inotiv
analyze. answer. advance.

Surgical services

Rodents

Inotiv offers cost-effective solutions to save you time and resources with:

- High-quality surgically-modified rodent models
- Availability at convenient locations to reduce transit time
- Access to surgical experts for model development and technical trouble shooting
- Offers flexibility and a consultative approach
- Innovative software system to track and monitor
- Surgical model development

Barrier locations

Inotiv currently operates two rodent surgical units dedicated to our maximum security production barriers. These surgery units are strategically located in:

- Indianapolis, Indiana (202 - Central)
- Indianapolis, Indiana (217 - West)

Highly-skilled surgeons

Inotiv is dedicated to providing the highest quality surgically-modified animals. Surgery personnel undergo rigorous training and evaluation prior to performing surgery. Surgical skills are continuously monitored. Our surgeons regularly receive outside educational training to improve their skills and increase their surgical knowledge.

Surgery Tracking Software

Inotiv partnered with a technology company to develop a first-in-class animal, staff and surgical model tracking software system.

The innovative system was created to track and monitor the entire spectrum of animals used in the laboratory including surgical model development to **improve animal welfare and realize efficiencies**.

ANIMAL WELFARE

Inotiv is dedicated to the humane care and use of research animals. All surgical modifications are reviewed and approved in advance by Inotiv's Institutional Animal Care and Use Committee (IACUC). Inotiv's veterinarians provide oversight and technical and professional support to surgical personnel.

All surgical procedures are performed by trained and tested surgeons using aseptic technique in surgical facilities dedicated to maximum security production barriers or isolators. Surgically-modified models are monitored postoperatively to ensure complete recovery from surgery.

All animals undergoing major survival surgery (as defined by the Guide for the Care and Use of Laboratory Animals, 2011) receive post-operative analgesia to further ensure their humane and ethical care. Exceptions to analgesic requirements will require pre-approval by Inotiv IACUC.

Inotiv recognizes the need to supplement enrichment to those animals needing to be singly housed after surgery (e.g., catheterized rats, mice). Therefore, we provide these animals with a section of inert diamond twist for gnawing or provide supplemental novel material for bedding. These enrichment items are provided to animals immediately post operatively and remain with them until delivery to the client.

Surgical models transported in special shipping containers with ClearH_2O® gel delivered via an environmentally controlled vehicle.

CATHETERIZATIONS

Inotiv offers several options for accessing catheterized vessels. See inotivco.com/CatheterExteriorizationOptions for details.

While each option offers unique advantages, Inotiv's standard catheterization closure is a fixed 1" catheter exteriorization. Catheter patency is verified by our surgical staff postoperatively and at the time of shipment. All catheters are guaranteed completely patent at time of shipment and clients should follow Inotiv's recommended flushing regimen to obtain optimal patency results. Full information on post op care can be found at inotivco.com/PostOpCareCaths and inotivco.com/PinPortPostOpCare.

RAT CATHETERIZATION PROCEDURES

Vascular catheterizations

- Carotid artery
- Femoral artery
- Femoral vein
- Jugular vein
- Portal vein via the superior mesenteric vein

Non-vascular catheterizations

- Bile duct – closed loop duodenal
- Intestinal – duodenal
- Intestinal – jejunal
- Intestinal – colonic
- Intrathecal
- Urinary bladder

MULTIPLE PROCEDURES – SINGLE ANIMAL

Multiple surgical procedures, including catheterizations, can be performed on a single animal during a single surgical time point.

If you require an unlisted combination, pricing is provided upon request.

Double vascular catheterizations

- Carotid artery and jugular vein
- Carotid artery and portal vein
- Double jugular vein
- Femoral artery and femoral vein
- Jugular vein and femoral vein
- Jugular vein and portal vein
- Jugular vein and femoral artery

Other combination surgeries

- Bile duct – closed loop and jugular vein
- Bile duct – closed loop and carotid artery
- Catheterization and soft tissue triple procedures

  – Contact our Veterinary Science, Research and Support Team

MOUSE CATHETERIZATION PROCEDURES

Vascular catheterizations

- Carotid artery
- Jugular vein

Non-vascular catheterizations

- Gastric
- Intestinal – colonic
- Intestinal – ileum

Multiple procedures – single animal

- Double vascular catheterizations
- Carotid artery and jugular vein
- Other combination surgeries
- Carotid artery and intestinal
- Jugular vein and intestinal

ROUNDED-TIP CATHETER

Inotiv offers the rounded-tip catheter as the standard for all our vascular catheterizations.

