Abdomen

20

Zacharias Zachariou

20.1 Principles of Surgery

- The knowledge of basic surgical principles is essential in order to be able to demonstrate competence in tissue dissection, principles of hemostasis etc. thus minimizing risk and optimizing the surgical outcome
- Excellent communication and teamwork are the cornerstones of performing safe and successful surgery
- The aim of any surgical procedure includes that:
  - Every operation should have a benefit for the patient
  - The benefit might be diagnostic or therapeutic
  - This benefit has to be achieved with the surgical procedure that provides maximal benefit with minimal risk
- Mutilating operations should be always avoided

20.2 Organ Anatomy

A good knowledge of the anatomy and recognize variants, which could make surgery more challenging, is a prerequisite for avoiding complications and contributes to the success of the procedure.

The normal anatomy for the following organs is shown in the figures below

- Stomach (Figs. 20.1 and 20.2)
- Small bowel (Fig. 20.3)
- Colon (Fig. 20.4)
- Rectum (Fig. 20.5)
- Liver (Fig. 20.6)
- Pancreas (Fig. 20.7)
- Adrenals (Fig. 20.8)

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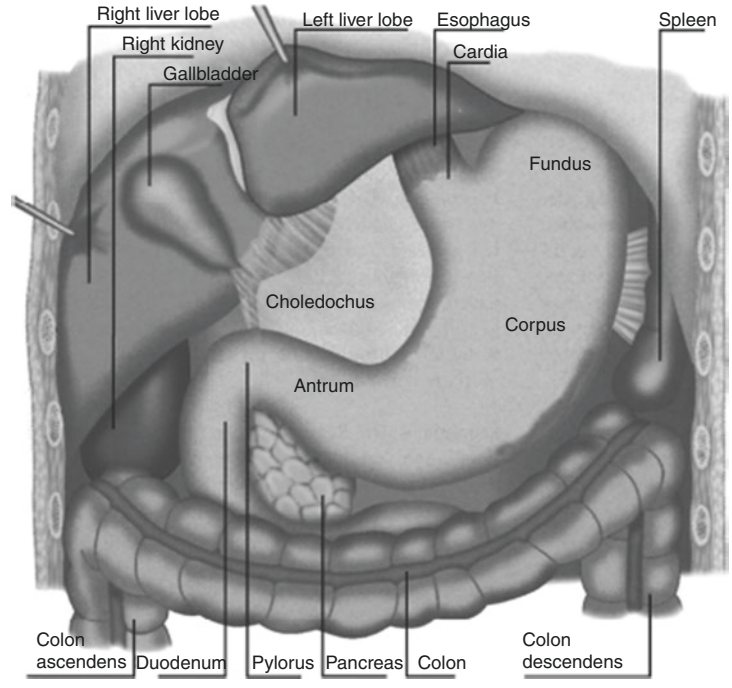

