Operative Considerations  
1) Proper “packing off” of the surgical field using moistened laparotomy pads should be performed around the exteriorized bowell to prevent accidental abdominal contamination from intestinal contents.  
2) Keep abdominal contents warm and moist throughout surgery with a warm, balanced electrolyte solution.  
3) Handling abdominal viscera should be kept to a minimum. Gentle manipulation of intestine with moistened gloves or stay sutures is helpful in preventing unnecessary tissue trauma. DeBakey forceps are the most atraumatic forceps for handling abdominal visceral organs.  
4) The collagen laden, tough submucosa is the layer of strength in the small intestine; this layer must be incorporated into any small intestinal closure (i.e., enterotomy, anastomosis). 5) It may be difficult to visualize the submucosal layer due to mucosal eversion. Visualization of submucosa may be enhanced if everted mucosa is trimmed away.  
6) Intestinal contents should be "milked" away from the anastomosis or enterotomy site. Intestinal clamps (e.g., Doyen intestinal clampsFigure%2005.pdf, Alice tissue forceps with a rubber feeding tube interposedFigure%2006.pdf, hair clipsFigure%2007.pdfFigure%2008.pdf, or Penrose drains) may be used to prevent intestinal contents from contaminating the surgical site whilst manipulating intestine during anastomosis or enterotomy.  
7) The enterotomy or anastomosis should be irrigated prior to its return to the abdominal cavity and instruments and gloves changed prior to abdominal closure.  
8) Abdominal lavage with 2-3 liters of body temperature, sterile, physiologic saline solution should be accomplished prior to closure. The objectives of repeated abdominal lavage include dilution of bacteria and endotoxin and mechanical removal of fibrin and necrotic debris. The fluid of choice is body temperature, sterile, physiologic saline solution with no additives (i.e. betadine solution, chlorhexidine, antibiotics, etc). Lavage solution is poured into the abdominal cavity using a sterile stainless steel bowl, the abdominal viscera gently aggitated, and fluid and debris suctioned out with a suction device and a sump suction tipFigure%2009.pdf.

Suture Material  
Absorbable suture  
Catgut. Catgut is NOT recommended in contaminated, infected, hypoproteinemic, or debilitated cachexic patients. Its unpredictable absorption and rapid loss of tensile strength in such situations may result in an unacceptably high number of anastomotic leaks and /or breakdowns. Use of catgut suture in gastrointestinal surgery is not recommended.

Dexon, Polysorb, and Vicryl. Synthetic absorbable braided suture (i.e., polyglactin, poly- glycolic acid) have become very popular. The braided nature however does result in increased tissue drag and difficult knotting ability.

Biosyn and Monocryl. These sutures have similar properties to Dexon, Polysorb and Vicryl however they are monofilament. They were developed to overcome the problem of tissue drag and knot slipping found in the braided synthetic absorbables. Their predictable hydrolytic absorption is unaffected by their immediate environment (i.e., infection, contam- ination, hypoproteinemia). They retain high tensile strength for a long period of time (2-3 weeks) and have very good handling characteristics. These suture materials are ideal for use in gastrointestinal surgery. These sutures are the authors choice for gastrointestinal surgery.

PDS and Maxon. PDS and Maxon, are synthetic absorbable monofilament suture materials with similar properties to that of Dexon and Vicryl. They have been shown to retain approximately 70% of their tensile strength at 3-4 weeks, and are absorbed by hydrolysis (unaffected by infection, contamination, hypoproteinemia). These suture materials are ideal for use in gastrointestinal surgery. Possible disadvantages include stiffness, a tendency to kink and prolonged absorbtion time.

Nonabsorbable suture

Nylon, Polypropylene, Polybutester. Monofilament, nonabsorbables are excellent suture materials for use in contaminated or infected surgical sites. They have a high tensile strength, are relatively inert in tissue, noncapillary, and do not act as a nidus for infection. These materials pass through tissue with essentially no tissue drag and have excellent knot tying security at sizes 3-0 to 5-0. For their properties, effectiveness, and cost, these are the author's nonabsorbable sutures of choice for intestinal anastomosis and enterotomy closure. Possible disadvantage of these materials is their memory.

Silk, Mersilene, Bronamid, Vetafil. In general, stay away from burying multifilament or braided nonabsorbable suture material. These sutures may harbor infection for years and may result in suture related abdominal abscesses or draining tracts. They should never be used in gastrointestinal surgery.

Suture size

For the majority of small intestinal surgical procedures in dogs, 3-0 or 4-0 size suture material is adequate; in cats, size 4-0 or 5-0 is recommended. The tensile strength of this size suture is greater than the tensile strength of the tissues that are being sutured (i.e., intestinal wall). Larger size suture may contribute to anastomotic failure by increased trauma to tissues and its effect on the blood supply of tissue margins.

Needles

Swaged-on "atraumatic" reversed cutting, narrow taper point, or fine taper-cut needles can all be used for gastrointestinal surgery. The author prefers a narrow taper point needle.

Suture Placement

When suturing intestine, sutures should be placed 3 - 4 mm from the cut edge of the intestine and no more than 2 - 3 mm apart. It is important to recognize everted mucosa and be sure the 3 - 4 mm bite in the intestinal wall is not just in mucosa but engages all layers of the intestinal wall. Measure your intestinal wall bite from the cut edge of the serosa.

Suture Patterns

There is considerable controversy regarding specific suture pattern for use in small intestinal surgery. Everting, inverting, and appositional suture patterns have been used experimentally

and clinically for suturing enterotomies and anastomoses. Appositional patterns are recommended as they cause little lumen compromise postoperatively.