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Renal Cell Carcinoma

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I. REVIEW OF RENAL ANATOMY

A. **Gross anatomy**

1. **Gross description**

- a. Kidneys are paired, reddish-brown, solid organs that lie in the retroperitoneum.
- b. The renal hilum is a depression on the medial surface of the kidney.
- c. The normal kidney weighs 150 g.
- d. Typical dimensions
 - 1) 10 to 12 cm in vertical plane
 - 2) 5 to 7 cm in transverse width
 - 3) 3 cm in anterior-posterior thickness
- e. Fetal lobulations (ie, concave depressions in the renal cortex that are normal during fetal development) may persist to some degree into adult life.

2. **Gerota's fascia**

- a. Perinephric fascia, or Gerota's fascia, surround the kidneys and adrenal glands.
- b. The anterior and posterior leaves of this fascia are fused on all sides of the kidney except inferiorly.
- c. The fascia forms an anatomic barrier around the kidney.
- d. The fascia helps to confine and limit the

spread of pathologic processes originating from the kidney.

3. **Renal vasculature.** The kidneys receive 20% of the total cardiac output.

- a. **Vascular pedicle.** The vascular pedicle classically contains a single artery and a larger vein, which enter the kidney via the renal hilum.

- 1) The renal vein is the most anterior component of the vascular pedicle, and the renal artery is posterior.
- 2) The artery and vein branch from the aorta and inferior vena cava, respectively, at L2.

- b. **Renal arterial supply**

- 1) The right renal artery passes behind the inferior vena cava.
- 2) The main renal artery divides into the anterior and posterior divisions. After giving off the posterior division, the anterior renal artery subdivides into 4 or more segmental branches: the apical, upper, middle, and lower segmental arteries.
- 3) The segmental arteries course through the renal sinus and divide into interlobar arteries.