Fig. 20.1 Topographic anatomy of the stomach

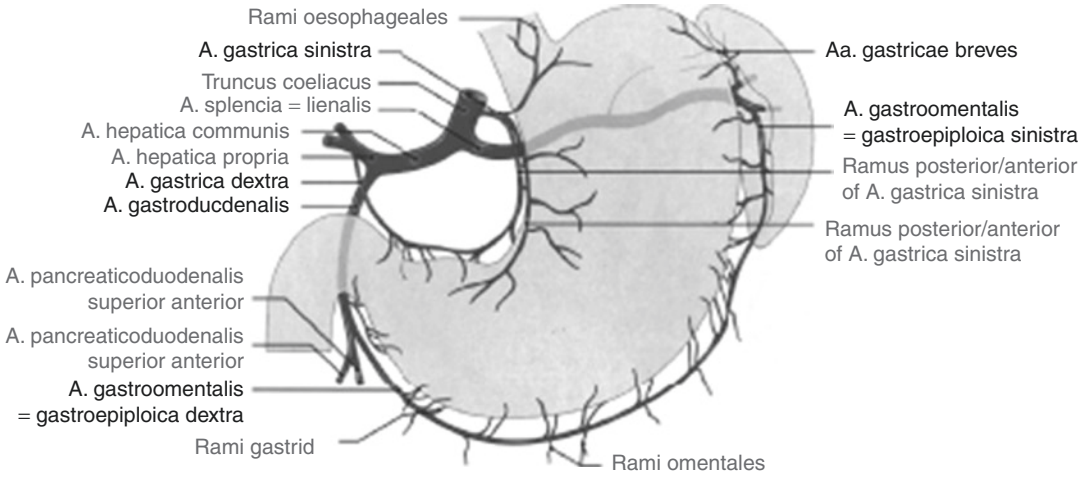

Fig. 20.2 Vascular anatomy of the stomach, spleen, liver, and duodenum

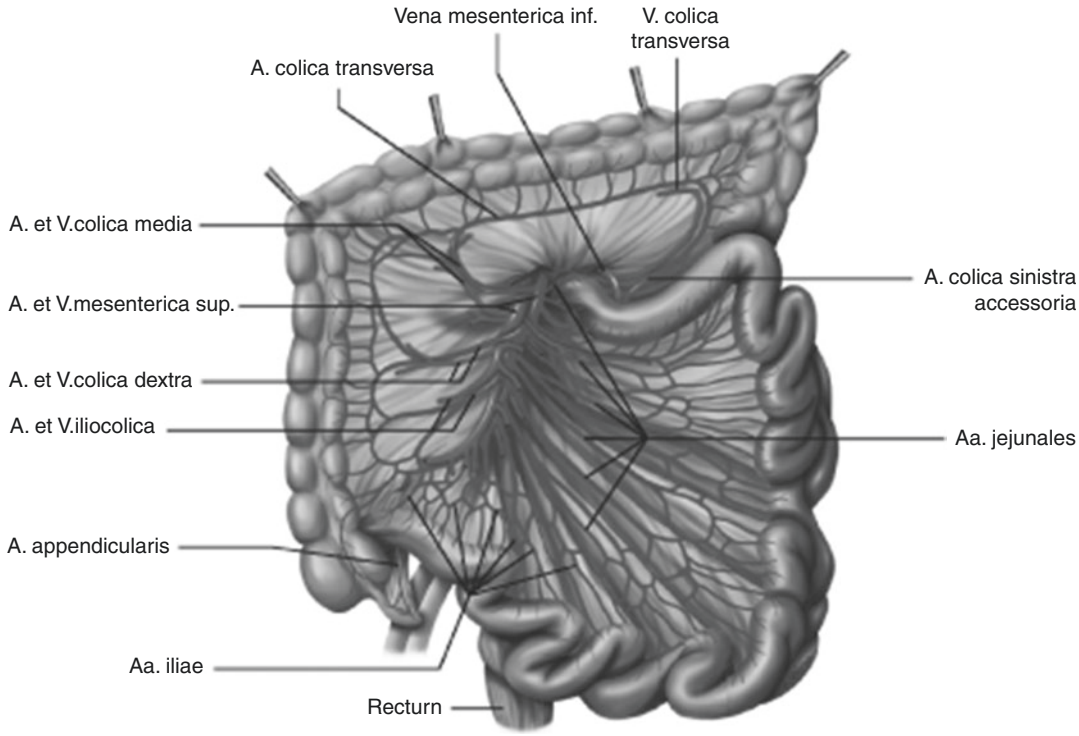

Fig. 20.3 Topographic and vascular anatomy of the small bowel

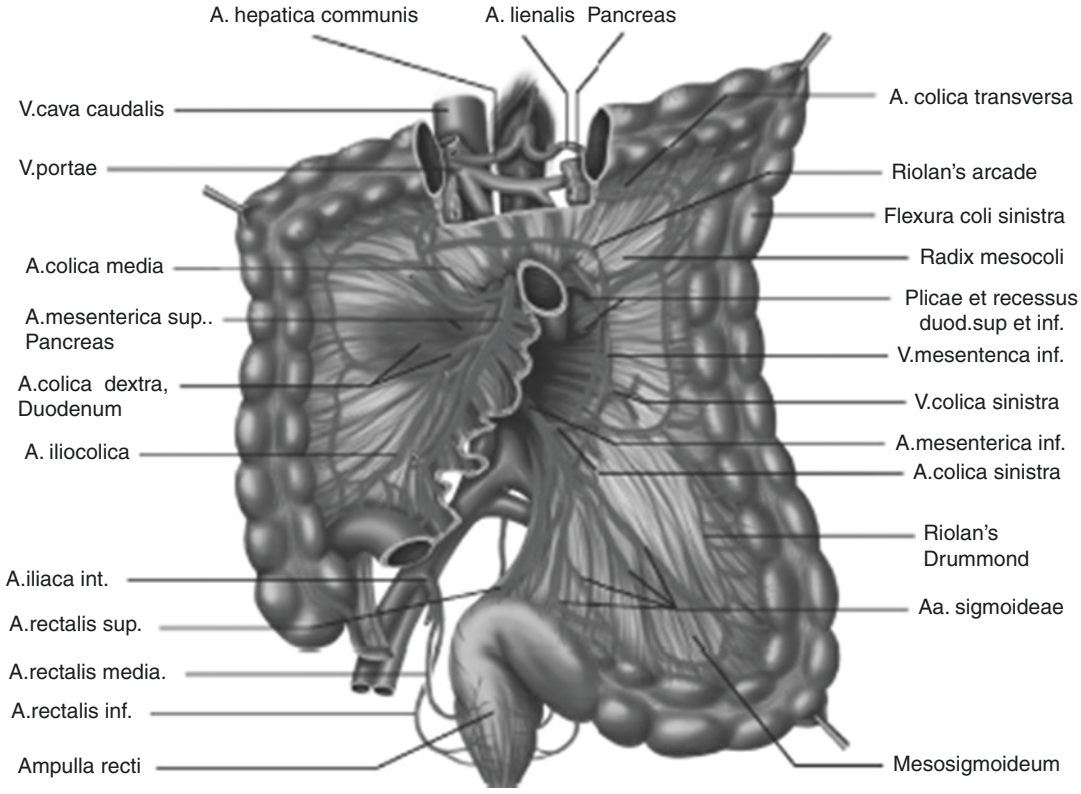

Fig. 20.4 Topographic and vascular anatomy of the colon

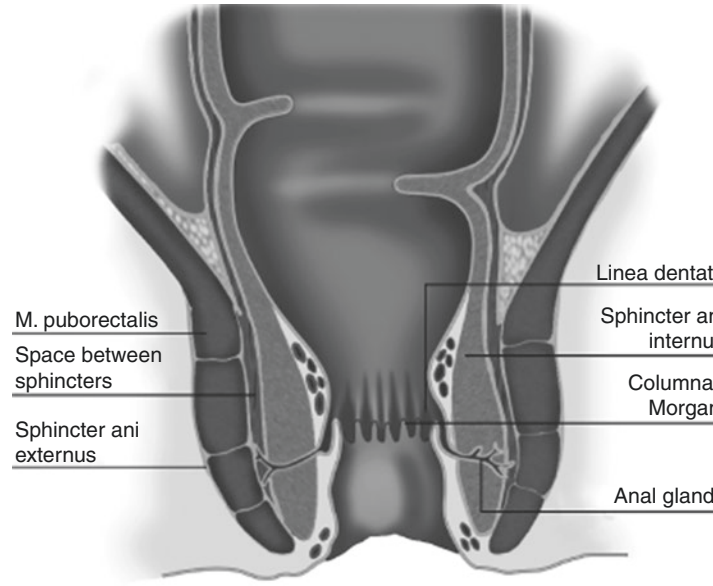

Fig. 20.5 Topographic anatomy of the rectum

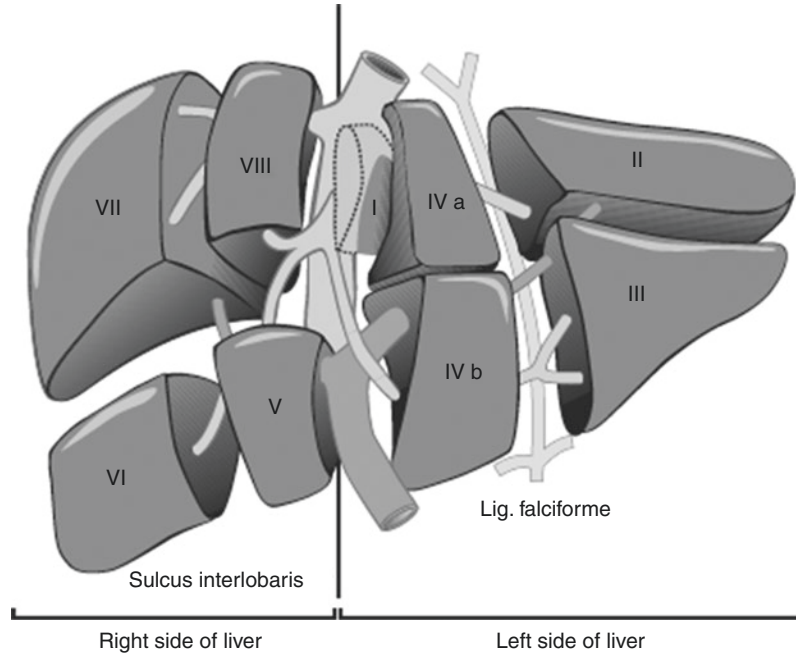

Fig. 20.6 Segmental arrangement of the liver

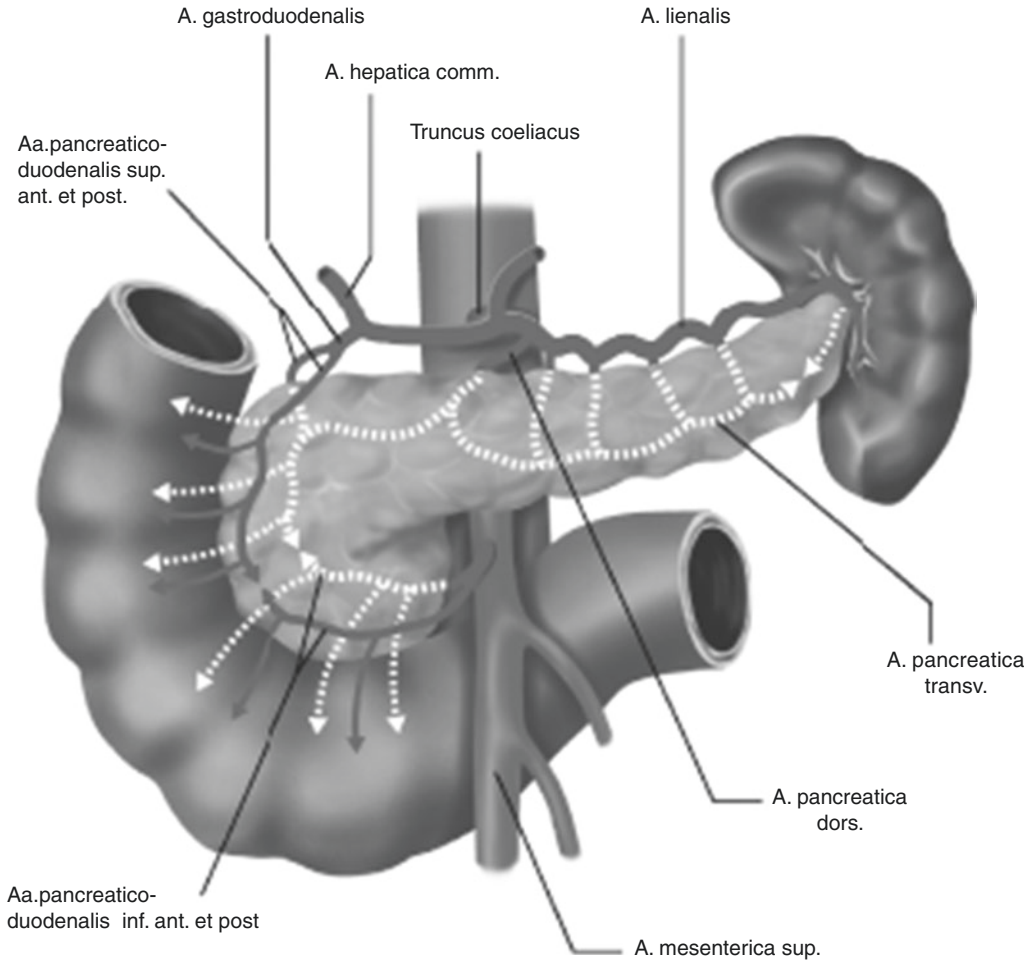

Fig. 20.7 Topographic and vascular anatomy of the pancreas

