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# Benign and malignant stromal lesions of the prostate

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## Hyperolastic stromal nodules and related lesions

The hyperplastic prostate may consist of purely stromal nodules with variable amounts of smooth muscle fibers. The classification proposed by Vogel and coworkers is: i) embryonal-mesenchymal; ii) fibroblastic; iii) fibromuscular; and iv) smooth muscle nodules.

All types of stromal nodules can be observed simultaneously in the prostate and are located predominantly in the transition zone. Transitional forms with a changing mixture of either embryonal-mesenchymal and fibroblastic or fibroblastic and smooth muscle cells exist. The majority occurs in the central periurethral regions, although they are also encountered in the intermediate and subcapsular regions (1). The stromal nodules contain thin-walled capillary-like vascular channels and thick-walled vessels in proportions that change with each morphological type of nodule. No elastic fibers are found in any type of nodule, in contrast to the diffuse hyperplastic stroma. Hyperplastic stromal nodules are infiltrated by T lymphocytes. Stromal nodules of predominantly fibroblastic and fibromuscular types can be infiltrated by glands such as fibroadenomas in the breast. In contrast, stromal hyperplasia with atypia is a rare lesion with very few well-documented reports (2). In this situation, there is hyperplasia of the stroma with no associated epithelial hyperplasia. The spindle cell proliferation is atypical and shows hyperchromasia and pleomorphism with bizarre nuclei. Bizarre hyperchromatic nuclei have occasionally been reported in the stroma between normal prostatic glands. Mitotic figures are usually absent or scanty. These changes are currently considered degenerative. Some of these lesions resemble phylloides tumors of the breast and the term phyllbides-type atypical prostatic hyperplasia has been applied (3). More recently, the term prostatic stromal proliferation of uncertain malignant potential has been applied to this group of lesions (2, 4). Rare prostatic stromal lesions of a regressive nature are stromal edema and myxoid changes, scars following infarction and postinflammatory fibrosis.

## Pseudosarcomatous lesions

Postoperative spindle cell nodule is a well-described but rare condition that occurs within a few months of prostate surgery, generally in a periurethral site. This condition is characterized by a proliferation of plump spindle cells arranged as intersecting fascicles each of which are surrounded by a delicate network of blood vessels. When small, these appearances may simulate Kaposi's sarcoma. Mitotic figures may range from 1-25 per 10 high power field but atypical mitotic figures are exceptional. Pleomorphism and focal necrosis are occasionally observed. Spindle cell proliferation without previous surgery (inflammatory pseudotumor and inflammatory myofibroblastic tumor) are rare in the prostate. Recent studies suggest a clonal myofibroblastic proliferation. Patient age and clinical history are essential in this setting.

## Benign soft tissue tumors

Benign soft tissue tumors of the prostate are rare. Those more frequently encountered are lebomyomas, fibromas and hemangiomas. These tumors show features similar to those at any other site with no pleomorphism and no significant mitotic rate. The variant atypical leiomyoma has also been described in the prostate and shows atypical, sometimes bizarre nuclei, some of which may be multinucleated but with no increase in mitosis. Criteria used to separate benign from malignant soft tissue tumors of the prostate are the criteria of malignancy applied to other soft tissue sites. A single case of leiomyoblastoma has also been described. Most fibromas described in the old literature are currently considered examples of hyperplastic stromal nodules.

## Malignant soft tissue tumors

Sarcoma of the prostate accounts for less than 0.1% of prostatic neoplasms. Prostatic malignant soft tissue tumors occur in a younger age group than do carcinomas. Fifty percent of prostatic sarcomas are rhabdomyosarcomas, 25% are lelomyosarcomas, 15% are unclassifiable and the remainder includes examples malignant peripheral nerve sheath tumors, fibrosarcomas, malignant fibrous histiocytoma, chondrosarcoma and osteosarcomas. Leiomyosarcomas are the dominant in type in adults (5). The histopathological features of prostatic sarcomas are similar to those in other sites (3). Immunohistochemistry, which is essential to distinguish these tumors from other pleomorphic sarcomas, undifferentiated carcinoma and undifferentiated lymphoma can be supplemented with electron microscopy.

## Mixed malignant stromal-eDithelial tumors

Most prostatic mixed malignant stromal-epithelial tumors are malignant phylloides tumors (6) and carcinosarcomas (7-9).

Malignant phylloides tumor of the prostate exhibits a spectrum of histological features similar to its counterpart in the breast, It may be subdivided into low-grade, intermediate-grade and high-grade groups but even low-grade tumors may recur. High-grade prostatic phylloides tumor has a high stromal-epithelial ratio, prominent stromal cellularity and overgrowth, marked cytological atypia and increased mitotic activity. Tumors with overtly malignant stroma rarely give rise to distant metastases of sarcoma. Some of these tumors are designated as prostatic stromal sarcoma (4).

Carcinosarcoma of the prostate is defined as a malignant neoplasm composed of histologically differentiated carcinoma plus malignant mesenchymal elements (7-9). The most common mesenchymal elements are poorly differentiated spindle cell sarcoma, chondrosarcoma and osteosarcoma but myosarcoma, liposarcoma and angiosarcoma may occur (9). Most reported cases have developed after treatment for apparently pure prostatic adenocarcinoma but some cases present at time of diagnosis with both adenocarcinoma and sarcoma (synchronous carcinosarcoma). Some authors

have recognized sarcomatoid carcinoma as a lesion distinct from carcinosarcoma because of the presence of specifically differentiated mesenchymal components in the latter and no specific mesenchymal element in the former. However, there is histologic similarity between the two and their clinical behavior is the same.

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