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Case Report

A CASE REPORT ON: ELECTROCAUTERY INDUCED BURN DURING C-SECTION

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ABSTRACT

An electrocautery is a form of direct transference of heat to the tissue which helps in the hemostasis during surgery. We are reporting a case of pregnant woman underwent elective Cesarean-section under spinal anesthesia who suffered deep burns on two legs due to the displacement of grounding pad which had been placed on posteromedial over the malleolus. Post-operative management was not complicated and discharged with some topical preparations to apply on the wounds.

Keywords: Electrocautery, Grounding pad, Burn.

INTRODUCTION

Electrocautery is one of the most widely used surgical devices. Bouie deserves acknowledgment for his outstanding pioneering role in designing the first surgical diathermy machine in 1928. Since then cautery has been increasingly employed in surgery for cutting and coagulating, ensuring efficient hemostasis during surgery [1].

It has become an indispensable tool in the operating room mainly, to achieve a bloodless surgical field [2]. The electrical current is produced by a generator and reaches the patient's body by an active electrode, acts in target tissues, and exits through a neutral electrode. When this electrical current meets the human tissue resistance, it turns into heat and determines the therapeutic effects, known as cutting or coagulation.

The surgical technique for Caesarean sections (C-sections) has undergone multiple changes aimed at improving patient outcomes. Among these changes, the use of electrocautery for obstetrical procedures was introduced according to recommendations arising from developments in general surgery. However, it is also associated with potential complications including internal and external burns, seromas, and surgical scar infections [3-6].

While incorporating the patient body into a high-frequency electrical circuit, modern electrosurgical devices are able to selectively cauterize and volatilize tissues by dissipating current density as it leaves the patient body, thereby avoiding unintended thermal injury. This is accomplished by a large grounding, or "indifferent" electrode that completes the circuit between patient and electrocautery device [7]. The grounding pad is usually attached by interns or nurses, and ignorance or negligence often occurs in relation to the proper placement of grounding pad.

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We present an interesting case of surgical site fire in a patient undergoing elective cesarean section and its subsequent management. This brief report is meant to create awareness among the surgeons and theatre staff regarding the potential risk of iatrogenic burn injury due to electrocautery. It also briefly discusses the possible mechanisms and preventive measures for such injury.

Case Report

A 24 -year old female was admitted to multispecialty hospital at 38 weeks for delivery. The patient underwent C-section under spinal anesthesia. The operation time was half an hour. Her surgery proceeded uneventfully. The grounding pad had been applied posteromedial over the malleolus which was discovered to cause a deep burn on 2 legs (Fig 1, 2) after recovery from surgery. In consultation with a gynecologist, the patient was managed with hydrogel dressings. A topical antibiotic Fucidin was advised.

On discharge, the patient was advised to have wound closure, but did not give consent to another surgical operation so conservative management was continued and healed by secondary intentions after 3 months.

Fig1. Burn on right leg

Fig 2. Burn on left leg

DISCUSSION

The use of electricity in surgery is highly useful and effective, but there are many risks of complications exists. Electrical burns are the most common electric accidents in the operating room [8].The ground plate (dispersive electrode) helps in the safe return of the electrical current to the radiofrequency generator [9]. So it is important to place against the clean and dry area in order to allow the uniform distribution of current. Grounding plate should be properly covered with conductive jelly's to ensure the maximum contact with the skin [10].

In this case, the burn is due to displacement of grounding pad from the area of contact. If the connections between the grounding plate and patient will lose it will lead to burns in that area. Reasons for tissue damage is due to the increased pressure of current on that area or without providing an appropriate exit for the current to pass safely through the circuit. Several measures can help to prevent this kind of problems

If the grounding pad temperature goes up to 450C, it is more likely that burns may occur [11]. Temperatures below 450C are important because damaged tissues are revisable. If the temperatures are above 450C, the proteins in the tissue will be denatured and the structural integrity disappears.

Normally superficial burns and superficial partial burns heal without the need for surgical excision and grafting. Commonly hydrogel dressings are used, it helps to maintain the hydration to the dry lesions and also improves the healing property by cool down the wound. Topical preparations like Mafenide acetate which is most commonly used an antimicrobial agent for the management of the burns wound. It provides excellent coverage against gram-negative organisms [12]. In this case, co-mupimet granule 10ml is used, it's a combination of Metronidazole and Mupirocin both are antibiotic so this combination is used in order to prevent the infection.

Electrocautery produces a very high current that can injure both patient and operator if not properly used and maintained. Some of these safety problems can be avoided by taking simple precautions like 1)The hand piece should always be placed in the nonconductive holster when not in use 2) Always use the lowest possible generator setting that will achieve the desired surgical effect 3) Clean the electrode tip frequently. But it should not be used in the presence of flammable agents or in oxygen-enriched environments, Rubber catheters or other materials should not be used as a sheath on active electrode tips, never operate electrosurgical equipment with wet hands or wet gloves, never operate electrosurgical equipment while standing on a wet

surface, Check grounding device contact if patient is repositioned [13].

CONCLUSION

An electrocautery burn is a medical error which also has medico-legal and ethical considerations. Reporting such errors help to ensure safer management of future patients by providing adequate information to the operating surgeons about the risks involved and methods to overcome that problem. The operating surgeon should be aware about the risks involved and be proactive to ensure the patient's safety.

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Nil

CONFLICT OF INTEREST

No interest

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