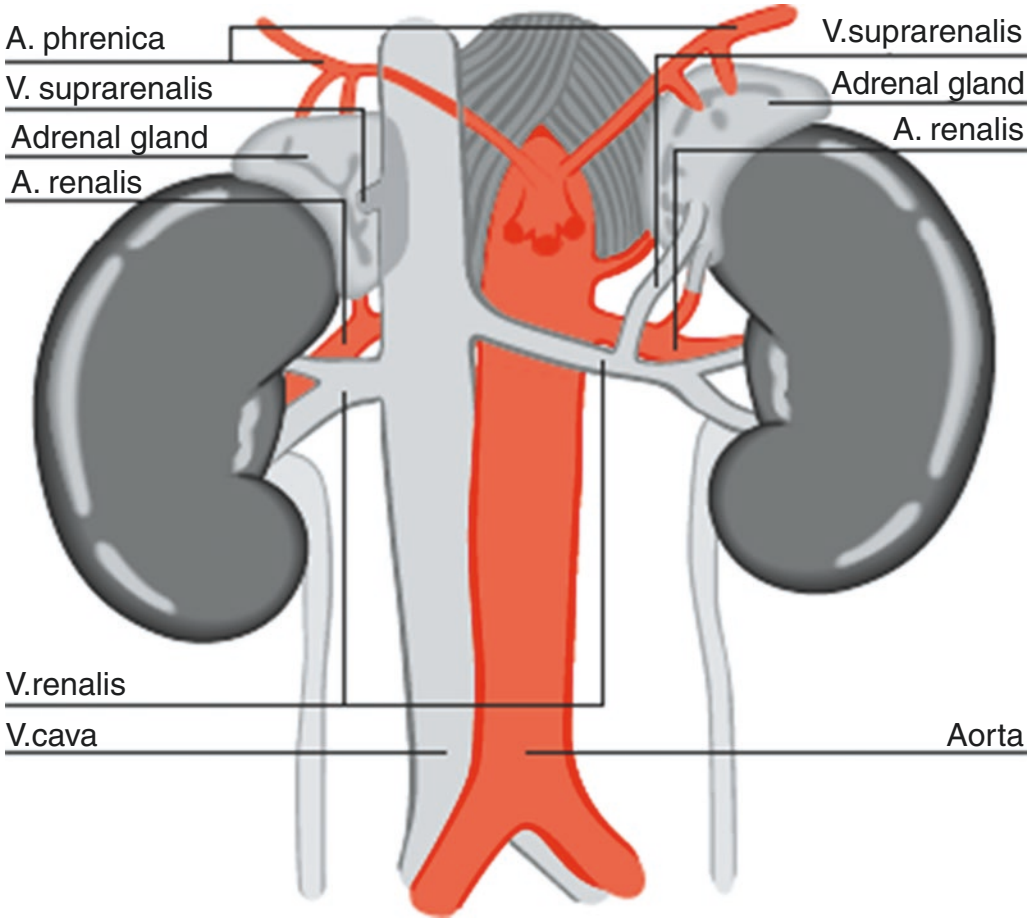

Fig. 20.8 Topographic and vascular anatomy of the adrenals

Table 20.1 Age-related differences in anatomy

	Newborn	Older child/adult
Form	Square	Rectangle
Costal arch	Wide angle	Acute angle
Rectus muscle	Wide, more lateral	Narrow more centralized
Liver	Large, below the epigastrium	Below the costal arch
Umbilicus	Closer to the symphysis	Distant to the symphysis
Bladder	Over the symphysis	Behind the symphysis

20.3 Age Related Anatomical Particularities

Age-related Differences in Anatomy

- Age-related differences in anatomy are listed in Table 20.1 and illustrated in Fig. 20.9

