

## SURGICAL MANAGEMENT OF TATTOOS

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### ABSTRACT

**Objective:** To study patients coming for surgical removal of their tattoos with regard to treatment outcome.

**Methodology:** It is a descriptive and observational study, conducted at Plastic, Reconstructive & Micro-Surgery Department of Dow Medical College & Civil Hospital, Karachi over a period of one year. Twenty four patient, 18 males and 6 females, who came for tattoo removal and were found to be psychologically fit, were included in the study. After explaining the treatment consequences they were subjected to either simple excision, serial excision, Dermabrasion or excision and skin grafting.

**Results:** Fourteen cases underwent serial excision, four had simple excisions and closure, three had dermabrasion and three cases excision and over grafting. Infection occurred in one case, dehiscence in one case and incomplete removal of tattoo by dermabrasion in one case. The long term follow up, of up to six months was available only in eight out of twenty four patients. Out of these eight, five developed hypertrophic scars.

**Conclusion:** Though tattoo removal is a simple procedure in the hands of experienced plastic surgeon, it is not free from complications. Though scar is inevitable, patient's satisfaction was quite high as they got rid of stigmas, which was haunting them.

**KEYWORDS:** Tattoo, Surgical removal, Laser removal.

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### INTRODUCTION

Tattoo is a foreign material entered into the dermis by needle or some other trauma that results in a visible, indelible mark in the skin.<sup>1</sup> Tattoo marking is a newly growing favorite practice or hobby of youngsters, both males

and females, in the urban areas of Pakistan. Most of the youngsters belong to age group of 16-22 years when there is either emotional or personal instability. There is strong desire to be identified with someone or to belong to someone. Most of these tattoos have names of their beloved or some marks of heart or cupid bows or simple alphabet letters of their loved ones. It is usually in the mid and late twenties that the individual finds the tattoo a liability. It is at this point that social, religious and familial pressures related to the tattoo become apparent to the individual and removal of tattoo is sought from Plastic surgeon.<sup>2</sup> Often such individuals have attempted to remove a portion of the tattoo themselves by burning the area with a hot object or acid or abrading the area with salt or sandpaper, only to find it painful and the scarring that results as objectionable as the tattoo.

A study of all cases of tattoos coming to out patient Plastic surgery service of Civil

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Hospital, Karachi for its surgical removal was carried out with regard to treatment outcome.

## METHODOLOGY

All patients coming to outpatient's department of Plastic Surgery service at Civil Hospital, Karachi for removal of tattoo were included in the study. A detailed interview by the first author excluded all those cases that were showing signs of emotional instability. All patients were explained the consequences of treatment outcome and patients with strong desire and motivation were included. Tattoo were examined with regard to age of patient, site of tattoo, duration of tattoo, matter of the tattoo, whether done by professional or nonprofessional and type of ink used.

Tattoos were studied with regard to treatment methods they were subjected, i.e. simple excision and closure, serial excision, excision and skin grafting, dermabrasion and any other method. Follow up was done for six months. Quality of scar and any other complications were also noted.

*Simple excision:* The tattoo was marked with gentian violet as an ellipse, observing the lines of relaxed skin tension. 2% Injection lidocaine (Inj. Xylocaine - Welcome) was injected into the marked area and the patients kept waiting for seven minutes. Tattooed skin was excised with No. 15 surgical blade. Skin was closed in two layers. Subcuticular layer was closed with 3/0 polygalactic acid (Vicryl Ethicon) and dermal/epidermal layer with 5/0 polypropylene (Prolene - Ethicon). Sutures were removed on 5<sup>th</sup> post operative day and patient was advised to apply adhesive tape (Steri Strip-3M) for a period of three weeks in order to prevent the spreading of scar.

The most important point during skin closure was to keep wound sutured edges slightly everted in order to overcome the spreading of scar which is inevitable to occur in due course of time. Wound edge eversion always goes away.

*Serial excision:* It was used for larger tattoos. In this method only a part of tattoo was removed

at one stage and closed as above (Fig-1). The remaining part of the tattoo was removed after three months. In this way the entire tattoo was removed in two to four surgical sessions.

*Excision & Skin grafting:* It was used for large tattoos. Skin grafting usually applied was of intermediate thickness and was obtained from thigh. All cases were done under general anesthesia.

*Dermabrasion:* Dermabrader is a machine which removes the epidermis and superficial layer of dermis

## RESULTS

From 1<sup>st</sup> January, 2000 to 31<sup>st</sup> December, 2000 twenty four cases of tattoos were studied. Eighteen were males and six females. Age varied form 16 years to 40 years.

*Site:* Twelve were on the forearm and six were on the dorsum of non dominant hand, three were on the upper arm, one on the thigh, one on the neck and one on the chest.

