| **Small Intestine Resection and Anastomosis Procedure** |
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| **Materials Required:*** Laparotomy surgical pack
* Suture materials - 3/0, 2/0 synthetic absorbable suture materials.
* Penrose drain.
* Abdominal lavage solutions - balanced electrolyte solution
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| The standard right-flank laparotomy incision is made. Once in the abdominal cavity the surgeon should thoroughly explore the abdomen for the affected segment of the intestine.**Step 1 - Isolate the damaged bowel*** Exteriorize the affected segment of bowel from the abdominal cavity and isolate using a combination of impervious drapes and moist sterile towels - decreases the risk of contamination, adhesions and peritonitis. Ideally position the affected bowel away from, and below, the level of the abdominal incision.
* Hand strip and lavage the contents of the bowel away from the proposed site of resection (up to 25-30 cm). In the small intestine distally this should be into the cecum or off the table using the resected bowel as a conduit for the intraluminal fluid.
* Occlude the lumen both proximally and distally to the proposed resection using Penrose drains encircling the intestines (small holes are made in the mesentery to accommodate the drains) and gently tightened to minimize gross contamination of the surgery site.

**Step 2 - Resect the bowel*** Select a resection site in the deflated normal segment that has a good segmental arterial supply to the anti-mesenteric surface (close to major mesenteric artery).
* Place intestinal resection clamps through a small mesenteric hole between 2 segmental vessels and clamp at a 60° angle to the mesenteric surface (the mesenteric side of the bowel will be longer) - increases vascular supply to the anti-mesenteric surface and slightly increases the intestinal diameter for anastomosis.
* The clamps should be placed on a portion of bowel which is to be removed.
* Double ligate the mesenteric vessels, supplying the segment of bowel to be removed, using 2/0 synthetic absorbable suture material, vascular clips, surgical staples (LDS stapler), or cautery (LigaSureTM) and cut close to the bowel to leave enough mesentery for closure.
* Resect bowel by sharp scalpel incision on the proximal aspect of the proximal clamp and the distal aspect of the distal clamp (the clamp will remain with the resected bowel).
* Remove the bowel and mesentery, plus the two resection clamps, from the surgical site.
* Cover both ends of the proposed anastomotic segments with moist sponges.
* The two sides of the anastomosis should now be handled by a surgical assistant to approximate them for suturing and to check for normal alignment.

**Step 3 - Anastomotic technique*** Place initial simple interrupted sutures through serosa and submucosa at mesenteric and antimesenteric sides of the bowel. Leave the ends of these sutures long and hold with artery forceps. These stay sutures can then be held by an assistant to maintain orientation and diameter of the two bowel ends.
* 2/0 or 3/0 synthetic absorbable suture material can be used.
* Multiple interrupted or continuous inverting (Lembert) or appositional sutures (simple interrupted or simple continuous) through the serosa and submucosa, 3-5 mm apart and 3-5 mm from the cut edge of the bowel.
* If an interrupted pattern is used it is easiest to start on one side and place sutures to divide each gap, between existing sutures, in half; this avoids the potential for inadvertently rucking the bowel on one side of the anastomosis.
* If a continuous pattern is used, it is recommended to interrupt it after 180 degrees to minimize stricture formation.
* Once one side is complete the bowel may be turned over and the second side completed .

**Step 4 - Check/clean anastomosis*** The stay sutures are cut short, penrose drains removed and the anastomosis checked for patency and any possible leaks.
* Any leaks should be sealed with interrupted sutures.
* The anastomosis and adjacent bowel are thoroughly lavaged to remove all organic debris and any blood clots.
* Care should be taken that the lavage fluid drains away from the abdominal incision.

**Step 5 - Close the mesentery*** Suture the cut edges of the mesentery created by bowel resection to the adjacent mesentery or to the serosal surface of adjacent bowel to eliminate all mesenteric defects.
* A simple continuous pattern to slightly overlap the cut edges using 2/0 synthetic absorbable suture material will decrease adhesions.

**Step 6 - Close laparotomy*** Close ventral midline laparotomy using routine methods and materials
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