20.4 Abdominal Incisions

- Types of abdominal incision and their advantages and disadvantages are described in Table 20.2

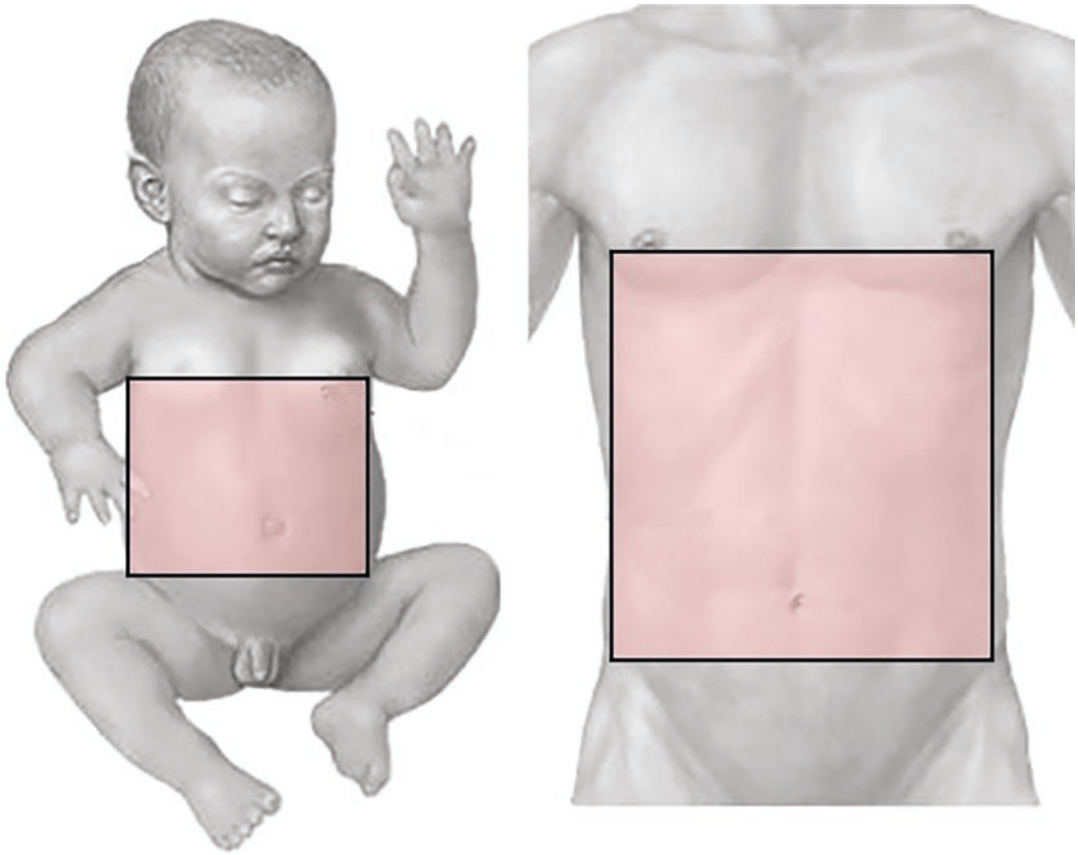

Fig. 20.9 Differences in the abdomen of infants and adults

Table 20.2 Types of abdominal incision, their advantages and disadvantages

Incisions	Definition	Advantages	Disadvantages
Midline	Incision in the midline; incising the skin on the right side of the umbilicus	Good overview of the abdominal cavity	Less good cosmetic result
Transverse	Transverse incision over the umbilicus with dissection of the muscles	• Good overview of the abdominal cavity and the diaphragm • Extension possible • Good cosmetic result	Dissection of the muscles
Costal margin	Incision about 2–3 cm parallel to the costal arch	• Good overview of the abdominal cavity and the diaphragm • Extension possible	Less good cosmetic result
Pararectal	Pararectal incision on the right side going directly beside the rectus muscle	• No muscle dissection • Extension possible	Less good cosmetic result
Gridiron	Transverse incision over the groin	Good cosmetic result	Muscle dissection necessary extension, less possible
Pfannenstiel	Transverse incision over the symphysis	■ Good overview of the pelvic organs ■ Good cosmetic result	Extension, less possible

