30 Penis

Foreskin

Foreskins removed from infants are usually not submitted to the surgical pathology laboratory for examination. If you do receive one of these specimens, measure it, describe its appearance, and submit a section for histologic evaluation. Foreskins removed from older patients are routinely submitted for evaluation, because they are more likely to harbor pathology. You need to sample these specimens more extensively and pay close attention to the margin of resection. Ink the epithelial margin, and carefully inspect the surfaces of the specimen. Record the number, size, location, and appearance of any lesions. Because the foreskin is much easier to section once it is fixed, you may wish to pin the four corners of the foreskin onto a wax tablet, and submerge the specimen in formalin.

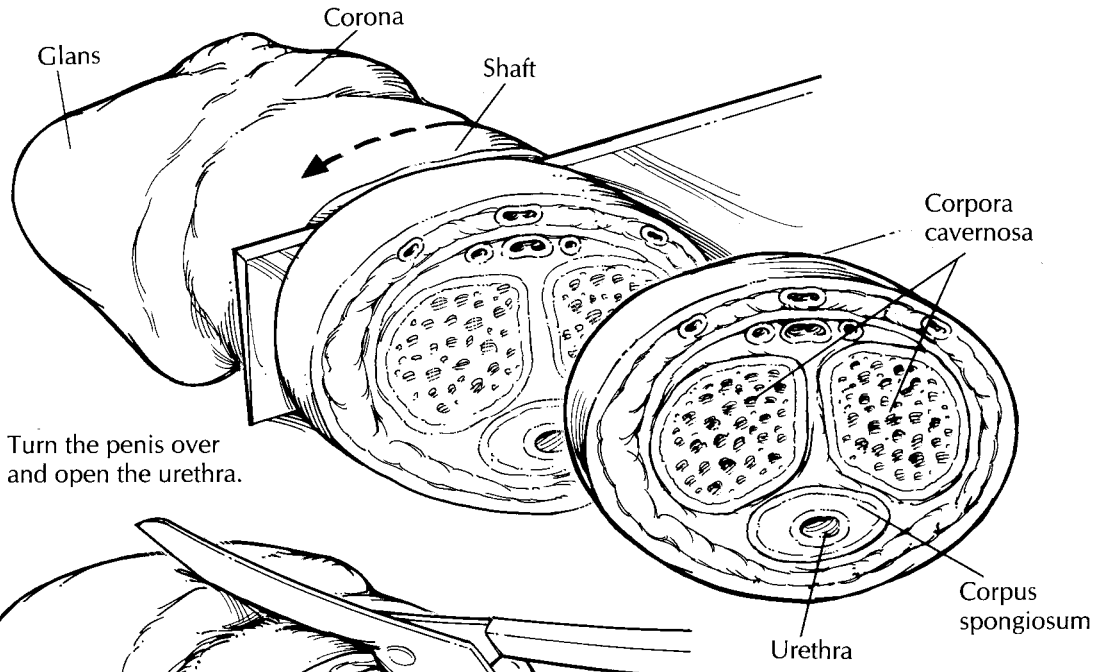
Even if no lesions are appreciated on gross inspection, liberally sample foreskins removed from adults to look for early neoplastic changes. Use perpendicular sections so that the epithelial margin is included in the sections. When a neoplasm is suspected, each quadrant of the epithelial margin should be sampled. More extensive sampling may be necessary if a visible lesion is large or if the lesion approaches the margin at several sites.