Benefits

- Increased long-term patency, with a flushing interval of 5-7 days*
- Reduced maintenance requirements
- No additional cost

* *Clients should confirm patency of the catheter within 2-4 days after animals arrive at their facility*

Supplier partners include:

- Access™ Technologies
- Instech Laboratories, Inc.
- Lomir Biomedical, Inc.
- SAI Infusion Technologies

Catheterization options

In addition to our standard catheterization closure, Inotiv offers these convenient options to help meet your research needs:

- Catheter harnesses
  - Single ports
  - Double ports
  - Quick connect luer
- Catheter skin buttons
  - Dacron mesh button stalk
  - Luer adapter
- Vascular access button™
- PinPort™
- Vascular access ports
- Rat infusion jackets
- Specialty catheters
  - Automated samplers

MEAN CATHETER PATENCY IN JUGULAR VEIN, DURATION BY TIP CONFIGURATION

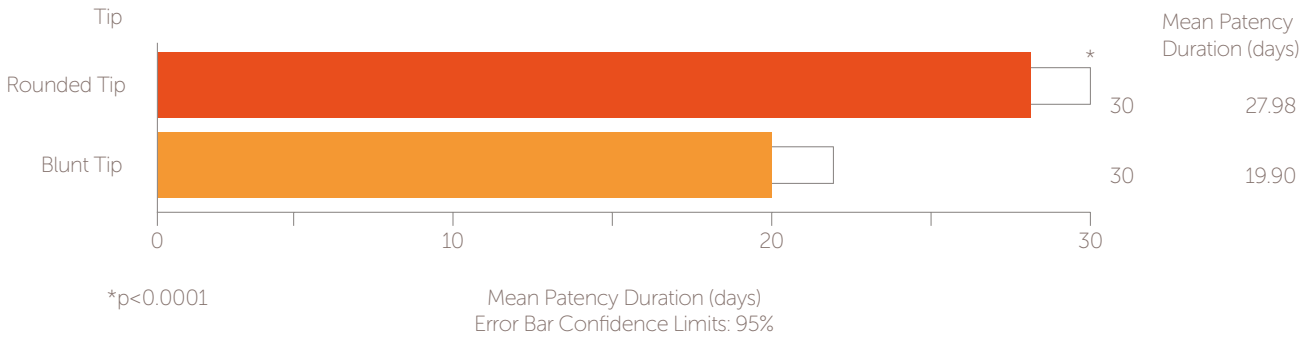

Fig. The relationship between rounded-tip and blunt-tip catheter configuration on Hsd:SpragueDawley® SD® rats with both 500U Heparin and Taurolidine Citrate locking solutions. Catheter maintenance was completed at seven day intervals for the length of the study.

SOFT TISSUE SURGICAL PROCEDURES

Reproductive

- Castration
- Hysterectomy
- Ovariectomy
- Oviduct ligation
- Ovariohysterectomy
- Vasectomy

Endocrine

- Adrenal demedullation
- Adrenalectomy
- Hypophysectomy (Intra-aural < 130 g)
- Thyroparathyroidectomy

Cardiovascular

- Myocardial infarction
- Transverse aortic constriction
- Telemetry

Additional soft tissue procedures

- Nephrectomy – unilateral
- Splenectomy

IMMUNODEFICIENT MODELS

Surgical modification can be performed on immunodeficient rats and mice that are maintained in flexible-film isolators or IVCs. These surgical procedures are performed in a hood at Inotiv in Indianapolis, Indiana.

Reproductive

- Castration
- Ovariectomy
- Vasectomy

Surgical procedures are in addition to the cost of animals and shipping. Sham operations are priced at 75% of the surgery cost.

ANESTHESIA OPTIONS

We recognize the success of surgical modification is dependent on variables including the type of anesthesia. Inotiv is prepared to provide both injectable and inhalation anesthesia options to assist in meeting your research needs.

No additional charges are assessed based upon the use of gas anesthesia.

Contact us for customized surgery

Contact our Veterinary Science, Research and Support Team at 800.793.7287 to discuss your specific surgical requirements. In some cases, a surgical procedure development fee is assessed and includes the provision of surgically-modified animals for evaluation.