

Twenty-Seven Cases of Marjolins Ulcer; An Institutional Experience on Diagnosis, Treatment and Outcomes

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Abstract

Purpose: Marjolins ulcer is a malignant transformation that arises from chronic ulcers or previously traumatized scar that occur usually after burns. To study the clinicopathological characteristics and treatment outcomes of Marjolins ulcer at our institute. **Materials and methods:** Retrospective analysis of all Marjolins ulcer patients presented to our department from 2018 to 2021 was done. A total of 27 patients of all age groups were included in the study. All the information regarding the diagnosis, treatment and outcome details were collected and analysed. **Results:** Most of the patients were in the 5th decade of life with an overall male preponderance. The most common cause for Marjolin ulcer was Burns Scar. The mean latency period for the development of Marjolins ulcer was 11 years. Squamous cell carcinoma was the most common histological subtype. 18.5% patients received Adjuvant radiotherapy. At the median follow up of 14 months, one patient presented with locoregional relapse. **Conclusion:** Chronic non-ulcers that do not respond to treatment should be carefully examined by multidisciplinary team for malignant transformation. Surgery is the mainstay of treatment and Adjuvant Radiotherapy should be considered in high-risk cases to reduce locoregional recurrence. Tumour size and nodal involvement are the main predictors of locoregional relapse.

Keywords: Marjolins- Squamous cell Carcinoma- Surgery- Burns- Radiotherapy

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Introduction

Marjolin's ulcer, a cutaneous malignancy was first described by a French surgeon Jean Nicholas Marjolin, and he described the ulcer formation over the burns scar, although they were not recognized as malignant at that time [1]. The term Marjolin's ulcer was defined by DaCosta, for the carcinomas arising from the burns scar [2]. Marjolin's ulcer is considered as a highly aggressive disease that develops from chronic wounds and skin scars and almost 65% of these ulcers have been diagnosed on underlying burn scars [3]. It can also develop on discoid lupus erythematosus lesions, ulceration and chronic osteomyelitis, amputation stumps, regions of chronic fistulas, chronic wounds etc [4-7]. It can occur at any age group but it is less common in children [8]. Marjolin's ulcer are predominantly seen in males [6, 7]. Squamous cell carcinoma is the most common histologic variant other variants are basal cell carcinoma (BCC), angiosarcoma,

fibrosarcoma, liposarcoma osteosarcoma etc [9].

The mechanism of malignant transformation is very well understood. A lot of theories have been mentioned in the literature [10]. Few theories states that the mutation by the inflammation in the injured tissue causes carcinogenesis [11]. Others describe that foreign body reaction at the damaged tissue leading to malignant transformation [12]. Few other studies also states that repeated damage to the ulcer and long-standing chronic irritation, which leads to continuous mitotic activity, to reduce the defect which ultimately leading to Carcinogenesis [13]. Patients with immune deficiency which are inherited are at increased risk for Carcinoma formation [14]. Marjolin's ulcers are divided into two type acute and chronic. In acute, malignant transformation happened within one year of the injury [15] and the chronic happens occur over years of long latency time.

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Marjolins ulcer is confirmed by histological examination of the tissue from the damaged site. The present study is a retrospective analysis of Marjolin's ulcer, diagnosis, treatment and outcomes in a tertiary care hospital in India.

Materials and Methods

It was a hospital based retrospective study. All the patients presented to our institute from 2018 to 2021 with diagnosis of Marjolins ulcer were analysed. All the information related to clinical features, history, diagnosis, treatment and follow-up details were collected. Histopathological examination was considered as the gold standard for diagnosis.

All the patients were treated by surgery as the main modality of treatment. Adjuvant Radiation was given in the patients who were meeting high risk criteria. After the completion of the treatment all the patients were followed up every 3 months with clinical and radiological examination. All the details were documented and analyzed. Statistical analysis was done by using the software SPSS 22.0 and R environment version.3.2.2 and Microsoft word and Excel have been used to create tables etc. Descriptive analysis and inferential analysis have been done in the study.

Results

Total Twenty-Seven cases of Marjolin's ulcers were identified. They were stratified according to the age, gender and the anatomic location. The age group of the patients studied ranged from 35 to 70 years. The median age of the study population was 52 years. Males were more commonly affected. Lower extremity was involved in 59% (16) of the patients followed by Upper Extremity (p 0.203). The most common etiologic factor was the burns scar followed by trauma which was statistically significant with a p value of 0.065. The time between the etiological factor and occurrence of Marjolin ulcer was 7 to 15 years (Mean 11 years). Patient and tumour characteristics are explained in Table 1.

All the patients underwent imaging of the locoregional



Figure 1. Pre- and Post-Operative Images of the Marjolins Ulcer of the Foot

site to rule out locoregional nodal spread. Surgery was the main modality of treatment. Wide Local Excision with 2 cm margin was conducted as the standard of management followed by reconstructions with Split Skin Graft (SSG) or locoregional flaps.

Out of the 16 lower extremity patients inguinal nodal dissection was done in 6 patients due to involvement of lymph nodes either clinically or radiologically. Four patients were presented with extensive bony involvement in which amputation followed by reconstructions with split skin graft (SSG) was conducted (Figure 1).

