

## Role of Radiofrequency in Keystone Flap

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### Abstract

Various energy sources are available in medical fields for multiple applications. Radiofrequency energy has been used in a variety of medical sectors and applications. Radiofrequency is now the foundation of a wide range of medical devices used in practically all medical professions. Its regionally concentrated effects make it particularly useful in a variety of minimally invasive procedures. In this case report we are assessing the role of radiofrequency electro surgery in raising the keystone flap.

**Keywords:** Radiofrequency; Keystone flap; Energy sources.

## INTRODUCTION

Radiofrequency energy source probe with a power of 1.7W was used in making cutaneous incision. The use of radio frequency energy causes regulated tissue heating, which results in controlled cell protein denaturation and desiccation, resulting in minimal cell death and tissue damage. Radiofrequency's main premise is that the generated heat can be utilized to cut, coagulate, or trigger

metabolic processes in the target tissue. The role of radiofrequency energy sources in elevating the local keystone flap will be discussed in this article.

## MATERIALS AND METHODS

In this case report, 32 year old male came to Jipmer Hospital with the chronic non healing ulcer over the lower back of size 5 X 5 cm for past 10 year post electrical burns. After wide local excision of the ulcer histopathology report came as Squamous cell carcinoma with all margins negative for tumor. After tumor removal size of the tumor ulcer size was around 8 x 8 cm. In view of scarred tissue all around the ulcer, local keystone flap based on the perforator was planned. In surgery we use the radiofrequency energy source to raise the keystone flap. Radiofrequency energy source machine was available in our hospital, cost of the machine is 4,50,000 (4500 US dollars). The Ellman surgitron Radiofrequency machine is easily purchasable and

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easily available (Figure 1). The Ellman Surgitron FFPF EMC Electrosurgical Unit comes with foot pedal and patient plate. This unit is a high-frequency radio-surgical device that is equipped

with an audio tone that indicates when the device is activated. The tone will be heard immediately upon activation of the Surgitron device.



Fig. 1: Radiofrequency electro surgery machine.

## RESULTS

Radiofrequency energy source is very helpful in raising keystone flap (Fig.2) in this case with minimal blood loss with less damage to the surrounding

tissues. It helps in achieving early hemostasis, little wound contraction, less postoperative edema and minimal postoperative pain.



Fig. 2: Radiofrequency energy assisted keystone flap

## DISCUSSION

The Ellman Surgitron radiosurgery dual frequency combines two optimised frequencies Mono polar (4.0 MHz) and Bipolar (1.7 MHz) for maximum precision and control. This machine has digital Control Panel for ease of operation and a clear view of settings and a Solid State circuitry for dependable

and consistent energy emission.<sup>1</sup> It comes with the Safety Indicators for visual and auditory alerts. This machine has Less Thermal Spread, causes minimal scar tissue. The positive features are quick Recovery with less tissue destruction, healing is hastened, decreased Post-operative Pain.<sup>2</sup> High frequency RF surgery causes less trauma, less burning or Charring of Tissues unlike laser or conventional

electro surgery. Minimal Heat Dissipation helps in maximum readability of histologic specimens.<sup>3,4</sup>

Electrosurgical generators can produce electromagnetic waves at a variety of frequencies. The type of electromagnetic (EM) radiation utilised in these electro surgery is radio frequency (RF), which varies from 3 kHz to 300 MHz because Radiofrequency waves have the lowest frequency of all the electromagnetic waves, they take longer to create heat in the tissue than other EM waves.<sup>5</sup> Radiofrequency ablation (RFA), also known as LRFA (laparoscopic radiofrequency ablation) in the laparoscopic context, is the most prevalent application of the RF. RFA was found to be more successful than stripping and foam sclerotherapy in the treatment of lower extremities varicosities (a less invasive aesthetic technique), however not as effective as laser therapy. In a study of bipolar RF in the treatment of plantar fasciitis in patients who couldn't be cured with conservative approaches.

## CONCLUSION

Radiofrequency radiation is a key component of a wide range of medical devices, making it a very useful instrument in the hands of clinicians. It was helpful in raising the flaps with less bleeding and minimal energy with minimal burns to the surrounding tissues. As a result, all healthcare

providers must be familiar with the basic physical principles and biological consequences of radiofrequency energy on the human body. This insight would lead to the right use of Radiofrequency energy and increased procedure safety.

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