

# ABDOMEN

## COURSE CONTENT

### COMPETENCIES

The first year medical student should be able to understand and describe the topography of the abdomen and its subdivisions i.e. abdomen proper, pelvis and perineum, describe the disposition of the peritoneum and greater and lesser peritoneal sacs, describe the gross anatomy of the viscera of the abdomen proper and the pelvis, describe the actions of thoracoabdominal and pelvic diaphragms and abdominal wall muscles, correlate the anatomical basis of clinical manifestations / procedures pertaining to the abdomen and demonstrate the radiological anatomy of abdomen.

### REGIONS AND ORGANS

#### ANTERIOR ABDOMINAL WALL

##### Regions of the abdominal wall & Rectus sheath

**Level 2 :** Details

**Level 3 :** Principles of surgical incisions, Midline - supra/infra umbilical, Paramedian, McBurney's, Kocher's, Transverse (Suprapubic), Laparoscopic

**INGUINAL CANAL:** Location, extent, boundaries and contents

**Level 2:** Different types of inguinal herniae and their differences

**Level 3:** Development of inguinal canal

#### STOMACH

Location, morphology, relations (peritoneal and visceral), blood supply, lymphatics, nerve supply

**Level 2:** Dimensions, shape, variation and microstructure

**Level 3:** Development and rotation and applied anatomy

**SPLEEN:** Location, morphology, dimensions, relations, blood supply in general

**Level 2:** Splenic circulation, splenic vascular segments and detailed microanatomy

**Level 3:** Development including anomalies and applied anatomy

**LIVER:** Morphology, relations, blood supply

**Level 2:** Development and microanatomy

**Level 3:** Applied anatomy and segments

**BILIARY APPARATUS:** Constituents, morphology

**Level 2:** Development, variations

**Level 3:** Applied anatomy

**PANCREAS:** Morphology, relations and blood supply in general

**Level 2:** Duct system, blood and nerve supply in detail and microanatomy in detail

**Level 3:** Development and applied anatomy

#### SMALL INTESTINE

Morphology, blood and nerve supply in general

**Level 2:** Blood and nerve supply in detail, detailed microanatomy

**Level 3:** Applied anatomy and development

### **LARGE INTESTINE AND VERMIFORM APPENDIX**

Morphology, relations

**Level 2:** Blood supply, detailed microanatomy and surface anatomy

**Level 3:** Applied anatomy

### **PERITONEUM AND MESENTERY OF SMALL INTESTINE**

Definition, parts, dimensions, attachments

**Level 2:** Structures crossed by root of mesentery and its contents

**Level 3:** Applied anatomy: Peritonitis, abdominal paracentesis

### **LESSER OMENTUM**

Definition, attachments

**Level 2:** Relations, contents

**Level 3:** Development and applied anatomy

### **EPIPLOIC FORAMEN, SUBPHRENIC SPACES, OMENTAL BURSA**

Definition and boundaries

**Level 2:** Applied anatomy

**Level 3:** Development

**KIDNEYS:** Morphology, differences between right and left kidney,

**Level 2:** Coverings, microanatomy, blood supply, relations

**Level 3:** Development and applied anatomy

**URETERS:** Extent, course, relations

**Level 2:** Sites of constrictions, blood supply and nerve supply

**Level 3:** Applied anatomy

### **SUPRARENAL GLANDS**

Morphology, relations, differences between right and left glands

**Level 2:** Coverings, blood supply, development in brief, details of microanatomy

**Level 3:** Development in detail and applied anatomy

### **THORACOLUMBAR FASCIA**

Definition, layers, attachments

**Level 2:** Relations and functions

**Level 3:** Applied anatomy

### **URINARY BLADDER**

Morphology, relations, blood supply, nerve supply, lymphatic drainage

**Level 2:** Supports, neural control of micturition, microanatomy

**Level 3:** Development and applied anatomy – catheterization, cystostomy

### **UTERUS, OVARIES AND UTERINE TUBES**

Morphology, relations, blood supply

