

# **Vertical Sleeve Gastrectomy in mice**

Version: 1

Replaced by version: No previous versions

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### **Summary:**

This is the protocol for the vertical sleeve gastrectomy in the mouse. This procedure eliminates the greater curvature of the stomach leaving approximately 30% of the preoperative stomach capacity. Specifically, this procedure eliminates the greater curvature of the stomach where the ghrelin-producing cells are located.

## **Reagents and Materials:**

| Reagent/Material    | Vendor            | Stock Number |
|---------------------|-------------------|--------------|
| 6-0 monocryl suture | Ethicon           | Y432H        |
| 7-0 Prolene         | Ethicon           | 8648G        |
| 7-0 PDS II          | Ethicon           | H206Z1551R   |
| Cotton swabs        | Fisher Scientific | 19-072333    |
| 10 ml 22G syringe   | BD                | Ref 309640   |
| Gause 3X3           | Kendall           | Ref 2346     |
| 0.9% Saline         | Baxter            | 2B1322       |
| Gloves              | Ansell            | PK20782      |
| 8-0 Nylon           | Arosurgical       | TK-081438    |

The remaining materials that are necessary for any surgical procedure in mice are sterile, high quality surgical instruments for microsurgery. A dissecting microscope (at least 10x magnification) is also highly recommended, however, surgical loupes or other magnification aid could be substituted. The individual performing the operations should be well-trained in small animal surgical and mouse anatomy.

### **Protocol:**

### **Preoperative Care**

- All animals <u>must be</u> singly-housed, given Ensure 12 hours before surgery and have all bedding removed.
- 2. Preoperative pain medications should be administered:
  - a. Ketoprofen (5 mg/kg)
  - b. Saline is given at the end of surgery and a second dose is given 24 hours later.
- 3. Ensure adequacy of anesthesia.
- 4. Place mouse on surgical board/surgical field over a warm water circulating blanket and immobilize gently.
- 5. Prep and drape animal sterilely.

#### **Operation**

- 1. Begin the procedure by making a midline laparotomy incision with sharp surgical scissors. Be sure to stay on the linea alba and away from the rectus abdominus muscles.
- 2. Using cotton swabs, gently sweep the intestinal contents until the stomach is located.
- 3. Gently cut away all connective tissue around the stomach and ligate the vessel attached to the greater curvature of the stomach using cautery pen or 7-0 PDS II.
- 4. Place ligatures on all stomach vessels using 7-0 PDS II.
- 5. Using 6-0 monofilament suture a continuous line below your ligatures.
- 6. Remove greater curvature of the stomach by cutting below ligated vessels and monofilament line of suture.

IMPORTANT: When removing the greater curvature of the stomach keep all pancreatic vessels intact.

- 7. Close stomach using 7-0 PDS II continuous pattern.
- 8. Next, close the abdomen in a simple, two-layer, interrupted fashion. The first interrupted layer should be a simple, interrupted muscle layer with 6-0 monocryl suture. Using good technique suture the connective tissue and not the muscle proper. The second layer is a skin layer also done in a simple, interrupted fashion with 7-0 Prolene suture.

#### **Postoperative Care**

- 1. All mice receive 1.0 ml of warmed, sterile saline following the procedure before being placed in the recovery cages.
- 2. All mouse cages are kept partially on a veterinary-approved heating pad for 5 to 7 days postoperatively.
- 3. Mice will remain on an Ensure diet for 24 hours post-surgery with no bedding in the cage.
- 4. Mice are monitored until recovered from the procedure, which typically takes 7-14 days depending on the procedure. General behavior (i.e. bright/alert/responsive vs. depressed/obtunded) is monitored.
- 5. Pain medication is administered per protocol: ketoprofen 5 mg/kg post-op and again at 24 hours postoperative.
- 6. Additional pain medication may be needed depending on postoperative recovery.