Ultrasonography

Ultrasonography or USG or Scanning is extensively used in pregnancy as well as non pregnant cases.
The basic role of Ultrasonography is that it helps in diagnosis of various disorders in obstetrics as well as Gynecology.

In Pregnancy : - USG is done in pregnancy to detect abnormalities in baby, liquor as well as placenta. It has been proven that any number of Sonographies done in pregnancy does not affect the baby in any manner.

We at Patankar Hospital do Sonographies at least 4 -5 times so as to diagnose problems to the mother or the baby at the earliest.

We recommend routine Ultrasonographies at 6-8 weeks, 11 -13 weeks, 18 – 20 weeks, 28 – 32 weeks, and 35 – 37 weeks of pregnancy. It is important to undergo Sonographies exactly during the same period as each of this Sonography has purpose and treatment can be initialized without delay.

6 - 8 weeks scan: - This is the first Sonography and is done internally (transvaginally) and the patient is not required to drink water for the Sonography. In fact the urinary bladder should be empty for clear visualization of the baby.

Generally the gestational sac is seen at about 5 weeks, the fetal pole (baby) is seen at 6 weeks and the babies' heart activity also starts at around 6 weeks. It is recommended to do the Sonography after 6 weeks as we can see the fetal heart activity and conclude that the life has begun.

We can also see if it is only a single pregnancy or multiple pregnancies at this time. If there is any problem to the baby like bleeding inside the uterus or opening of the mouth of Uterus (Cervix) or reduction in the amount of liquor surrounding the baby, it can be diagnosed and corrective treatment can be started.

Other problems like ovarian cysts, fibroid uterus or malformations of the uterus can also be seen and appropriate preventive measures or treatments can also be initiated.

11 – 13 weeks scan: - This is an abdominal Sonography and the patient needs to have lot of fluids before the Sonography. Ideally the urinary bladder should be full for better visualization.

This Sonography is very crucial as it enlightes us with a lot of information. Fetal skull bone is formed by 11 weeks. Small limb buds are also developed and can be visualized. It is also possible (not always) to see fetal heart chambers, stomach, urinary bladder, spine and face around 13 weeks.

This Sonography also gives information regarding nuchal thickness (Nuchal thickness is the thickness of the pad of fat behind the baby's neck) in various chromosomal defects like Down's syndrome, Edward's syndrome and Patau's syndrome this nuchal thickness is increased. It is very important to note that the babies with any of these syndromes do have mental retardation.

This nuchal thickness along with the results of double test (described elsewhere) gives us predictive value for any of these syndromes and if required further rests like amniocentesis can be done to rule out these syndromes.

Fetal nasal bone is also seen around 12-13 weeks babies with absent nasal bone may have mental retardation so by this 11 -13 weeks Sonography we can detect major defects of the body as well as we get a fair information regarding the possibilities of fetal mental retardation.

18 - 20 weeks scan:- This is the most important sonography in the pregnancy and is mainly done to detect congenital anomalies or defects in the baby. This is also called as anomaly scan.

The urinary bladder should be full and there are no restrictions on the food in take. Measurements of the baby are taken and they are biparietal diameter (transverse diameter of babies head), head circumference, abdominal circumference, femur (thigh bone) length and cerebral diameter. Other measurements can also be taken in required.

Baby is screened thoroughly from head to toe and anomalies,if any, are diagnosed. Fetal head, face, heart, abdomen, kidneys, diaphragm, urinary bladder as well as limbs are seen carefully.

Other information like placental position, length of cervix, amount of liquor is also obtained in this study.

It is important to note that all congenital anomalies cannot be diagnosed on Sonography and detected of anomalies depends on various factors such as fetal position amount of liquor ,mental obesity, fullness of bladder, location of placenta etc,

It is particular difficult to see fetal and details of fetal heart at this stage and fetal cardiac 2-D echo and Colour Doppler if required is done at around 24-28 weeks.

28-32- weeks scan:- This is again done with full bladder and is done mainly to assess fetal growth.

Fetal heart and other organs are again screened completely to detect anomalies and amount of liquor is also assessed.

The Sonography detects IUGR (Intra Uterine Growth Retardation) at the earliest and treatment can be initiated immediately.

35-37 weeks scan:- This is again a very important Sonography as it gives us idea regarding the fetal well being .

Fetal measurements are taken and IUGR is looked for fetal organs are again screened but it is many times difficult to visualize the baby completely at this period.

AFI i.e. Amniotic Fluid Index is measured which gives us exact estimation of liquor surrounding the baby. Fetal weight is also estimated but one should remember that it is not exact and a 15% variation is possible.

We routinely do umbilical artery Colour Doppler at this stage and it is gives information regarding the blood flow from mother to the fetus. If this Umbilical blood flow is not good, the baby is jeopardy and many times it is essential to take out the baby at the earliest as it requires neonatal care.

It is important to note that it is not possible to estimate the time of delivery or the type of delivery on Sonography.

Colour Doppler:-Though we do umbilical artery Colour Doppler in all third trimester scans, in selected cases like pregnancy induced hypertension, intrauterine growth retardation and diabetes it is essential to see for blood supply in various other vessels.

Middle cerebral artery gives information regarding blood flow in the fetal brain, renal Doppler gives information regarding blood supply to kidneys and uterine artery aorta as well as ductus venous blood flow gives us other useful information.

Doppler studies as well as non-stress test (NST) can detect fetal jeopardy at the earliest.

3-Dand 4-D scan: - In 3-D scan the images are taken which are then reconstructed while 4D scan is dynamic or live 3-D scan. These Scans give us better visualization of fetus particularly the face, spin & limbs.

It is not necessary to undergo these scans routinely but they definitely have a role when anomalies are suspected like cleft lip & spinal deformities.

The best period to do these scans is between 20-28 weeks of gestation and it is essential to have perfect fetal position at the time of scan

Non pregnant states: Sonography is equally useful in patients who are not pregnant for the diagnosis of certain conditions e.g., fibroids, cysts in the ovaries ,certain pelvic infections,etc.Depending upon the nature of the complaint we shall tell you the type of sonography to be done.Sometimes it may be through the vagina ,sometimes thr' the abdomen and sometimes it may have to be coupled with the sonography of the other abdominal organs as well.