**Level 2:** Supports of uterus, microanatomy of uterus, ovary and uterine tube

**Level 3:** Applied anatomy and development

**BROAD LIGAMENT:** Definition, extent, contents

**Level 2:** Function and parts

**Level 3:** Applied anatomy

## **TESTES**

Morphology, blood supply, lymphatic drainage

**Level 2:** Development including descent and coverings, detailed microanatomy

**Level 3:** Applied anatomy

## **SPERMATIC CORD**

Definition, beginning, end, course and contents, coverings, vasectomy

**Level 2:** Microanatomy of vas deferens

**Level 3:** Applied anatomy

**21. PROSTATE:** Morphology, relations, blood supply

**Level 2:** Capsules

**Level 3:** Applied anatomy – Prostatectomy

## **MALE URETHRA**

Different parts, shapes of apertures

## **RECTUM AND ANAL CANAL**

Morphology, blood supply

**Level 2:** Nerve supply, lymphatic drainage

**Level 3:** Continence factors, Supports

## **PELVIC DIAPHRAGM**

Definition, parts, attachments, nerve supply, actions

**Level 2:** Relations and exact orientation of the muscle fibre

**Level 3:** Applied anatomy

## **UROGENITAL DIAPHRAGM (UGD)**

Definition, constituent musculature, difference between male and female UGD

**Level 2:** Attachments

**Level 3:** Functions

## **PERINEAL SPACES**

Definition and boundaries of each pouch

**Level 2:** Contents and communication

**Level 3:** Applied anatomy

## **ISCHIORECTAL FOSSA**

Location and boundaries

**Level 2:** Contents

**Level 3:** Applied anatomy - Ischiorectal abscess

**PUDENDAL CANAL:** Location, boundaries

**Level 2:** Contents

**Level 3:** Applied anatomy - Pudendal nerve block, pudendal nerve entrapment syndrome

## MYOLOGY

Anterior abdominal wall, rectus sheath, psoas major, quadratus lumborum, thoracoabdominal diaphragm

**Level 3:** Incisions, Psoas abscess

## OSTEOLOGY

Identification, anatomical position, parts, joints formed, descriptions, attachments, relations, development, differences between male and female pelvis

**Level 2:** Applied anatomy: Pelvis - types, external and internal pelvic assessment (various diameters), weight transmission, lumbar vertebrae, anatomical basis of disc prolapse, nerve compression

**Level 3:** Sacralization, lumbarization

## ARTHROLOGY

**MOVEMENTS OF LUMBAR VERTEBRAE, LUMBOSACRAL, SACROILIAC, SACROCOCCYGEAL JOINTS**

**Level 2:** Details

**Level 3:** Applied anatomy

## ANGIOLOGY

**PORTAL VEIN:** Formation, termination and tributaries

**Level 2:** Course, relations, portasystemic communications in general

**Level 3:** Portasystemic communications in detail; Development

**INFERIOR VENA CAVA:** Formation, termination and tributaries

**Level 2:** Course, relations

**Level 3:** Development, communications

**ABDOMINAL AORTA:** Commencement, termination, branches, distribution

**Level 2:** Course, relations

**Level 3:** Applied anatomy: Development of collateral circulation

**INTERNAL ILIAC ARTERY:** Commencement, termination, branches

**Level 2:** Course, relations

**Level 3:** Applied anatomy: Collateral circulation

## NEUROLOGY

**LUMBAR PLEXUS**

Formation, branches, root value of femoral and obturator nerves

**Level 2:** Distribution

**Level 3:** Applied anatomy

**SACRAL PLEXUS**

Formation, branches, root value of sciatic nerve

**Level 2:** Relations, distribution

**Level 3:** Applied anatomy

## ANATOMY PRACTICALS

### SURFACE LIVING ANATOMY

**(BONY) LANDMARKS (PALPATION OF):** Anterior superior iliac spine, Pubic tubercle

**PLANES:** Median, mid-clavicular, mid-axillary, mid-scapular, transpyloric, subcostal, transtuberular,

**JOINTS (DEMONSTRATION OF MOVEMENTS):** Intervertebral

**ORGANS:** 10 regions and projection of organs in them; stomach, duodenum, caecum, appendix, ascending, transverse and descending colon, pancreas, liver, gall bladder, spleen, kidneys (ventral and dorsal), root of mesentery

