

OXFORD MEDICAL OUTLINE SERIES

ABDOMINAL SURGERY

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PREFACE

THIS IS NOT intended as an original work but rather as one in which the outstanding, pertinent, present-day conceptions of abdominal surgery, as gleaned from the literature and personal experience, are compiled in such form as to be readily accessible to the student.

Surgery should be founded upon an anatomical and physiological basis. Hence concise reviews of anatomy and physiology have been included. Short *résumés* on the pathogenesis and pathology are also included as an aid in judging the type of surgery most applicable to the individual case.

The surgical techniques described are those found to be most successful in the author's personal experience. Numerous other techniques, as productive of good results, cannot be described in a book of this size.

References have been freely used, and the minimum of citation is due not to disregard of the authors' rights but rather to the fact that space was needed for descriptive content in order to confine the book to a limited number of pages and still cover a large field in surgery.

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I

THE ABDOMINAL WALL AND COMMON INCISIONS

PART ONE: THE ABDOMINAL WALL

I. Surface Anatomy

A. Anterior and Anterolateral Surfaces.

1. For descriptive purposes, these surfaces are divided into 9 areas by the following lines:
 - a. Two vertical lines running from the center of each inguinal ligament upward across the costal margin and parallel to the long axis of the body.
 - b. Two transverse lines at right angles to the vertical, the upper at the level of the tips of the 10th ribs and the lower at the level of the highest points of the iliac crest.
2. The 9 spaces thus outlined, beginning at the upper right-hand corner, are:
 - a. The right hypochondrium, epigastrium, left hypochondrium.
 - b. The right lumbar, umbilical, left lumbar.
 - c. The right iliac, hypogastric, left iliac.

II. Superficial Structures

A. Components.

1. Skin.
2. Superficial fascia, made up of two layers known as Camper's fascia and Scarpa's fascia.
 - a. Most of the subcutaneous fat lies in the fascia of Camper.
 - b. The fascia of Scarpa is the denser of the two layers and is closely applied to the abdominal muscles.

B. Sources of the Arterial Supply.

1. Above the umbilicus, from the branches of the superior epigastric, musculophrenic and vertebral arteries.
2. Below the umbilicus, from the superficial epigastric, super-

THE ABDOMINAL WALL AND COMMON INCISIONS

ficial circumflex iliac and superficial external pudendal branches of the femoral artery.

C. Drainage of Veins.

1. The superficial veins above the umbilicus drain into the superior vena cava through the intercostal, internal mammary and long thoracic veins.
2. The superficial veins below the umbilicus drain into the femoral vein through the epigastric, circumflex iliac and pudendal veins.
3. Owing to free anastomosis between the caval and systemic venous systems around the umbilicus, portal obstruction may cause varicosities of the superficial veins in this area, the condition being known as "caput Medusae." (See detailed description in chapter on Liver.)

D. Drainage of Lymphatics.

1. The supra-umbilical group drain into the axillary group.
2. The infra-umbilical group drain into the superficial glands of the thigh.
3. The superficial group around the umbilicus is connected with lymphatics from the liver by way of the round ligament, thus accounting for the spread of metastases to the umbilicus.

III. The Abdominal Wall Muscles

A. The Rectus Abdominis Muscles.

1. These muscles extend from the costal margin to the pubes, one on either side of the midline.
2. They are encased in the rectus sheath, which is composed of the aponeurosis of the three lateral abdominal wall muscles.
3. Each muscle is divided into segments (3 to 5 in number) by transverse digitations from the anterior layer of the rectus sheath.
4. The anterior and posterior layers of the rectus sheath combine in the midline with those from the opposite side to form the linea alba.
5. At a point midway between the umbilicus and pubes, all the aponeurotic layers of the rectus sheath swing anterior to the muscles, thus leaving the lower portion of the muscle devoid of sheath.

THE ABDOMINAL WALL MUSCLES

- a. This point is called the linea semicircularis, or the semilunar fold of Douglas.
6. The pyramidalis muscles are situated in the lower and inner border of the rectus sheath.
7. The blood supply is furnished by:
 - a. The superior epigastric artery, a branch of the internal mammary.
 - b. The inferior epigastric, a branch of the external iliac.
 - c. Small branches from the intercostal and lumbar arteries.
8. The rectus muscle is the only one in the body receiving segmental innervation.
 - a. This is derived from the intercostal nerves, which enter through the lateral walls of the rectus sheath.

B. The Anterolateral Abdominal Wall Muscles.

1. These muscles are composed of:
 - a. The external oblique muscle, which runs in a downward and inward direction.
 - b. The internal oblique muscle, which runs upward and medially.
 - c. The transversalis abdominis, which runs medially toward the linea alba.
2. The blood supply is furnished by:
 - a. Branches from the 6 lower intercostal and 4 lumbar arteries, which run between the transversalis abdominis muscle and the internal oblique.
 - b. The deep circumflex iliac artery.
3. Nerve innervation:
 - a. Derive their supply from the 6 lower intercostals, the last thoracic, the ileo-inguinal and ileo-hypogastric, the latter two being derived from the first lumbar nerve.
 - b. Accompany the arteries between the 2 deep muscles and are both sensory to the skin, and motor.
 - c. Are connected with those of the abdominal viscera, as evidenced by the splinting of the abdominal wall in case of pathology within.