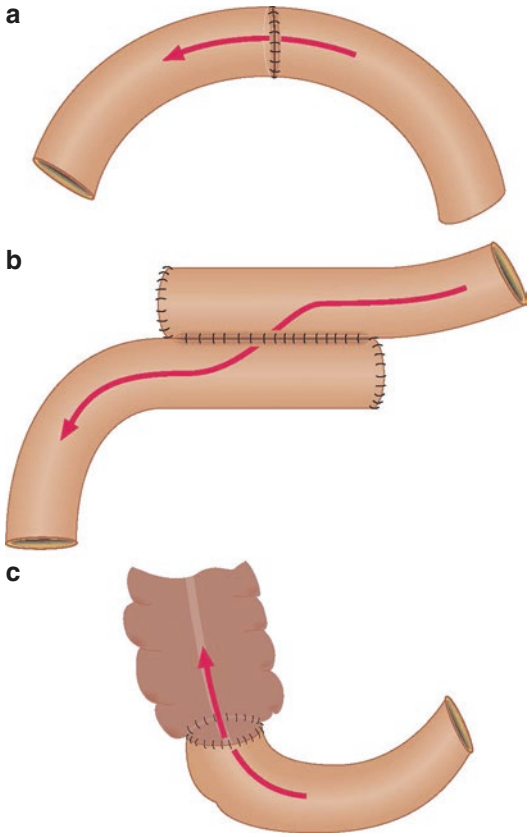

Fig. 20.10 Anastomoses techniques. (**a**) End-to-end ileoileostomy, (**b**) side-to-side ileo-ileostomy, (**c**) ileo-ascendostomy

20.5 Common Bowel Surgical Techniques

- Small bowel anastomosis
  - End-to-end ileo-ileostomy, side-to-side ileo-ileostomy, and ileoascendostomy (Fig. 20.10)
  - Diversion anastomoses: Y-Roux, and omega with a side-to-side anastomosis (Fig. 20.11)
  - Stricturotomy (Fig. 20.12)

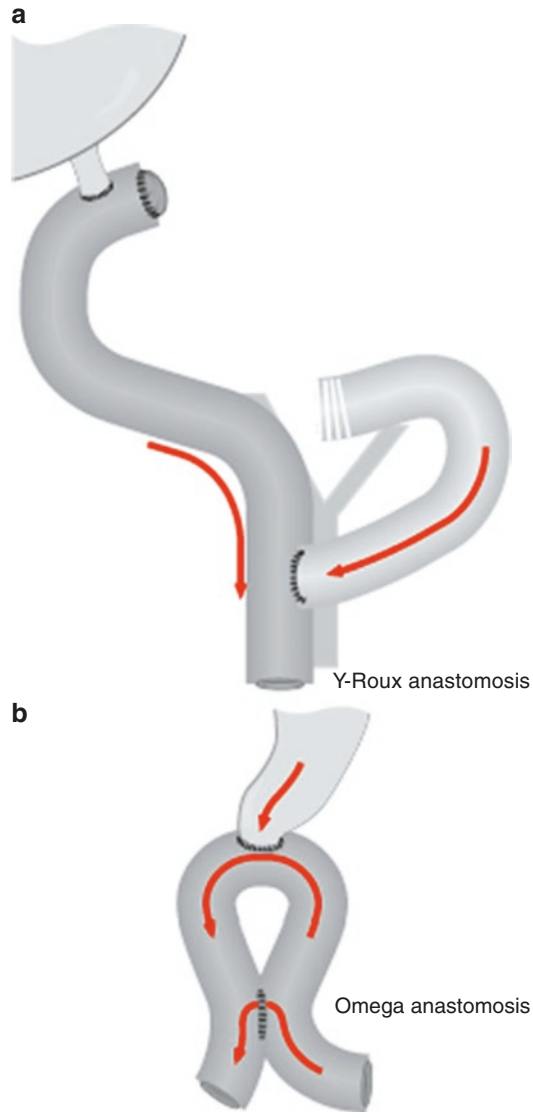

Fig. 20.11 Diversion anastomoses. (**a**) Y-Roux anastomosis, (**b**) Omega anastomosis with a side-to-side anastomosis