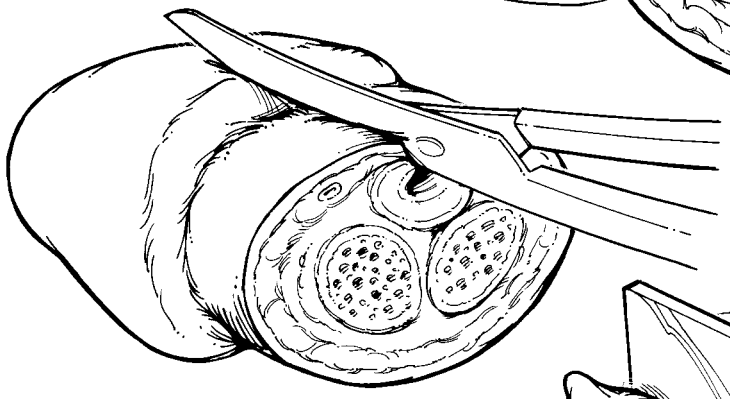
Penectomies

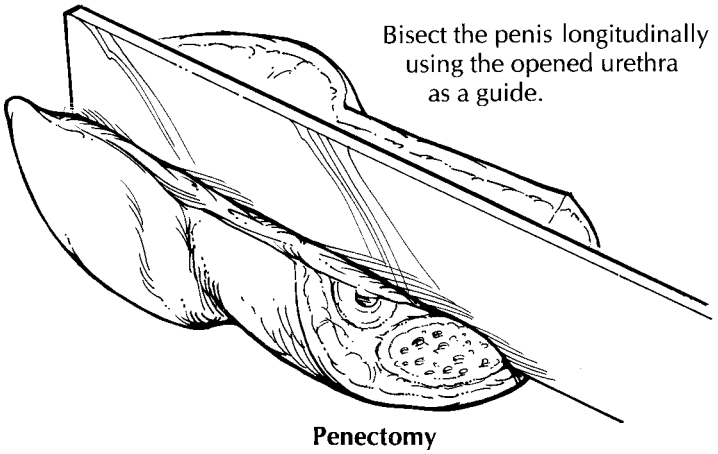
The diverse findings encountered in penectomies range from the essentially normal penis removed from a patient undergoing a sex change operation to the penis grossly distorted by gangrene or infiltrating carcinoma. The best way to be prepared for virtually any penectomy specimen is to become familiar with the anatomy of the normal penis. This familiarity will allow you to answer those questions that should be foremost in mind when evaluating a penile lesion: Where on the penis does the lesion arise, into what anatomic compartments does the lesion extend, and how close is it to the resection margin?

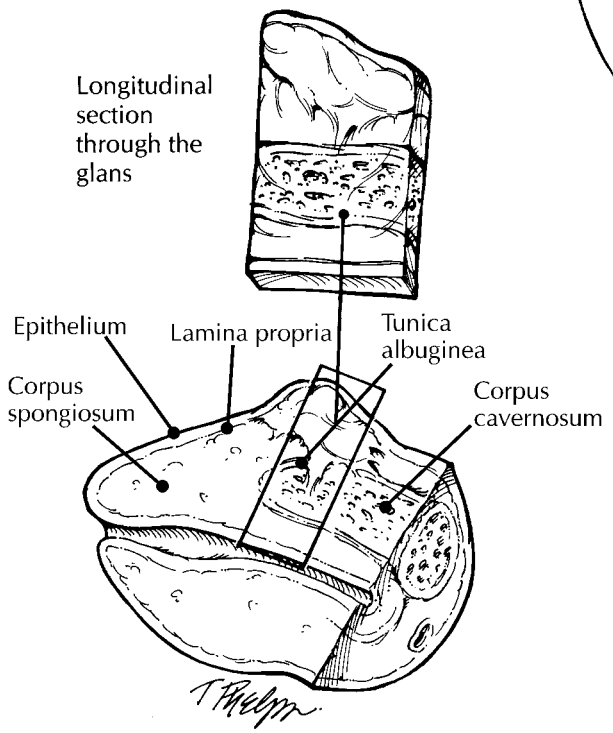
Before beginning the dissection, identify the three basic structural components of the penis as illustrated. The *shaft*, as its name suggests, is the cylindrical rod-like portion of the penis. It is covered by a loosely attached layer of rugated skin, and it houses the three erectile bodies of the penis—the two corpora cavernosa (located dorsally and laterally) and the single corpus spongiosum (located ventrally, surrounding the urethra along the midline). The *glans* is the cone-shaped expansion of the distal corpus spongiosum. It sits like a bonnet on the end of the shaft. The edge of the glans at its base is referred to as the corona, and at the apex of the glans is the opening of the urethra (i.e., the urethral meatus). The *foreskin* is a retractable fold of skin that partially covers the glans. Its attachment to the skin of the shaft occurs just behind the corona. The foreskin will obviously not be present in penectomies from circumcised males.