**MUSCLES (DEMONSTRATION OF ACTION):** Obliques, Transversus abdominis, Rectus abdominis

**NERVES:** Dermatomes

**VESSELS:** Abdominal aorta and branches

**OTHERS:** Inguinal canal, enlarged liver, spleen, kidneys, abdominal quadrants and regions; position of superficial and deep inguinal rings; renal angle; McBurney's point

**Level 2:** Murphy's sign

### RADIOLOGICAL ANATOMY

#### LIST OF RADIOGRAMS

Region	View	Identify
Plain X-ray	AP/Lateral	Soft tissue shadow, gas shadow, lumbar vertebrae, transverse process, pedicle, spinous process
Ba meal Ba meal follow through Ba enema (Double contrast)		Lesser, greater curvatures, duodenal cap Feathery appearance Parts of large intestine
Oral cholecystogram		Shape and parts of gall bladder
Intravenous urogram		Major, minor calyces, kidneys, constrictions of ureter
Cystogram Ascending pyelogram		Urinary bladder Ureter
Abdominal Aortogram		Major branches
Hystero-salpingogram		Peritoneal spill
Myelogram		Subarachnoid space
CT abdomen (Plain, contrast)		Major structures

## SECTIONAL ANATOMY

Drawing of cross-sectional diagrams and identification of major anatomical structures at the following vertebral levels:

T12, L1, L4

Drawing of midsagittal section and identification of major anatomical structures of male & female pelvis

**Level 2:** Relationship between the major structures at the mentioned levels and sagittal sections

**Level 3:** Minor details: Fascia, smaller vessels and nerves, individual muscles, correlation with coronal sections

## CLINICAL, SURGICAL AND FUNCTIONAL ANATOMY (Anatomical basis only)

**Abdominal wall:** Inguinal canal: Inguinal herniae - direct/indirect

**Level 2:** Comparison with femoral hernia

**Peritoneal fossae:** Omental bursa (Lesser sac)

**Level 2:** Duodenal fossae

**Subdiaphragmatic space**

**Level 2:** Classification - common spaces

### ABDOMINAL VISCERA

**Stomach:** Blood supply and lymphatics, pyloric stenosis

**Level 2:** Ulcers, cancer and surgery of the stomach, gastric perforation; vagotomy

**Duodenum:** Relations, duodenal papilla

**Level 2:** Endoscopic retrograde cholangio-pancreatography (ERCP)

**Small intestine**

**Level 2:** Mesentery, Meckel's diverticulum

**Caecum and appendix:** Common positions, McBurney's point, McBurney's incision, referred pain

**Rectum and anal canal:** Relations, blood supply and lymphatics, piles

**Level 2:** Difference in anal canal, above/below Hilton's line

**Liver and extrahepatic biliary apparatus:** Anatomical/surgical lobes/segments

**Level 2:** Gallstones, cholecystitis

**Pancreas:** Relations, Islet cell functions

**Level 2:** Common site of cancer

**Spleen:** Relations, Injuries

**Level 2:** Splenectomy

**Portasystemic anastomosis:** Common sites, varices

**Kidneys:** Relations

**Level 2:** Renal segments

**Ureters:** Common site of strictures

**Level 2:** Renal and ureteric calculi

**Urinary bladder:** Relations

**Level 2:** Ectopia vesicae

**Level 3:** Functionally abnormal bladders

**Prostate:** Lobes, cancer, benign enlargement, prostatic plexus (compare with thyroid)

**Level 2:** Venous drainage - Metastasis

**Urethra:** Male/Female

**Level 2:** Hypospadias, epispadias, stricture of urethra, rupture

**Gonads:** Undescended and ectopic testis

**Level 2:** Hydrocoele

**Uterus:** Relations - supports

**Level 2:** Prolapse of uterus, cancer cervix, lymphatic drainage, exfoliative cytology (PAP smear)

**Perineal spaces:** Superficial/deep extravasation of urine, pelvic venous plexus

**Charles McBurney**  
(1845- 1913)



He was an American surgeon pioneering the diagnostics and operative treatment of appendicitis.

McBurney's point - a point at the junction of medial two-thirds and lateral one-third of the line joining the umbilicus and the right anterior superior iliac spine (a guide to the position of the base of appendix).

McBurney's sign - maximum tenderness and rigidity over McBurney's point in appendicitis.

McBurney's incision - a muscle splitting abdominal incision employed in appendicectomy.