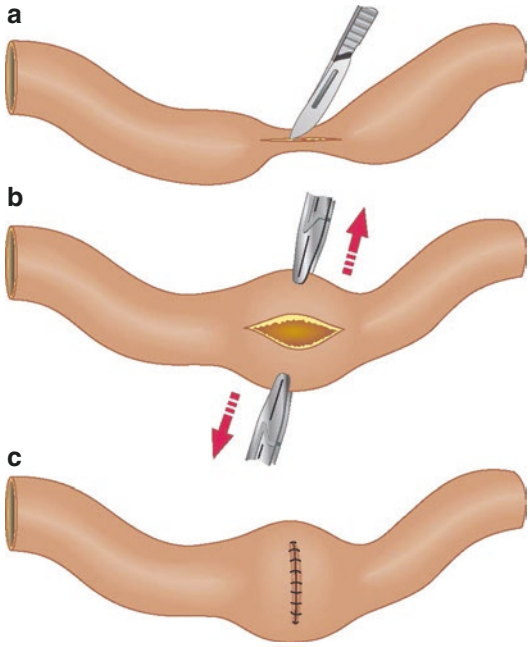

Fig. 20.12 (**a**–**c**) Principle of stricturotomy

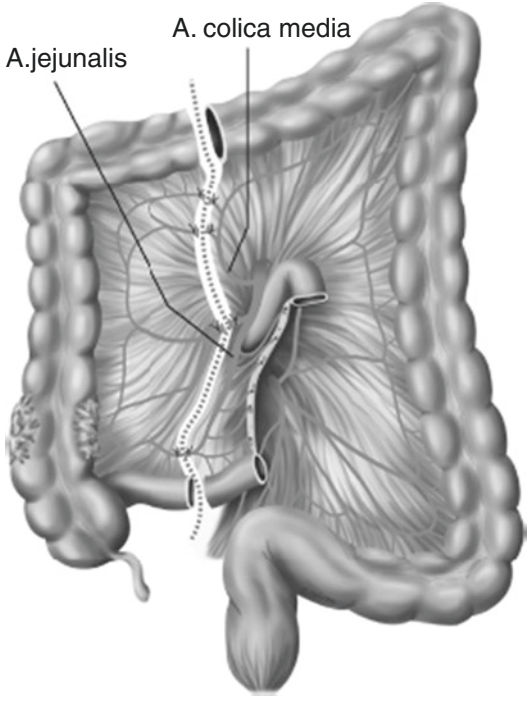

Fig. 20.13 Right hemicolectomy

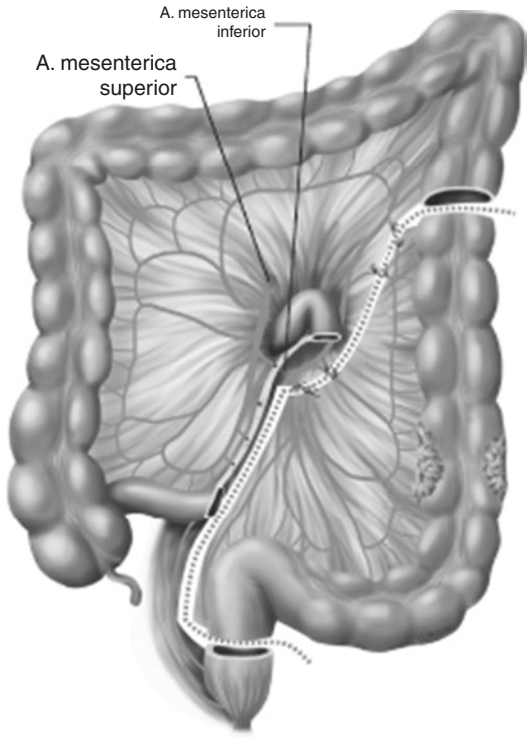

Fig. 20.14 Left hemicolectomy

- Colon
  - Right hemicolectomy (Fig. 20.13)
  - Left hemicolectomy (Fig. 20.14)

20.6 Types of Ostomies

- Ostomies are diversions of the intestine to an opening in the abdominal wall
- This procedures can be performed either in the small intestine or the colon

