



EPIDEMIOLOGY OF POST BURN PROBLEM SCARS AND THEIR RELATION WITH TIME SINCE BURN

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**ABSTRACT**

**Background:** Burn is a major problem globally as well as in India. Treatment of problems related with post burn scars is a significant part of rehabilitation of these patients. We have conducted a prospective epidemiological study to assess magnitude of this problem and to identify factors associated with this problem. **Methods:** This is a single centre prospective epidemiological study conducted over 10 months duration. All post burn subjects with post burn scar related problems were included. Their demographic data, VSS score, time since burn injury and presence itching were recorded. **Results:** Total 41 subjects with post burn problem scars were included. The mean age of patients was 24.1 ± 16.9 with 14 (34.1%) males and 27 (65.9%) females. Mean VSS score of these scars was 7.4 ± 1.8. Complaint of itching was present in 30 (73.2%) scars. 22 (53.7%) subjects presented with problem scars within 1 year of the burn injury. VSS score of scars older than 1 year is higher than that of scars less than 1 year duration. **Conclusion:** Most of the subjects coming to OPD for treatment of post burn problem scars are of young and middle age group; around half of them being younger than 20 years. Two third of these subjects are females. Most of the post burn immature scars are having hypo or hyper pigmentation, pink to red in colour, yielding to firm, and between 1mm to 4mm height, with a VSS score in range of 5 to 9. Itching is a common problem associated with these scars. Problem of itching and vascularity of scar is more in the first year after burn injury, which slowly improves over time. VSS score of post burn immature scars worsen with time if left untreated, mainly due to increase in scar height (hypertrophy) and pigmentation.

**KEYWORDS :** Post burn problem scars, epidemiology, time since burn injury

**INTRODUCTION:**

Burn is a major problem globally and has a significantly high incidence in low and middle income countries like India.<sup>1</sup> It is one of the major groups of trauma, second after road side accidents in terms of annual incidence. Estimated incidence of burn injuries in India is around 6-7 million per year.<sup>2</sup> Out of these around 0.15 million people require prolonged rehabilitation.<sup>2</sup> In the natural history of burn, wound healing is not the end but the beginning of another set of post burn problems. Post burn problems are local problems associated with scar hypertrophy, contracture, pruritis and disfigurement as well as systemic problems like hyper-metabolic state, nutritional deficiency and anemia.<sup>3-5</sup> There is a significant psychosocial and socioeconomic impact of post burn problems over burn survivors.<sup>6-8</sup> Burn victims are in need of support from healthcare system during acute burn injury as well as post burn rehabilitation. Problem of burn rehabilitation is further important because most of the burn survivors are of age group 15 to 40 year, which is most productive age group of the society.<sup>2,3</sup> In this article we share findings of our study on epidemiology of subjects coming to health care system for treatment of post burn problem scars.

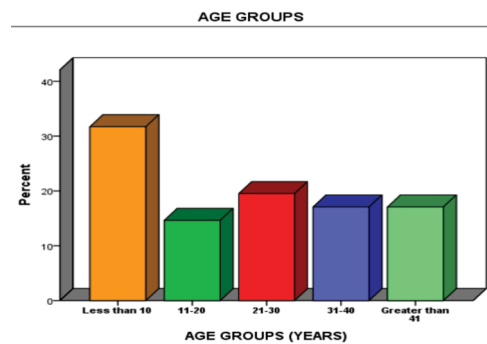
**MATERIALS AND METHODS:**

This is a single centre prospective epidemiological study conducted at the Plastic Surgery Department of a tertiary healthcare and research institute in India. Study duration was 10 months (from Sept 2018 to June 2019) All post burn subjects coming to the plastic surgery outpatient department (OPD) with post burn scar related problems were included in the study. Their demographic data was recorded. Their scar was assessed using Vancouver scar scale (VSS) score. Subjects were asked about presence of itching in the scars. Time since burn injury at the time of presentation was recorded.

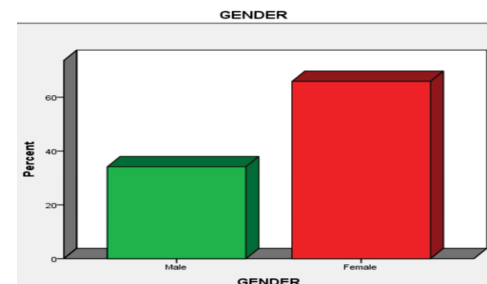
**RESULTS:**

Total 41 subjects with post burn problem scars were presented to the OPD over a period of 10 months. The mean age of

patients was 24.1 ± 16.9 (range 3-62 years). (Figure-1) There were 14 (34.1%) males and 27 (65.9%) females, respectively. (Figure-2) Mean VSS score of these scars was 7.4 ± 1.8. (Table-1) Complaint of itching was present in 30 (73.2%) scars. 22 (53.7%) subjects presented with problem scars within 1 year of the burn injury, while remaining 19 (46.3%) subjects presented after 1 year of the burn injury. (Figure-3) Table-2 shows the pattern of scar characteristics according to the time since burn injury.



