

Course Syllabus

➤ **PHYSICS OF ULTRASOUND & MACHINE SETTINGS**

➤ **ABDOMINAL ULTRASOUND**

✓ **Gall bladder**

- RUQ anatomy
- Anatomy of Biliary system
- Technique of GB Scanning
- Anatomical considerations
- Cholelithiasis, Cholecystitis and its complications
- Polyps, Adenomyomatosis, Adenocarcinoma

✓ **Liver**

- Protocols and Scanning Technique
- Normal USG of liver
- Doppler of hepatic vessels
- Diffuse liver diseases
- Focal liver masses (hemangiomas, abscesses, hydatid etc)
- Liver cirrhosis and Portal hypertension

✓ **Pancreas**

- Sonographic anatomy
- Critical Anatomic Structures, anatomical divisions and relationships.
- Transverse and Sagittal planes of Pancreas
- Scanning Technique with technical considerations
- Acute pancreatitis, Chronic pancreatitis
- Complications of pancreatitis
- Pancreatic Cystic Lesions
- Congenital abnormalities of pancreas
- Pancreatic carcinoma

✓ **Spleen**

- Normal Variants (Polysplenia, Splenunculus, Wandering spleen)
- Splenomegaly, splenic Infections
- Splenic Cysts. Metastases. Lymphoma. Varices
- Haematomas, Abscess. Splenic infarction

✓ Kidneys

- Anatomy of the kidneys
- Common anatomical variants (Horseshoe kidney, Ectopic kidney, Cross fused ectopic Unilateral renal agenesis, Dromedary hump, Persistent fetal lobulation, Prominent column of Bertin, Junctional parenchymal defect)
- Pathologies (Calculus, Hydronephrosis, Nephrocalcinosis Polycystic kidney, Renal Abscesses)
- Renal cyst, Renal infection, Medullary sponge kidney, Carcinoma

✓ UB and Prostate

- Scanning techniques
- Bladder calculus and ureteroceles
- Cystitis and bladder tumours
- Prostatitis and Benign Prostatic Hyperplasia
- Prostate Carcinoma

➤ SMALL PARTS ULTRASOUND

✓ Scrotal ultrasound

- Anatomy of scrotum Scanning protocol
- Epididymis Intratesticular fluid Congenital anomalies
- Acute scrotum Epididymitis and Orchitis
- Testicular torsion Bell clapper deformity
- Hydrocele Varicocele Testicular trauma
- Scrotal Hernia Testicular Cancer

✓ Thyroid ultrasound

- USG anatomy of thyroid gland
- Technique of thyroid scanning
- Diffuse thyroid disease (Goitre, Multinodular goitre, Graves's disease)
- Thyroiditis Thyroid nodule

✓ Breast Sonography

- USG anatomy of Breast
- Technique of Breast Scanning (Quadrant scanning & radial scanning)
- Analyzing a focal lesion in breast (Fibroadenoma, Galactocele, abscess etc)
- Ultrasound criteria of benign & malignant lesions

GYNECOLOGICAL ULTRASOUND



➤ **FEMALE PELVIC ULTRASOUND**

✓ **Uterus and ovaries**

- TVS and TAS scanning techniques,
- Variation of Uterine positions
- Normal appearance of Endometrium/ Ovaries/uterus
- Congenital abnormalities of uterus
- **Cervical pathologies** (Nabothian cysts, Polyps, Cervical fibroids, cervical carcinoma.)
- **Myometrial pathologies** (Fibroids Adenomyosis)
- **Endometrial pathologies** (Endometrial Polyps, Endometrial Carcinoma, Endometrial hyperplasia, Endometritis, endometriosis). Adhesions- Ashermans Syndrome, Submucosal fibroids, Arterio-venous malformation (AVM), Hydro/hematometra)
- **Ovarian Cysts** (Simple Cyst, Haemorrhagic ovarian cysts, Corpus luteal cyst, Dermoid, Endometrioma)
- PCODS, Ovarian hyper-stimulation syndrome (OHSS), Complex ovarian cyst
- Pelvic inflammatory disease (PID), Uterine arteriovenous malformations
- Pelvic congestion syndrome
- Fallopian tubes scanning

✓ **Ultrasound in Infertility**

Evaluation for:

- Fibroids, Adenomyosis, endometriosis, polyps, dermoids , endometrial hyperplasia, PCODS ,PID, endometritis
- Follicular monitoring
- Uterine biohysical profile scoring

FETAL ULTRASOUND

The background is a dark blue gradient with a subtle pattern of small white dots. On the right side, there are several faint, light blue technical graphics. These include a large circular scale with numerical markings from 0 to 210, a smaller circular scale with markings from 0 to 100, and various dashed and solid lines forming circular and semi-circular patterns, some with arrows indicating direction.

➤ **FOETAL ULTRASOUND**

✓ **Sonographic scanning techniques**

✓ **Early /ectopic Pregnancy**

- Embryology
- G Sac / Embryo /DDS /Y Sac,
- Haemorrhages, embryonic demise
- Pregnancy of unknown location (PUL),
- True vs. pseudo-gestational sac
- USG Findings of ectopic
- Heterotopic pregnancy, Cervical ectopic pregnancy, Interstitial ectopic pregnancy
- Caesarean scar ectopic pregnancy
- Role of BHCG in ectopic.

