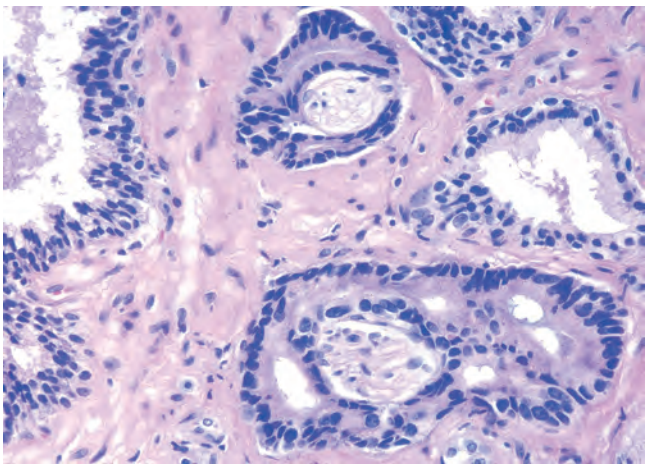

Figure 21-37 Carcinoma of prostate showing perineural invasion by malignant glands. Compare to benign gland *(left)*.

Grading and Staging. **Grading is of particular importance in prostatic cancer, because grade and stage (discussed below) are the best prognostic predictors.** Prostate cancer is graded using the Gleason system, which stratifies prostate cancer into five grades on the basis of glandular patterns of differentiation. Grade 1 represents the most well differentiated tumors, in which the neoplastic glands are uniform and round in appearance and are packed into well-circumscribed nodules (Fig. 21-38*A*). In contrast, grade 5 tumors show no glandular differentiation, with tumor cells infiltrating the stroma in the form of cords, sheets, and nests (Fig. 21-38*C*). The other grades fall in between these extremes. Most tumors contain more than one pattern; in such instances, a primary grade is assigned to the dominant pattern and a secondary grade to the second most frequent pattern. The two numeric grades are then added to obtain a combined Gleason grade or score. Thus, for example, a tumor with a dominant grade 3 and a secondary grade 4 has a Gleason score of 7. Tumors with only one pattern are treated as if their primary and secondary grades are the same, and hence, the number is doubled. An exception to the rule is if three patterns are present on biopsy, the most common and highest grades are added together to arrive at the Gleason score. Thus, under this schema the most well-differentiated tumors have a Gleason score of 2 (1 + 1), and the least-differentiated tumors merit a score of 10 (5 + 5). Gleason scores are often combined into groups with similar biologic behavior, with grades 2 through 6 representing well-differentiated tumors with an excellent prognosis, 3 + 4 = 7 moderately differentiated tumors, 4 + 3 = 7 moderately to poorly differentiated tumors, and 8 through 10 poorly to undifferentiated tumors with aggressive biologies. In surgical specimens, Gleason scores of 2 through 4 are typically small tumors found incidentally in TURP performed for symptoms of BPH. The majority of potentially treatable cancers detected on needle biopsy as a result of screening have Gleason scores of 6 through 7. Tumors with Gleason scores 8 through 10 tend to be advanced cancers that are less likely to be cured. Although there is some evidence that prostate cancers can become more aggressive with time, most

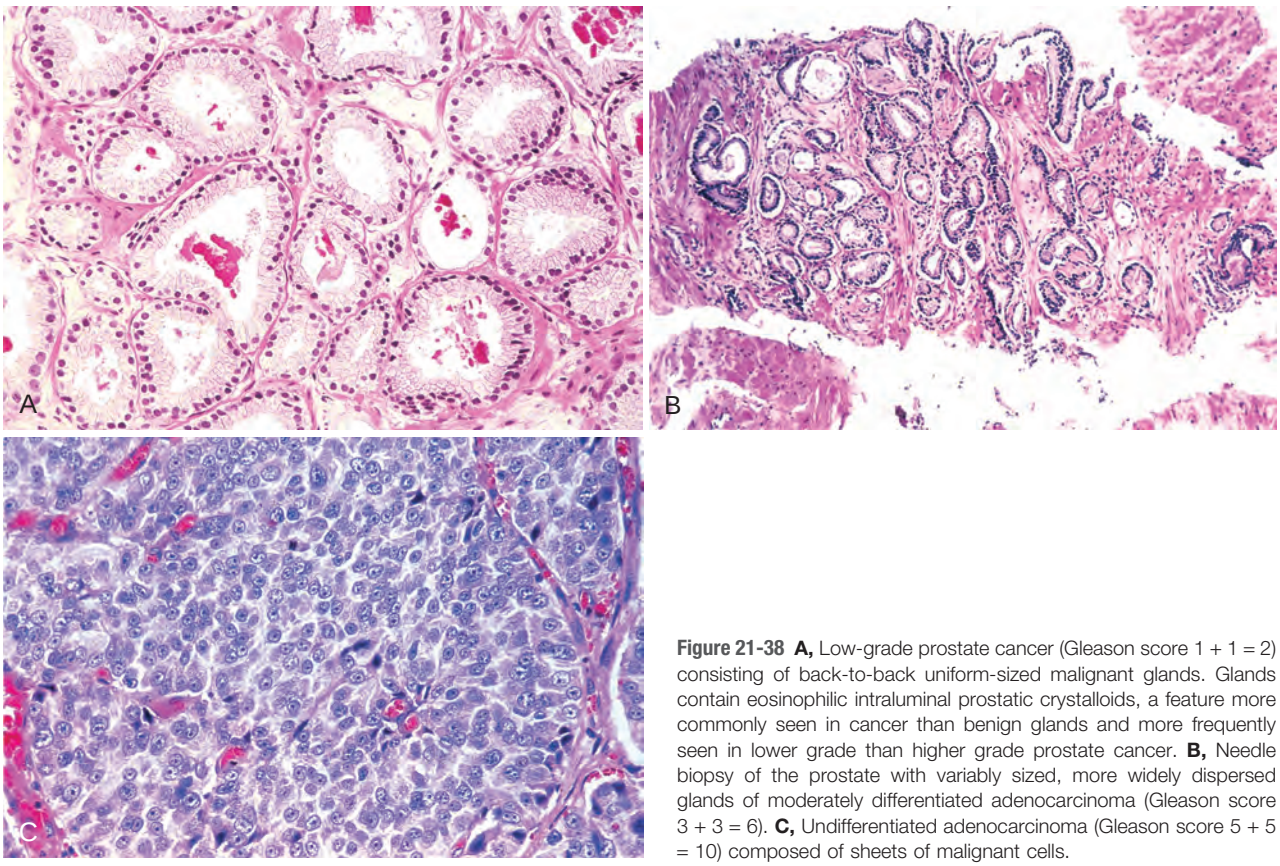

Figure 21-38 **A,** Low-grade prostate cancer (Gleason score 1 + 1 = 2) consisting of back-to-back uniform-sized malignant glands. Glands contain eosinophilic intraluminal prostatic crystalloids, a feature more commonly seen in cancer than benign glands and more frequently seen in lower grade than higher grade prostate cancer. **B,** Needle biopsy of the prostate with variably sized, more widely dispersed glands of moderately differentiated adenocarcinoma (Gleason score 3 + 3 = 6). **C,** Undifferentiated adenocarcinoma (Gleason score 5 + 5 = 10) composed of sheets of malignant cells.