**Figure 1:** Age distribution of the subjects with post burn problem scars



**Figure 2:** Gender distribution of the subjects with post burn problem scars

Table-1: Severity of the post burn problem scars at the time of presentation

Variable	Score
Pigmentation	2.1 ± 0.8
Vascularity	0.75 ± 0.76
Pliability	2.5 ± 0.74
Height	2.07 ± 1.03
VSS score	7.46 ± 1.8
Itching	73.2%

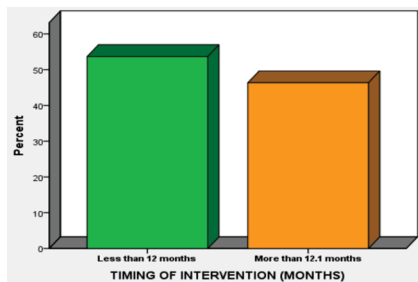


Figure 3: Distribution of scars according to time since burn injury at the time of presentation

Table-2: Severity of the post burn problem scars according to time since burn injury at the time of presentation

	Before 12 m	After 12 m
VSS score	6.86	8.16
Pigmentation	1.77	2.47
Vascularity	1.18	0.26
Pliability	2.36	2.74
Height	1.55	2.68
Itching	95.5%	47.4%

**DISCUSSION:**

Problems associated with post burn scars are functional as well as aesthetic.<sup>3-8</sup> This study shows that subjects with post burn problem scars are of a wide age range (3 years to 62 years); Mean age being 24.2 ± 17 years. When divided into decade wise age groups, maximum subjects (31.7%) are of age group younger than 10 years. Around half (46.3%) of the subjects are younger than 20 years. Thus it can be said that majority of subjects coming to plastic surgery out-patient department (OPD) for complaint of problematic post burn scars are of young age. Gender distribution of these subjects shows that two thirds (65.9%) of them are females. This distribution pattern of age and gender is multifactorial. Higher incidence of burns in young and female population, lower mortality in younger burn victims, lower rate of OPD follow up by old age and male burn survivors are few possible reasons.<sup>3-5, 8</sup> This data cannot be extrapolated to general population as the inclusion criteria is limited to the subjects coming to OPD only.

Mean VSS score of post burn immature scars at presentation to OPD is 7.46 ± 1.8. Present study shows that most of these scars are having hypo or hyper pigmentation, pink to red in colour, yielding to firm, and between 1mm-4mm height. 73% (30 out of 41) of these scars are having problem of itching at presentation. Our findings are consistent with other clinical studies that post burn immature scars are red, raised and rigid masses with itching and pain.<sup>3-5, 9, 10</sup>

On analyzing post burn scar in terms of time since burn injury we found that VSS score of scars older than 1 year is higher than that of scars less than 1 year duration. We found that Height and pigmentation of the scar is much higher in scars older than 1 year. Pliability is found to be slightly higher in older scars. However vascularity of the scar is significantly lower in older scars. Thus it can be said that post burn immature scars worsen with time, if remains untreated. Their vascularity decreases with time and pliability remains almost

same. However they become more hypertrophic (raised height) and pigmented with time.<sup>4, 11</sup> Initially almost all of the post burn immature scars have itching, which decreases with time.<sup>5</sup>

Shortcomings of present study are that we did not consider categorization of scars based on location of scar, extent of original burn injury, previous operative wound management, and presence of skin graft over the scars. These may be confounding factors contributing to errors. The study is single center study. Further large population based studies are required to clearly understand epidemiology of post burn problem scars.

**CONCLUSION:**

Post burn problem scar is a significant clinical problem which needs treatment. Most of the subjects coming to OPD for treatment of these scars are of young and middle age group; around half of them being younger than 20 years. Two third of these subjects are females. Most of the post burn immature scars are having hypo or hyper pigmentation, pink to red in colour, yielding to firm, and between 1mm to 4mm height, with a VSS score in range of 5 to 9. Itching is a common problem associated with these scars. Problem of itching and vascularity of scar is more in the first year after burn injury, which slowly improves over time. VSS score of post burn immature scars worsen with time if left untreated, mainly due to increase in scar height (hypertrophy) and pigmentation.

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