✓ **Foetal Head scanning**

- Embryology of CNS
- Standard sonographic planes of foetal head (axial and sagittal)
- Ventricular system scanning
- Ventriculomegaly
- Corpus callosum
- Agenesis of Corpus callosum
- Absent CSP
- Posterior fossa cyst (Mega-cisterna magna Blake's pouch cyst, Dandy walkers malformation)
- Holoprosencephaly
- Chairi 2nd Malformation
- Hydrencephaly

✓ **Foetal abdominal Scanning**

- Physiological Midgut Herniation
- Normal Stomach bubble, Non Visualization of the Stomach bubble
- Diaphragmatic hernia
- Esophageal atresia, Duodenal atresia, Jejunal & ileal atresia
- Ventral wall defect Omphalocele Gastroschisis

✓ Placenta

- Normal USG appearance of placenta
- Subchorionic cyst of the placenta.
- Cord Insertion
- Placental Grading
- Circumvallate placenta, Succenturiate placenta Bilobed placenta
- Placental chorioangioma
- Placenta previa and placental abruption
- Placenta accreta

✓ Amniotic Fluid

- Development and contents of amniotic fluid
- Sources of amniotic fluid , routes of amniotic fluid removal,
- Amniotic fluid regulation
- Amniotic fluid index
- Polyhydramnios and Oligohydramnios

✓ Multiple gestation

- Genesis of multiple gestation
- Zygosity and chorionicity
- Fetal Complications
(Prematurity IUGR, single foetal demise, Twin to Twin transfusion syndrome Acardiac and Vanishing Twin, Conjoined twins)

➤ FOETAL COLOR DOPPLER

Normal and abnormal flows of:

- Uterine artery
- Umbilical artery
- Middle cerebral artery
- Foetal aorta /IVC
- UV and DV
- Interpretation of flow velocities
- Timing of delivery

➤ FOETAL ECHOCARDIOGRAPHY

- Introduction to basic echo
- Indications & timing
- Equipments
- Laterality of Fetal body & image
- Segmental analysis.

Here are some of the skills which will be set after undergoing our ultrasound course:

- Become familiar with ideal machine setup.
- Use of transabdominal probe and transvaginal including probe orientation.
- Understand morphological features of normal pregnancy understanding physiology of cardiac activity in first trimester.
- Ultrasound identification of an early intrauterine pregnancy.
- Ultrasound appearances in early pregnancy-embryo, placenta, gestational sac.
- Recognition and diagnosis of complications of early pregnancy.
- Basic first trimester biometry.
- Understanding principles of gestational sac diameter and crown rump length.
- Assessing retained products of conception
- Ultrasound findings of corpus luteum
- To gain competence in undertaking a basic dating scan using between 8-12 weeks.
- To perform Nuchal translucency confidently.
- Understanding principles of difference between normal intrauterine sac and pseudosac.
- Ultrasound assessment of suspected ectopic pregnancy.
- Ability to establish the diagnosis of multiple pregnancy and to assess chorionicity and amnionicity.
- Ability to correlate clinical, morphological and biochemical findings in ectopic pregnancy.
- Ability to evaluate adnexa in a systematic and effective way to interpret the findings in a clinical context
- Asses the amount of fluid in pouch of douglas
- Amniotic fluid assessment max. vertical pocket and amniotic fluid index , oligohydramnios and polyhydramnios's.
- Placenta assessment of site cord insertion vasaprevia placenta previa and acreeata.
- Ability to identify fetal position.
- Confirm normal anatomy of head and face.
- Understanding of ventricular system of brain
- Ability of scan head in all planes
- Ability to identify Corpus callosum
- Ability to scan posterior fossa in detail
- Confirm normal anatomy of abdomen
- Perform anomaly scan.
- Perform confidently scrotal and thyroid scan
- Ability to identify and examine the uterus, ovaries and pouch of douglas.
- Ultrasound appearance of normal uterus, endometrium and ovarian.
- Understanding endometrial and ovarian changes during menstrual cycles.
- Ability to locate submucosal intramural and subserosal fibroids, Adenomyosis and endometrial polyps.
- To diagnose polycystic ovaries, simple and complex ovarian cyst.
- Understanding scanning techniques of abdominal sonographic and sonographic anatomy.
- Ability to scan diffuse liver disease, fatty liver grades , acute hepatitis , cirrhosis and portal hypertension , focal mass lesion- cystic lesions and solid lesions
- To diagnose cholelithiasis, atypical calculus and pitfalls, WES, complications of cholecystitis, polyps and GB mass.
- To diagnose inflammation of pancreas (acute and chronic), pseudocyst and neoplasms.
- To diagnose splenomegaly and focal splenic masses, solid and cystic masses.
- Diagnosing splenic rupture.
- Understanding scanning techniques of kidney and sonographic anatomy.
- Understanding corticomedullary demarcation renal sinus, columns of bertin.
- To diagnose hydronephrosis, renal calculus and mimics of a calculus , renal infections and tumours.
- Ability to differentiate Nephrocalcinosis and pyonephrosis pyelonephritis ,simple cortical cysts , and para pelvic cyst , poly cystic kidney disease, renal echogenicity corticomedullary demarcation, renal sinus column of bertin.
- Ability to scan maternal and foetal vessels on color doppler.
- Ability to interpret the flow velocities in foetal doppler and thereby predicting the outcome and timing of delivery.
- Ability to perform a basic fetal echocardiography.