Technical Note

Tips on Maintaining Animal Comfort

Data Sciences International (DSI) implantable devices have been proven to be very biocompatible. With appropriate care and surgical techniques, these devices are well tolerated in research animals. However, an investigator may occasionally experience problems with animal irritation or discomfort that could be attributed to the device and/or surgical techniques. The most common issues and how to prevent them are described in this tech note.

Tightness of Sutures

When suturing any animal, it is important that the sutures are not cinched too tight. It is only necessary to bring the two edges of the tissue into contact. Sutures that are tied too tight will restrict blood flow to the tissue along the edge of the incision and delay healing. Additionally, mild swelling at the incision site is a normal response post-operatively. If the sutures placed are too tight, the additional compression of the underlying tissue may attribute to animal discomfort. Many animals respond to this discomfort with excessive grooming, scratching, and possibly chewing at the surgical site. This can result in the loss of the sutures and dehiscence of the incision. If any of these issues are observed, it's recommended to review surgical techniques and ensure that the sutures are secure, but not too tight. Additionally, trimming the nails in rodents as part of the surgical prep can also prevent exacerbation of skin irritation.

Suture Type and Size

Selection of suture material and size are both important in relation to animal comfort. Ideally, the suture material selected should be as non-reactive in the body as possible. Synthetic suture materials are superior to silk in terms of biocompatibility as silk has been shown to cause an inflammatory response in the body. Commonly used non-absorbable synthetic suture materials include nylon and polyester, both of which come in a variety of sizes. Using suture that is too large can cause a tissue reaction due to the presence of more foreign material associated with the larger knots. Using suture that is too small may not provide the strength necessary to hold the incision closed. Additionally, trimming the excess suture from the tied knots can also help reduce tissue irritation. It is recommended to use 4-0 or 5-0 suture for most procedures in rodents. With larger animals, 2-0 to 4-0 suture is recommended for most surgical applications. Please see the individual surgical manuals for specific suture recommendations.

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DSI • 119 14th Street NW • Suite 100 • St. Paul, MN 55112 • www.datasci.com • T: +1 (651) 414-5700 • F: +1 (651) 481-7404 • Toll Free: 1 (800) 262-9687

Proper Pocket Size

Ensuring proper pocket size when implanting devices subcutaneously will help prevent animal discomfort. If the device does not fit easily in the pocket, it will cause the skin to stretch in order to fit the device. This can lead to skin irritation, scratching, chewing or even skin necrosis at the device location. To avoid this, ensure the subcutaneous device pocket is large enough to comfortably accommodate the implant. If the pocket appears too large or there is concern about implant migration, the pocket may be closed by suturing the subcutaneous space.

Infection Prevention

If an incision or device becomes infected, the animal may show signs of discomfort as well as delayed healing. Indicators of infection may include heat, swelling, redness, and purulent discharge at the incision site. Additionally, the animal may exhibit signs of illness such as fever, lethargy, and overall discomfort. If an infection develops around the implant, there is no cure except for removal of the device. Ensuring that there is strict adherence to aseptic technique during surgery will help prevent the occurrence of infection. It is also very important to clip and scrub the surgical site before performing surgery. Additionally, the use of pre- and post-operative antibiotics may be species-specific and should be determined in consultation with the facility's attending veterinarian.

If you have further questions, please contact Technical Support.

DSI Technical Support – U.S. and Canada
Email: support@datasci.com
Monday through Friday: 8 AM to 5 PM CST
(except Holidays)

DSI Technical Support – Europe
Email: Europe-support@datasci.com
Monday through Friday: 8 AM to 5 PM CET
(except Holidays)

DSI Technical Support – China
Email: Apacsupport@datasci.com
Monday through Friday: 9 AM to 5 PM CST
(except Holidays)

DSI Technical Support – All Other Countries
Email: support@datasci.com
Monday through Friday: 8 AM to 5 PM CST
(except Holidays)