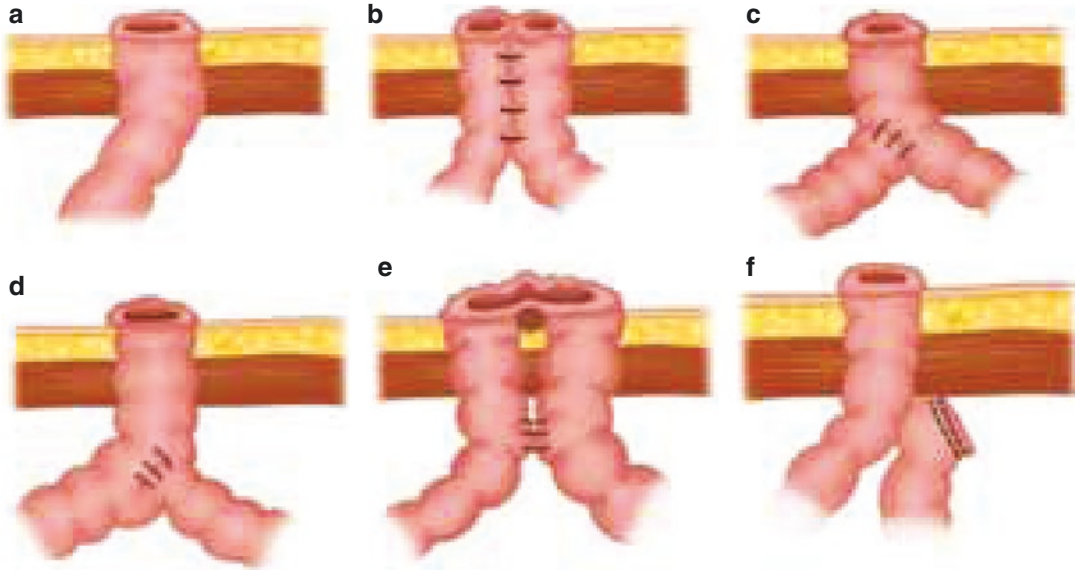

Fig. 20.15 (**a**) Chimney end stoma, (**b**) double barrel stoma, (**c**) end to side with distal vent (Bishop-Koop ostomy), (**d**) side to end with proximal vent (Santulli ostomy), (**e**) loop stoma (skin bridge), (**f**) end stoma with closure of the distal part (Hartmann pouch)

- Figure 20.15 shows the different possibilities to divert the intestine and create a stoma
- The indications for each one will be indicated in the different chapters

20.7 Special Bowel Surgical Techniques

- Noble plication
  - Indication for intestinal obstruction due to extensive adhesions resulting from numerous similar operations or extensive serosal damage following division of multiple adhesions
  - Fixation of loops causing adhesions to form in an orderly fashion without kinks
  - Fixation with serosal sutures between the intestinal loops with wide meanders (Fig. 20.16)
  - Alternatively the loops can be stuck with Fibrin glue
  - A modification is also possible with the insertion of a long tube (Baker tube) which

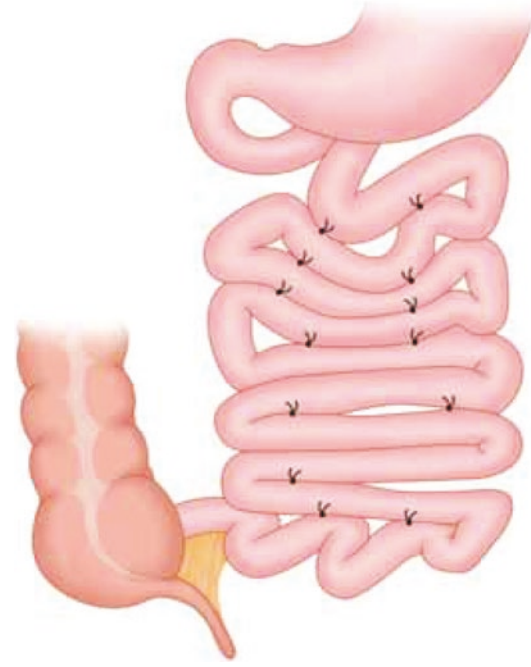

Fig. 20.16 Classical Noble plicature

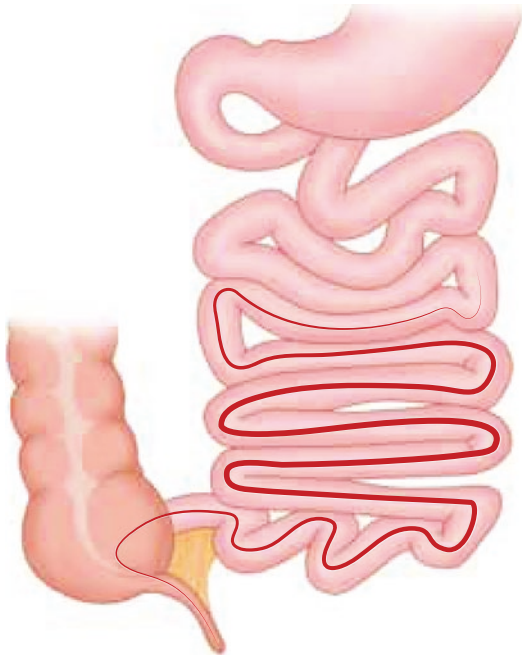

Fig. 20.17 Plicature with along tube via appendicostoma

is exteriorized through an appendicostoma (Fig. 20.17)

- Bishop Koop Anastomosis (Fig. 20.18)
  - Indicated in cases of meconium ileus, multiple intestinal atresia or stenosis, especially for the management of greatly different intestinal diameters
  - The intestine is divided at the site where the anastomosis is required
  - About 5 cm distal of the separation the distal intestine is incised antemesenterially
  - The proximal intestine is anastomosed end to side
  - The distal intestine is exteriorized as a chimney ostomy and serves as a vent
  - Extraperitoneal closure of the stoma is easy and safe

Fig. 20.18 Bishop Koop colostomy

xtraperitoneal closure of the stoma is easy and s

Bishop Koop colostomy