In upper extremity tumours, one patient presented with axillary nodal metastasis on presentation for which Axillary Nodal dissection was done. All the patients Marjolins ulcer in head and neck region underwent WLE with adequate margins (Figure 2). One patient developed Marjolins ulcer due to Discoid Lupus Erythematosus and he underwent wide local excision with parascapular flap reconstruction.

On Histopathological examination, the size of the tumour ranged from 2x3 cm to 10x10 cm. Squamous cell Carcinoma (SCC) (23) in most common histology followed by, Basal Cell Carcinoma (BCC) (3) and Dermatofibrosarcoma (1). Five patients were found to have positive lymph nodes post operatively.

Adjuvant Radiotherapy was given in the patients with high-risk criteria positive lymph nodes and larger tumour size. Five patients were received adjuvant Radiotherapy. All the patients were followed every 3 months with clinical and radiological examination of primary site

Table 1. Patient and Tumour Characteristics

Age	Mean 52 Years	n	Percentage (%)	P value
Gender	Male	17	62	P=0.203
	Female	10	38	
Site	Lower Extremity	16	59	P=0.065
	Upper Extremity	5	18	
	Head and Neck	5	18	
Etiology	Trunk	1	4	P=0.012
	Burns	17	62	
	Trauma	9	33.00	
	DLE	1	5.00	
Histology	Squamous cell Carcinoma	23	85.00	P-0.045
	Basal Cell Carcinoma (BCC)	3	10.00	
	Dermatofibrosarcoma	1	5.00	



Figure 2. Pre and Post Operative Image of the Marjolin's Ulcer of the Face

and nodal areas. At the median follow-up of 14 months, all the patients showed complete response except one patient. This patient with SCC of the foot came back with inguinal lymph nodal recurrence after 1 year of surgery. The Progression Free Survival at 3 years was found to be 96.3% with a significant p value of 0.035.

Discussion

Non-healing ulcers which were developed on the chronic scars are very dangerous because of their malignant transformation potential. Hence, these ulcers should be examined carefully to exclude the presence of malignancy. Clinical profile of both benign and malignant ulcers is same, although some variations are noted [16, 17]. Hence, any ulcer which is not healing on burns or traumatic scar should be treated like a cancerous one unless it is proved by histological examination [18]. This retrospective analysis was done to study the clinicopathological profile and treatment outcomes of Marjolin's ulcers presented at our institute.

Marjolin's ulcers may occur at any age with no strong race predisposition [19]. It is most commonly seen in men and this ratio in our study, was 1.9:1. Men are at major risk for developing Marjolin's ulcer may be due to the genetic mutations and more physical activities by the males. The mean age of our study cases was 52 years with an age range from 35 to 70 years. Which is identical to other studies [17, 20]. Most frequently observed site was lower extremity in our study. Marjolin's ulcer may occur on any site, but they are commonly observed at lower limbs followed by upper limbs, head and neck and trunk [21].

Our objective was to analyse the clinicopathological profile and treatment outcomes in the biopsy proven Marjolin's ulcer. In our study, squamous cell carcinoma (SCC) was the most common histological subtype. These findings are in an agreement with literature [22]. We recorded the cutaneous ulcers within the scars in the majority of the cases 23 out of 27, fungating ulcers in 4 patients, clinical or radiologically significant lymphadenopathy was found in six patients. The extensive bony involvement was found in four cases. The mean dimension of the ulcers in our study was 6-8 cm (ranging from 2 to 12 cm) According to literature, ulcers with more than 6 cm are more likely to undergo malignant

transformation [23].

Marjolin's ulcer rarely metastasize. It is generally considered that prophylactic nodal dissection has no influence on recurrence and should not be encouraged [24]. However, few studies reported that, of lymph nodes spread in the lower limbs is relatively more and for the patients without lymph node spread, prophylactic nodal dissection should be considered [25]. Few studies also say that Lymph node metastasis in Marjolin's ulcer is 22% [26]. Lymph nodal involvement in our study was 22%.

Surgery is the standard treatment method for Marjolin's ulcer. Post excision of the tumour, repair and reconstruction using skin grafts to be done to improve the quality of life. Skin grafting should be considered as much as possible. skin flap repair should be considered if bones are exposed. Local skin flap repair should be done, if possible, otherwise skin flap graft repair is the considered as an alternative option.

The histological subtype SCC has a worst prognosis compared to other types, hence aggressive treatment in this subtype is encouraged-excision and radiotherapy are recommended for managing the recurrence. A study done by Ozek and Cankayal found that the radiation should be given in patients positive lymph nodes after nodal dissection, tumours with more than 10 cm. In our study adjuvant radiation was given in the patients with positive nodes. Overall, literature reviews support the use of adjuvant radiation in poor surgical candidates, positive nodes and large sized tumours [27].

Marjolin's ulcer has a very short recurrence time [28, 29]. However, recurrence rates in our study did not show any statistical significance. The main reason for this is the smaller number of patient population and the shorter duration of follow-up.

In conclusion, Chronic non-ulcers that do not respond to treatment should be carefully examined by multidisciplinary team for malignant transformation. This retrospective review at our institute showed that Marjolin's ulcer predominantly seen in males and the most common etiological factor was burns scar. Surgery followed by Adjuvant Radiation should be considered in high-risk patients.

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Statement of Transparency and Principals:

- Author declares no conflict of interest
- Study was approved by Research Ethic Committee of author affiliated Institute .
- Study's data is available upon a reasonable request.
- All authors have contributed to implementation of this research.

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