

## Radiofrequency Assisted Management of Trap Door Scar

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### Abstract

Scar revision forms a major part of plastic surgery practice. Various methods of scar revision have been described including revision by Z Plasty, W Plasty, serial excision, dermabrasion of the scar etc. the final outcome of scar revision depends on various factors like type of scar, skin type of the patient, orientation of the scar, technique used for revision and instrument used for revision. In this article we describe the use of the radiofrequency probe for revision of a trapdoor scar in a 32 year old patient and its benefits.

**Keywords:** Scar; Radiofrequency.

### Introduction

The Radiofrequency cautery is also known as "poor man's laser" or "cold cautery". It uses alternating current at very high frequencies (500-4000 KHz) for producing ablation of tissues. It can be used for electrofulgration, electrodesiccation or electrocoagulation [1,2]. The radiofrequency probe ensures precise cutting with minimal collateral damage producing more aesthetically pleasing scars. This also ensures that healing is faster. It is highly effective in causing cutting of the skin at the same time coagulating tissues ensuring good hemostasis. Because of the simultaneous effects of cutting and coagulation, time taken to finish surgery is also faster. Procedures can be performed under local anesthesia. Lesions that would otherwise require the use of expensive ablative lasers can be treated in a fast, cost effective manner by the use of radiofrequency ablation [3,4,5,6]. It can be used to do full thickness excisions or to superficially shave off lesions. Its cosmetic uses include excision of naevi, removal of vascular lesions like hemangiomas, face lifts, abdominoplasty etc [7].

Here we present the case of a 32 year old male patient with a post traumatic, post operative trapdoor scar on the right cheek for whom scar revision was

done with the use of radiofrequency cautery.

### Case Report

A 32 year old male patient presented to the plastic surgery outpatient department with history of post traumatic, post operative unsightly scar over the right cheek since 30 years. Patient did not complain of pain, pruritis or altered sensation in the region of the scar.

On examination, a curvilinear, hyperpigmented, mature, depressed scar was present over the right cheek measuring 8 cm in length and 4mm wide in the broadest part of the scar. There were multiple



Fig. 1a and b: Preoperative pictures showing unsightly scar over right cheek

hatch marks running across the central scar. A trapdoor component was also noted to be present. There was no tethering to the underlying structures. The Vancouver scar scale (VSS) score was 3. The patient had Fitzpatrick type 5 skin. The patient was informed about various treatment modalities available and a final plan for serial excision of the scar was made.

After investigating the patient and obtaining informed written consent, the patient underwent Radiofrequency assisted excision of the central part of the scar under local anesthesia. The power of the radiofrequency used was 1W. The wound was closed with absorbable subcuticular sutures. Intraoperatively it was noted that the use of the radiofrequency probe provided good cutting of the scar tissues with adequate hemostasis. This ensured faster completion of the surgical procedure. The first post op check dressing was done on post op day 3 which showed good wound healing with a fine scar. After 10<sup>th</sup> post operative day, the patient was advised silicone gel application and sunscreen application to prevent hypertrophy and hyperpigmentation of the scar. The patient was followed up for a total period of 2 weeks and the follow up was uneventful. The postoperative VSS score was 0.



Fig. 2: Intraoperative picture showing markings for excision



Fig. 3: Use of Radiofrequency for excision of scar



Fig. 4a and b: Intraoperative pictures showing scar after excision and immediate postoperative appearance following suturing.



Fig. 5: Appearance at 10 days postop

## Discussion

Since the establishment of electricity, electrosurgery has been used in medical practice. Electrosurgical instruments have evolved from more basic instruments to better developed machines [8]. The radiowaves created by the radiofrequency unit travel through the cautery tip to the patient and back to the unit through a plate antenna placed close to the patient. When the waves pass through the body, the body tissues offer resistance which in turn generates heat which causes boiling of the tissue water and rupture of the cell membrane producing a cutting effect. The heat causes denaturation of the body proteins causing a coagulation effect. The various waveforms used causes three main patterns of its action. Fully rectified and filtered waveform causes cutting. Fully rectified waveform causes partial cutting and partial coagulation. Partially rectified waveform causes predominantly coagulation [9,10,11].

The electrodes in the Radiofrequency unit cause very minimal collateral damage (upto 75 micrometre) as the electrodes remain cold during the procedure and only the tip of the electrode comes in contact with the skin for a very short period of time. As the diameter of the electrode tip is small, the electrode-tissue interface is small. The Radiofrequency unit uses high frequency but at low intensity [9,10,11].

Scar revision forms one of the procedures performed routinely in plastic surgery. The ultimate result after revision depends on many factors. One of

those factors is the trauma caused to the tissue intraoperatively. The radiofrequency probe, by ensuring good cutting with minimal collateral damage ensures an aesthetically satisfying scar appearance after revision. The use of scalpel causes bleeding when the incision is made and obscures the surgical field prolonging surgical time. The radiofrequency probe ensures adequate hemostasis intraoperatively and prevents complications such as hematoma formation, postoperative wound gape and infection ensuring a good final outcome after surgery.

### Conclusion

Through this case report we would like to suggest that the use of radiofrequency for scar revision is a better option to conventional methods such as revision with scalpel or electrocautery. It is precise with minimal collateral damage and good hemostasis ensuring faster surgery with better postoperative outcomes.

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None

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None

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