

Kidney:

Structure of Kidney:

Kidney is a compound tubular gland covered by connective tissue capsule.

Location:

Although many believe that kidneys are located in the lower back but actually this is not their location.

- located against the dorsal body wall in the retroperitoneal position (beneath the parietal peritoneum position) & below the diaphragm in the superior lumbar region.

Extension: They extend from the Thoracic T-12 vertebrae to the 3-lumbar vertebrae thus they receive some protection from the lower rib cage.

Position: Right kidney is slightly lower than the left kidney, becz of considerable space occupied by liver.

Shape: Dark Red Bean Shaped Organ.

Size:

About 12cm (5inch) long, Six cm (2.5 inch) wide & 3cm (1inch) ~~wide~~ thick.

Weight:

About 150 gms.

Adipose Capsule:

Embedded & held in a position by a fatty mass called adipose Capsule which holds it in against $\hookrightarrow$ it also Accumulate (Adiposes).

the muscles of Trunk wall.

• Adrenal Gland:

Atop each kidney has **adrenal gland** (Regulate B.P & Heart Rate) which is a part of endocrine system.

• Renal Hilus:

It is convex laterally & has a medial indentation called **renal hilus** where blood vessels, lymph vessels, the ureter & nerves enter.

• Renal Capsule:

An outer fibrous transparent **capsule** surround each kidney & gives a fresh glistening appearance.

Layers:

(i) Renal Cortex (ii) Renal Medulla

↓
Dark & Granular
Appearance

↓
Inner Most
Layer

Blood Supply:

Kidneys continuously clean the blood & adjust its composition so it is not supressing that - they have a very rich blood supply approximately **one quarter** of the total blood supply of the body passes through the kidney each one min.

In Adults, during resting condition both kidneys receive **1300 ml of blood**

per min or ^{20%} about of C.O

Renal Blood Vessels: (i) Aterial Blood

⇒ Renal Artery:

Supply:

Aterial Supply of each kidney is renal artery arises from abdominal aorta and enters the kidney through the hilus

⇒ Segmental Art: As the renal artery approaches the hilus, it divided into many **segmental artery** while through the renal sinus.

⇒ Lobae Artery:

Once inside the pelvis S.A subdivides into **lobae arteries**

⇒ Interlobae Artery:

Each of which gives off several branched called **interlobae artery** when travel through the renal column to reach the cortex.

⇒ Arcuate Artery:

At the cortex medulla junction where arteries of cortex & medulla join interlobae arteries gives off the **arcuate Artery** which curves over the medullary pyramids.

⇒ Interlobulae Artery:

Each arcuate artery gives rise to small **interlobulae Artery** and run outward to supply ^{blood to} the cortical tissue.

⇒ Afferent arterioles:

From each interlobulae artery, numerous afferent arterioles

arise. Afferent Arteriole enter the Bowman's Capsule and forms Glomerular Capillary tuft. Here it divides into 4 or 5 large capillaries

⇒ Glomerular Capillaries:

Each large capillary divides into small Glomerular Capillaries which form the loops. And loops unite to → efferent arteriole.

⇒ Efferent Arteriole: Form a second capillary network called peritubular capillaries which surround tubular portion of nephrons.

⇒ Peritubular Capillaries & Vasa Recta:

↳ are found around the tubular portion of cortical nephrons. The tubular portion of juxtamedullary nephrons is supplied by some specialized capillaries called vasa recta (straight blood vessels) ^{directly} arise from efferent arteriole.

Venous Blood Supply:

drain into venous system.

- Draining from the kidneys flows through veins that trace the pathway of the arterial supply in a reverse direction.

Venous System starts from Peritubular capillaries and continue as Interlobular - ar veins → Arcuate Vein → Interlobar

Vein & finally Renal Vein which leaves
(the) leaves the kidney through hilus
& joins **inferior Vena Cava**.
No Segmental & Lobar Veins
Sketch

