



FIGURE 26-5 Casts in urine. **A**, Unstimulated urine sediment (40× objective) in a patient with glomerulonephritis. *Solid line* shows a granular cast, and *hollow line* shows a hyaline cast. **B**, Sternheimer-Malbin–stained urine sediment (40×). The *solid line* points to an erythrocyte cast in a patient with immunoglobulin A nephropathy. **C**, Unstimulated urine sediment (40×) shows several renal tubular cells and an epithelial cell cast (*solid line*) indicating acute tubular injury. **D**, Papanicolaou–stained urine sediment (*solid line*) (100×) shows an epithelial cell cast in an otherwise stable patient with diabetic nephropathy. **E**, Unstimulated urine sediment (40×) shows bilirubin-stained granular cast (*solid line*) indicating renal inflammation in a patient with liver disease. **F**, Unstimulated urine sediment (10×) shows dirty-brown granular casts (*solid line*) indicative of acute tubular necrosis (ATN). **G**, Unstimulated urine sediment (40×) shows severe ATN. No dirty-brown granular casts were seen, but the tubular cells (*solid lines*) were dysmorphic and multinucleated. **H**, Sternheimer-Malbin–stained urine sediment (40×) shows a fatty cast (*solid line*) in a patient with nephrotic syndrome.

diagnosis of bladder outlet obstruction without the need to catheterize the patient.

Renal ultrasonography is the most accurate way of determining kidney size. It is commonly performed to detect renal masses, cysts, and evidence of obstruction characterized by dilatation of the pelvicalyceal system and to evaluate the size and shape of the

kidneys. The presence of small kidneys (i.e., <9 cm on both sides) suggests the presence of scarring and therefore CKD. However, kidneys that are larger, typically in the range of 11 to 13 cm, are often seen in conjunction with CKD due to diabetes mellitus, amyloidosis, and multiple myeloma. Therefore, the presence of small kidneys is not needed to make a diagnosis of CKD.