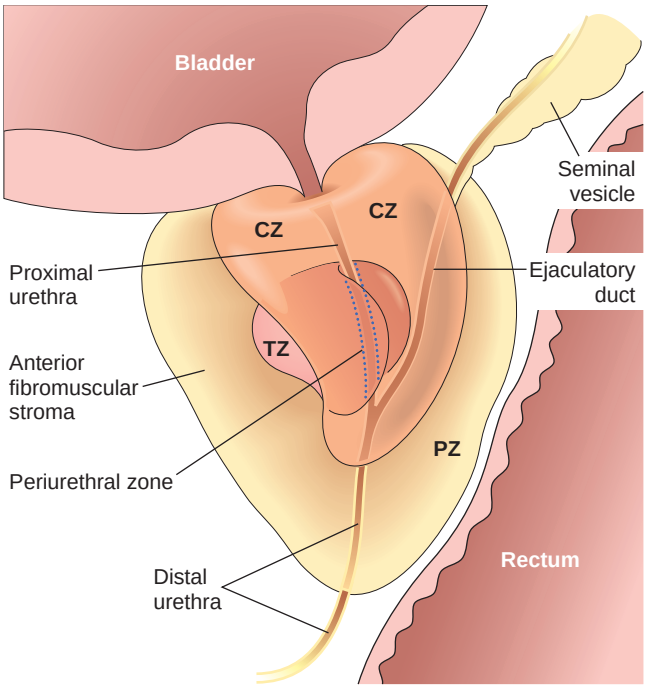

Figure 21-30 Adult prostate. The normal prostate contains several distinct regions, including a central zone (CZ), a peripheral zone (PZ), a transitional zone (TZ), and a periurethral zone. Most carcinomas arise from the peripheral zone and may be palpable during digital examination of the rectum. Nodular hyperplasia, in contrast, arises from the more centrally situated transitional zone and often produces urinary obstruction.

neck of the bladder and urethra, and is devoid of a distinct capsule. In the adult, prostatic parenchyma can be divided into four biologically and anatomically distinct zones or regions: the peripheral, central, transitional, and periurethral zones (Fig. 21-30). The types of proliferative lesions are different in each region. For example, most hyperplasias arise in the transitional zone, whereas most carcinomas originate in the peripheral zone.

Histologically the prostate is composed of glands lined by two layers of cells: a basal layer of low cuboidal epithelium covered by a layer of columnar secretory cells (Fig. 21-31). In many areas there are small papillary infoldings of the epithelium. These glands are separated by abundant fibromuscular stroma. Testicular androgens control the growth and survival of prostatic cells. Castration leads to atrophy of the prostate caused by widespread apoptosis.

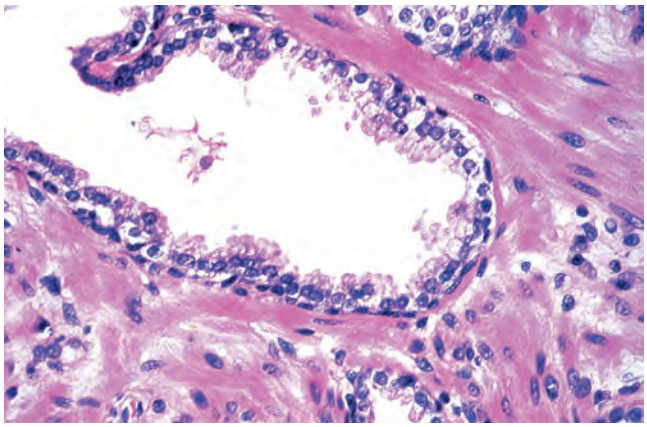

Figure 21-31 Benign prostate gland with basal cell and secretory cell layer.

Only three pathologic processes affect the prostate gland with sufficient frequency to merit discussion: inflammation, benign nodular enlargement, and tumors. Of these three, the benign nodular enlargements are by far the most common and occur so often in advanced age that they can almost be construed as a "normal" aging process. Prostatic carcinoma is also an extremely common lesion in men and therefore merits careful consideration. We begin our discussion with consideration of the inflammatory processes.

Inflammation

Prostatitis may be divided into several categories: acute and chronic bacterial prostatitis, chronic abacterial prostatitis, and granulomatous prostatitis.

- **Acute bacterial prostatitis** typically results from bacteria similar to those that cause urinary tract infections. Thus, most cases are caused by various strains of *E. coli*, other gram-negative rods, enterococci, and staphylococci. The organisms become implanted in the prostate usually by intraprostatic reflux of urine from the posterior urethra or from the urinary bladder, but occasionally they seed the prostate by lymphohematogenous routes from distant foci of infection. Prostatitis sometimes follows surgical manipulation of the urethra or prostate gland itself, such as catheterization, cystoscopy, urethral dilation, or resection procedures on the prostate. Clinically, acute bacterial prostatitis is associated with fever, chills, and dysuria. On rectal examination the prostate is exquisitely tender and boggy. The diagnosis can be established by urine culture and clinical features.
- **Chronic bacterial prostatitis** is difficult to diagnose and treat. It may present with low back pain, dysuria, and perineal and suprapubic discomfort. Alternatively, it may be virtually asymptomatic. Patients often have a history of recurrent urinary tract infections (cystitis, urethritis) caused by the same organism. Because most antibiotics penetrate the prostate poorly, bacteria find safe haven in the parenchyma and constantly seed the urinary tract. Diagnosis of chronic bacterial prostatitis depends on the demonstration of leukocytosis in the expressed prostatic secretions, along with positive bacterial cultures. In most cases, there is no antecedent acute attack, and the disease appears insidiously and without obvious provocation. The implicated organisms are the same as those cited as causes of acute prostatitis.
- **Chronic abacterial prostatitis** is the most common form of prostatitis seen today. It is indistinguishable from chronic bacterial prostatitis in terms of signs and symptoms, but there is no history of recurrent urinary tract infection. Expressed prostatic secretions contain more than 10 leukocytes per high-power field, but bacterial cultures are uniformly negative.
- **Granulomatous prostatitis** may be specific, where an etiologic infectious agent may be identified, or nonspecific. In the United States the most common cause is instillation of BCG within the bladder for treatment of