Bile Duct Catheters

Model Interest
Bile duct catheters are of great interest for repeated bile sampling sessions. Charles River's method of double catheterisation (bile duct and duodenum) enables an appropriate recovery time and removes the need for additional bile salt supplementation as compared to single catheterisation.

Animal Models
- Rats: male/female, any strain*, weight >200 g. Standard model: male CD 250 g
  *For a few strains (pathological strains or disease models like obese and/or diabetic animals) specific pre and post-operative care could be needed and will be mentioned by the Surgical Team.

Material
- Standard catheters: sterile polyurethane catheters (bile duct end: 0.305 mm ID, 0.635 mm OD; duodenum end 0.635 mm ID, 1.194 OD); other catheters on demand

Preoperative Preparation
- Anaesthesia: intraperitoneal injection of a ketamine and xylazine mixture or isoflurane
- Preparation of the surgical area: shaving and disinfection with aseptic solution
- Preoperative administration of an analgesic (buprenorphine or others analgesics on demand)
- Preoperative injection of an antibiotic (enrofloxacin or equivalent) on customer's approval
- Protective gel applied on animal's eyes

Surgical Technique
- A medial laparotomy is performed. Two small incisions are performed in the scapular region. The biliary end of the catheter is grasped using forceps or hemostats and passed subcutaneously from the left incision of the scapular region down to the abdominal incision. By the same method, the intestinal end of the catheter is grasped and passed subcutaneously from the right side incision down to the abdominal incision.
- The bile duct is approached and connective tissue is carefully isolated. A small tab incision is made on the cystic duct and the catheter is inserted and fixed with non-resorbable sutures.
- A purse string suture is placed in the duodenum. A small incision is made in the center of the purse string suture. The intestinal catheter tip is then inserted through the incision into the duodenum and advanced up the bead on the catheter. The purse string suture is tied off.
- The catheter is secured to both sides of the abdominal wall with a non-resorbable suture. The incisions are checked carefully to ensure that there is no leakage or obstruction. The abdominal musculature is closed with resorbable sutures and the skin incision with wound clips.
- The catheter is secured in the scapular region where it exits from the skin using one non-resorbable suture just below the bead and the incision is closed with a non-resorbable suture.
- The exteriorised portion of the catheter is cut in the middle. Bile flow is then checked to ensure patency. The bile will flow from the animal's left side to its right side. The catheter is then reconnected with a 22G needle stock connector and the connector is fixed onto the skin by a wound clip.

For more information, contact us
surgery@eu.crl.com
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Postoperative Care
• Use of heating pads during animal recovery
• Subcutaneous injection of cold sterile saline for hydration
• Postoperative administration of an analgesic at Day 1 (buprenorphine or other analgesics on demand)
• Close clinical observation
• Individual housing

Animal Shipment
• Animals are shipped in individual boxes, within 72 hours after surgery
• Specific transport hydrated food is placed in animal shipment boxes

Catheter Use
• Accompanying document: specific sheet including catheter handling procedures

Material and Human Resources
• Two technicians: one gently restraining the animal, the other performing the procedure
• Small haemostatic forceps or specific staple remover, blunt 23G needles, sterile saline solution, injection, and/or sampling consumables, 23G plugs

Work on Non Anesthetised Animals
• The wound clip should be removed with a staple remover or haemostatic forceps
• The catheter loop should be disconnected and the needle bore left on the left end. Bile flow from the left end should be noticed at this time. The right side of the catheter is plugged. The left side of the catheter could be extended as needed using a piece of tubing attached to one end of the needle stock. After collecting bile, the two ends of the catheter should be reconnected using the needle stock.
• The sampling should be performed as soon as possible because of the short time duration of catheter patency (not more than 15 days after the surgery). The animals should be kept under close clinical observation and receive appropriate care if needed.

For any information regarding catheter handling and use, please contact Charles River Surgical Services at surgery@eu.crl.com