Carefully examine the surfaces of the specimen, keeping in mind that the vast majority of penile neoplasms arise from the surface epithelium of the glans and from the undersurface of the foreskin. Neoplasms may be concealed by the foreskin, so be sure to retract this skin fold and look at the entire surface including the epithelium lining the deep recesses of the coronal sulcus. Other neoplasms—especially those that are not









Penectomy

1. Identify the shaft and the glans. Remove the foreskin (if present), along the corona.
2. Take a complete shave section of the amputation margin, and bread-loaf the shaft of the penis as shown.
3. Open the urethra with scissors, then use the urethra as a guide to bisect the glans longitudinally. The glans can then be additionally sectioned parallel to the midline.
4. Document the size and depth of invasion of any neoplasms.
5. Submit sections of tumor, foreskin, transverse sections through the shaft, and longitudinal sections through the glans. Submit the amputation margin as a shave section.

deeply invasive—may be so subtle as to elude casual inspection; therefore, be sure to look carefully for discolored plaque-like irregularities that characterize superficial spreading carcinomas. Do not stop once one lesion has been found; keep looking for others. Squamous carcinomas of the penis tend to be multifocal, and these tumors will be overlooked if the entire epithelial surface is not examined.

In the gross description, record the dimensions of the entire specimen and the dimensions of each of its individual components (i.e., foreskin, glans, and shaft). Describe the surfaces of each component, and note the number, size, color, and distribution of any lesions found. Assess the tumor's macroscopic pattern of growth (e.g., nodular, ulcerative/infiltrative, verrucous, or flat).

Begin the dissection by taking a shave section from the penile shaft at the amputation site. This section represents the only margin. If it is carefully taken, this section will include margins of the skin, erectile bodies, and penile urethra. If all of these components cannot be included in a single section, submit each component individually. Remove the foreskin from the uncircumcised penectomy. This can be done with a circular cut leaving a 5-mm rim of foreskin attached to the corona. The foreskin should then be separately processed according to the guidelines given previously in the section on the foreskin. The deep structures of the penis are most easily visualized when the penis is sectioned in two different planes. Bread-loaf the shaft perpendicular to its long axis. Begin at the proximal end of the specimen, and stop 1 to 2 cm from the corona. Next, serially section the distal penis parallel to its long axis. The first of these parallel longitudinal sections should bisect the proximal penis into equal halves midline through the urethra. This is not a difficult section if you first use scissors to open the urethra at the 6-o'clock position (i.e., midventral plane), and then insert a knife into the opened urethra to complete the longitudinal section. Serially section the rest of the glans parallel to this initial midline cut in the sagittal plane.

Examine the cut surfaces of the specimen. Locate and describe the appearance of the penile urethra and the four anatomic levels of the glans. As described by Cubilla et al.,[15] they include: (1) the epithelium, the flat less than 1 mm layer of epithelium covering the surface of the glans; (2) the lamina propria, the approximately 2 mm thick layer of loose connective tissue beneath the epithelium; (3) the corpus spongiosum (grossly reddish, spongy tissue located between the lamina propria and the tunica albuginea) surrounding the distal urethra; and (4) the corpora cavernosa (spongy reddish brown tissue encased in a band of firm white tissue, the tunica albuginea). If a tumor is present, measure how deeply it infiltrates the penis, and try to determine which of the four anatomic structures the tumor involves. The standard sections that should be submitted for histologic evaluation include the following: (1) a shave section from the shaft margin (including the skin, erectile bodies, and urethra); (2) sections of foreskin; (3) transverse sections through the shaft at two or three different levels; and (4) longitudinal sections through the glans including a midline section with the urethra. When sampling the tumor, submit sections that demonstrate its relationships to the adjacent surface epithelium, to the urethra, and to the corpora spongiosum and cavernosum. For tumors that involve the urethra, determine the maximum tumor extension by submitting sections at regular intervals along the entire length of the penis.

Important Issues to Address in Your Surgical Pathology Report on Penectomies

- What procedure was performed, and what structures/organs are present?
- Is a neoplasm present?
- Where is the tumor located (e.g., foreskin, glans, shaft, and/or urethra)?
- Is the tumor *in situ* or infiltrating?
- What are the histologic type and grade of the tumor?
- What is the size of the tumor, and how deeply (in millimeters) does the tumor infiltrate the penis?
- Is vascular invasion identified?
- What deep structures does the tumor involve (e.g., lamina propria, corpus spongiosum, corpora cavernosa, urethra, prostate, adjacent structures)?
- Are the resection margins free of tumor?
- Does the non-neoplastic portion of the penis show any pathology?