*Duration:* Out of 24 tattoos studied, 12 were of less than 5 years old, 9 were less than three years old and three were less than one year old.

*Type of Tattoo:* Out of 24 tattoos two were done by professional and 22 by non professional. Out of 22 done by non-professionals, five were self inflicted.

*Matter of Tattoo:* Five cases were having alphabet or letters (Fig-2), six were having heart or

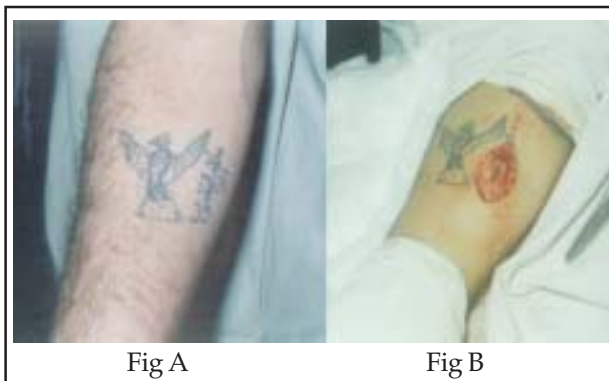


Fig-1: Tattoo on forearm (A) in process of Serial excision (B)



Fig-2: Alphanat Tattoo on dorsum of hand.

heart like structures (Fig-3), eight were having names, three were having dots and lines and two were having different shapes such like dragon & Cupid's bow.

*Ink used:* All the cases were done by black ink.

*Treatment Employed:* Fourteen cases underwent serial excision, four cases simple excision and closure, three cases dermabrasion and three cases excision and over grafting.

*Complications:* Infection occurred in one case, dehiscence in one case and incomplete removal of tattoo by dermabrasion in one case. Five cases developed hypertrophic scars.

Patients were followed up in out patients for up to six months. At the end of three months, only 16 out of 24 remained in the follow up. Scar in eight cases was acceptable to patients. Eight cases, in which there were some complication, were visiting at the end of six months. Out of these eight, five developed hypertrophic scars. Three were treated by intralesional



Fig-3: Heart sign tattoo on forearm

injection triamcinolone, one by silicone sheeting (Cica Care – BSM) and one by combination of both.

## DISCUSSION

Tattoo can be of three types<sup>3</sup> which are as under:-

*Adventitious* when pigment enters dermis accidentally.

*Medical:* This involves the insertion of pigment by a surgeon e.g. for reconstruction of nipple areola complex.

*Decorative:* This is a planned impregnation of pigment into skin to create an artistic design or pattern. Decorative tattoos can be done by professional or non professionals. Decorative tattooing has been around since beginning of modern civilization. Modern tattoo artists use myriad of colors to produce startling designs resulting in permanent work of body art.<sup>4</sup> Professional tattoos are those, which are placed by artist, they have got regular outline, are well demarcated and pigment is uniformly distributed up to a certain depth.<sup>5</sup>

Non-professional (amateur) tattoos tend to have outline form only. Outline is often irregular and thick. Pigment is not uniformly distributed. Designs are rather simple and they are usually placed on the distal portion of the extremity.

Tattooing is fashionable in western world equally in both sexes.<sup>6</sup> Associations found with tattooing tendency in western world were lack of religious affiliation, extended jail time, alcohol drinking and recreational drug use.<sup>7</sup> Tattooed college students were found to be sexually active at the very young age as compared to non tattooed men but this difference was not found in tattooed and non tattooed women.<sup>8</sup> None of the above associations were found in our series of patients.

Several factors influence the outcome when treating tattoos. Scar is inevitable. The final appearance of scar depends upon patient's skin type, location of tattoo, the tension on closure, the color and age of tattoo and whether tattoo is done by professional or amateur.

In our series, all the tattoos were decorative. Out of twenty four, twenty two were done by nonprofessional. Most of the patients at the time of tattoo removal were found to be in normal emotional and psychological state and therefore were not subjected to any psychiatric counseling. Nineteen patients sought removal due to social liabilities and five due to religious reasons. Majority of patients had tattoo in different shapes on the forearm most probably due to ease of application. They were done by non professional, were covering more area and thus need serial excision for removal. Modern day methods of tattoo removal by different lasers were not used in our series as they are expensive and are not available in our institute. Currently, the Q-switched ruby,<sup>9,10</sup> Nd: Yag, alexandrite, and green pulsed dye lasers are employed in tattoo removal. Each laser enables removal of specific colors of ink, however, no one of these can remove all ink.

### CONCLUSION

Though tattoo removal is a simple procedure in the hand of experienced Plastic surgeon, it is not free from complications. Scar is inevitable but patient's satisfaction is quite high as they get rid of stigmas, which usually haunts them.

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