Radiofrequency Assisted Pressure Sore Reconstruction

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Abstract

Surgeries performed traditionally used to be cumbersome with skin bleeding while making incisions with scalpel, especially in pressure sore reconstruction where use of tourniquet or infiltration of vasoconstrictors may not be appropriate. Incisions made by high frequency electromagnetic radiation (radiofrequency) are considered to be of more aesthetic value, less time taking, less bleeding, less surgical site pain, and minimal ill effects on wound healing.

Keywords

Pressure Sore; Flap; Radiofrequency; Reconstruction; Radiation; Electromagnetic

Introduction

Cutaneous bleeding is a frequent problem after starting surgery. A constant cutaneous bleeding may hinder the operating field, and can lead to surgeon discomfort. It also prolongs operative duration thereby adding on to the morbidity associated with anesthesia and cost of surgery. The usage of radio-frequency diminishes cutaneous bleeding and thereby the total operative time too.

Radiosurgery expedites incisions in various fields of plastic and reconstructive surgery such as in face lifting, hair restoration surgery, and abdominoplasty. Radiofrequency incision delivers a pressure less incision with no dragging or bunching of tissue, synchronized cutting and coagulation, and accuracy of incision [1, 2]. Lateral tissue damage from RF has been the least matched with other heat-producing devices [3].

In contrast with scalpel, radiofrequency has numerous benefits, such as ease of soft tissue ablation, ability to achieve hemostasis, instantaneous sterilization, reduced bacteremia, and little wound contraction, reduced edema, minimal scar, reduced mechanical trauma, less surgical site pain.

Material and Methods

A 28 year old male presented to the outpatient department of Plastic Surgery, JIPMER, Puducherry, India in April 2017 with post traumatic paraplegia with left trochanteric pressure sore stage III. Treatment plan for the patient was reconstruction of the defect with flap cover. Patient was optimized prior to surgery. Patient was evaluated for osteomyelitis of the left femur and had no evidence of osteomyelitis. Patient underwent excision of trochanteric ulcer and reconstruction with tensor fascia latae musculocutaneous rotation flap under general anesthesia. The cutaneous incision were made using radio-

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frequency probe with a power of 1.7W, as an alternative of using scalpel. It was perceived that bleeding was minimal and the operative duration was less. The surgeon and the assistants comfort were also better.

The skin incision had no damaging consequence on wound healing.

**Discussion**

Pressure sore reconstruction plays a vital role in rehabilitation of the involved patients. Most of the patients requiring reconstructive surgery are poorly nourished with multiple co-morbidities. Reconstruction needs to be tailored accordingly to patients so that further deterioration does not occur. Operative times are usually prolonged due to positioning and the extra care taken for padding and preventing pressure injury during positioning. Blood loss during surgery needs to be limited by non-conventional measures as measures such as tourniquet for proximal control or infiltration of vasoconstrictors may not be appropriate.

Radiofrequency ablation devices function on the source of generating high frequency voltage (of ≈500 kHz), which, when brought into juxtaposition of tissues, causes flow of electrical currents through them. The tissues provide the necessary impedance to produce heat as electrons overcome the resistance in the tissues, and the patient’s body, therefore, becomes part of the electrical circuit [4]. Radiofrequency devices are organized either as mono/bi-polar devices.

The extent of heat developed by high-frequency, alternating current increases by the square of the current density. Persistent heat application causes the tissues beneath the tip of the electrode to become hot enough to vaporize any water they contain, thereby producing a cutting or ablating effect. Circulating blood quickly dissipates heat away from the tip of the active electrode and current density becomes insufficient to heat the patient’s tissues at sites distant from the tip.

**Conclusion**

Our case demonstrated radiofrequency can be used in reconstructive flap surgery as an alternate to scalpel because of ease of application, better hemostasis, less operating time and no objectionable effects on wound healing.

**References**


