's. Increased alertness by caregivers, training for identification of chronic wounds also play a key role. By regular follow up with treating physicians help in preventing this rare malignancy.

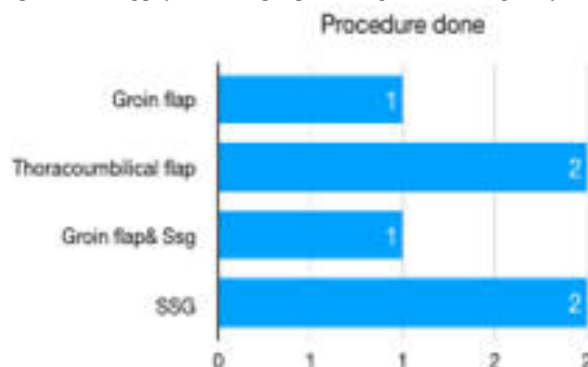


Fig.1 Procedure done following wide local excision



Fig.2 Marjolin's ulcer over elbow



Fig.3 Immediate postoperative picture of patient of skin grafting and at 6 months of follow-up.



Fig.4 Marjolin's ulcer over elbow WLE and cover with Thoracolumbal flap, flap necrosis followed by ssg cover



Fig.5 Post WLE for Marjolin's ulcer with Thoracumbilical flap cover



Fig.6 Post burn marjolin's ulcer over wrist WLE & groin flap cover

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