

# Post-operative aural surgical wound dressing in rats

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## Abstract

Wound dressing is an integral technique of animal care in various studies involving animal models. This post-operative technique often determines the mortality and morbidity of the animal used and also influences experimental outcomes. Post auricular surgical wounds presents a challenge for dressing on account of presence of sense organs in the vicinity. Rats are also prone to damaging the dressing and the underlying sutures. Hence, an appropriate technique for dressing the region is vital for successful surgical outcomes. Literature on dressing of post auricular surgical wounds in rats are scarce. The present work describes in detail the wound dressing technique in adult Wistar rats developed by the authors. A total of 14 animals were used for the study and with this technique, the wrap around the incision was found to be intact till the next day of post-operative dressing. The wound healing process appeared to be normal with no visible signs of infection at the incision.

**Key words:** Post-operative, Wistar rats; wound dressing

## Introduction

Experimental surgery on rodents are routinely carried out as part of a research protocol and therefore wound care and management in the operated animal is a crucial post-operative step in animal care which may often pose a major health problem, both in terms of morbidity and mortality. Surgical wound dressing in operated animal is usually done to prevent infections and to ensure timely healing of the incision. A number of literatures on post-operative care in animals focus on the administration of antibiotics and analgesics; limited data is, however, available on wound dressing. The present work therefore describes the wound dressing technique in operated rats undergoing otological surgeries..

## Methods

Individually caged adult Wistar rats (9 male and 5 female) were maintained in the Animal House, NEIGRIHMS, Shillong under controlled laboratory conditions of temperature (22±2°C), relative humidity (45±5%) and a 12h day: 12h night cycle. Animals were provided standard pellet diet and water *ad libitum*. The experimental operations were carried out using procedures approved by the Institutional Animal Ethics Committee (Letter No. NEIGR/Pharma-AH/IAEC/2016/07; Dated: November 8, 2017). The animals aged 10 to 17 months and weighing 150 to 230 g were used for the study. These animals were subjected to surgical studies on the tympanic bulla by the post auricular approach. All surgeries were elective and conducted in healthy rats.

The animals were anaesthetized using isoflurane (2.5-3%) and oxygen in an induction chamber. The anaesthetized animals were then placed on the operating table over a heating pad and isoflurane (1.5-2 %) and oxygen were administered by nose cone continuously. The hairs around the ear were shaved. The region was cleaned using savlon solution, followed by povidone iodine solution. A postaural incision of approximately 1.2 cm was made. The surgical procedure to access the tympanic bulla was completed. The wound was closed with 4-0 polyglactin 910 surgical suture. All surgical procedures were carried out under strict aseptic conditions. After surgery, the incision was cleaned with surgical spirit followed by povidone iodine solution using sterile cotton gauze. This was followed by topical application of framycetin over the wound. The wound was then covered with paraffin gauze (Fig. 1). Wound was then wrapped with 4 inch cotton bandage folded once. One end of the gauze was then carefully passed under the head of the anaesthetized animal. The wound was covered by crossing the ends of the gauze over the wound also ensuring that the ears were left uncovered (Fig 2). The wrap was then secured by loosely tying the ends of the gauze with two knots. The animal was then placed in the induction chamber and administered oxygen till it regained consciousness. Thereafter the animal was transferred to its cage and shifted to the animal room.

## Results

A total of 14 animals were used for the study. The time taken to dress the wound was 5-10 min. In all the animals, the wound was dressed regularly and no signs of infection at the incision site were observed. The wrap was found to be intact the next day after surgery. The wound was dressed regularly with topical framycetin and paraffin gauze and wrapped with cotton bandage for 10-14 days after surgery; thereafter, the wound was simply cleaned with povidone iodine solution followed by topical application of framycetin. In all the animal, the suture was absorbed and primary wound closure with healthy scarring was observed within 20-25 days after surgery.

## Discussion

Wound dressing in operated animals ensures timely healing of the wound and is crucial for the general welfare of the experimental animals. An ideal wound dressing technique can be developed by experience as well as by monitoring the animals' behavior post-surgery. In many instances, the animals tend to scratch and bite the dressed area which makes the wound more susceptible to infections. Hence, developing a secure wrap over the wound is often a challenge in operated

animals. The dressing technique demonstrated in the current study effectively covers the wound till the next dressing procedure. In our study, the surgical area was not easily accessible to the animal; the dressing technique however, needs to be improved upon in cases where the incision is easily accessible to the animal for scratching or biting the surgical dressing.

## Conclusion

The dressing technique described by the authors is less time-consuming and securely covers the wound till healing thus minimizing the risk of infections to the animal as a whole.

## Conflict of Interests

The authors have no conflicts of interest to disclose.

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Fig-1: Steps of ear dressing- Initial steps



Fig-1: Steps of ear dressing- Final steps

