



GOOD PRACTICE GUIDELINES

Standards of Rodent Surgery

Members of the working Group:

*Dr H B Waynforth (Chairman); Professor P Brain; Mr T Sharpe; Mr D F Stewart;
Mr K A Applebee; Dr P G G Darke (Home Office Observer)*

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**Laboratory Animal Science Association, PO Box 3993, Tamworth, Staffordshire, B78 3QU
Telephone: 01827 259 130 Fax: 01827 259 188 – e-mail: lasa@globalnet.co.uk**

STANDARDS OF RODENT SURGERY

Introduction

Standards currently used for recovery surgery more often than not fail to use aseptic technique, as a result of traditional thinking that rodents rarely become infected during surgery. Recent research suggests that this is not the case and that rodents do become more frequently infected than previously suspected and that high standards should be employed at all times. What is important is that standards are developed which are *practical*, given the diverse nature of experimental laboratory animal surgery. Since infection, in many cases, is dependent on achieving a threshold level of microbiological contamination, the objectives of rodent surgery must be to minimise this contamination, where its complete elimination is impractical. It is always good practice to discuss any particular surgical procedure, if it is new to the licensee, with the named veterinary surgeon.

Training

Prior to undertaking any surgery, licensees must receive appropriate training. Attendance at a Home Office Module 4 Course is mandatory for personal licensees requesting recovery surgical techniques for the first time, and provides a basic grounding in the principles of surgery.(Note. Some surgery for short terminal procedures is implicit in Module 3). Licensees must have an understanding of aseptic technique, types and uses of instruments, appropriate use of the physical facilities, correct surgical procedure, wound healing and closure. Training utilizing cadavers is imperative in order to practice appropriate surgical techniques until competence is achieved. Before carrying out a procedure for the first time it is by far the best strategy to see the procedure being carried out first by a competent person. This can lead to a reduction in the time taken to carry out the technique successfully as well as reduce the number of animals used.

Recovery Surgery

Surgery *must* be carried out *aseptically*, with minimal trauma to tissues. This requires attention to the following:

1. The location - this should be a room dedicated only to surgery, with at least separate areas within the room for animal preparation and surgeon preparation. Provision of areas for the preparation and storage of equipment and for the post-operative recovery of animals is also recommended.
2. The surgeon - should wear a clean face mask and head cap. He/she should scrub-up hands, and wear sterile gloves and a sterile gown. In some circumstances, a clean laundered gown may be acceptable.
3. The instruments - must be sterile and maintained in pristine condition to avoid inflicting greater tissue trauma than necessary. The appropriate instruments for the surgical procedure being undertaken must be used.

4. The table - good preparation of the operating surface is essential. Use of a sterile towel or drape on the surface is recommended.
5. The animal - the surgical site should be prepared by removal of hair and by disinfection. Draping the animal and the site of operation in all species, irrespective of size is recommended. Steps 4 and 5 will allow instruments to be more easily maintained in a sterile condition throughout the operation.
6. The surgical technique - trauma to tissues and organs must be minimised by the use of good surgical technique. Practice is essential. Use sterile suture materials and appropriate wound closure techniques

Batch Surgery with Recovery

The majority of experimental situations generally require several animals to be surgically prepared, in a batch. This may be one-after-another, or simultaneously such as transplantation of skin between multiple donors or recipients. In either case, sterile instruments should be used for each animal. It is usually impractical to have several sets of sterile instruments available and since in practice, it is necessary to ensure that only the tips of the instruments are sterile, this requirement can be achieved quickly, simply and cheaply with a single set of instruments by repetitive use of a hot-bead sterilizer. To maintain sterility during batch surgery, a new sterile pair of gloves should be donned for each animal. Alternatively, and *much to be preferred*, an assistant can be employed to prepare each animal and to perform any other non-sterile functions for the surgeon.

Problem situations

It is sometimes difficult under experimental conditions to prepare or keep material and equipment sterile. In these circumstances, actions such as wiping over equipment with disinfectant before use, using in-line 0.2 μ filters on syringes and administering antibiotics can help to obtain the prime objective of reducing the overall level of microbiological contamination.

Non-Recovery Surgery

Where surgery is to be carried out in under about four hours, infection is not a limiting factor. Therefore surgery can be carried out under clean conditions only, ensuring that there is no ingress of hair, blood or other matter into the wound which would obscure the surgeon's field of view. Actions such as removing hair, dampening the skin with disinfectant, and employing atraumatic surgical technique will help achieve this. Infection may be a problem when non-recovery surgery is prolonged and here aseptic technique should be used.

Post-Operative Care

1. Where possible, ensure the animal quickly recovers from the anaesthetic. This improves its chance of resisting infection and maintaining homeostasis.

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2. Recovery should take place in a dry, warm, comfortable environment with *continuous* observation until the animal has regained its righting reflex.
3. Over the next day or two, observations should be made to monitor body weight, normal feeding and drinking and absence of adverse reactions.
4. Post-operative pain must be assessed and should be alleviated whenever possible. The named veterinary surgeon should be consulted on the appropriate use of analgesics and antibiotics.
5. Sutures and wound clips should be removed at an appropriate time.

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