A 51-year-old woman is seen because of burning at the site of entry of a urethral (Foley) catheter. The catheter had been placed perioperatively for a cholecystectomy. No history of genitourinary difficulty or trauma to the area. A urine culture that revealed Escherichia coli led to a diagnosis of urinary tract infection (UTI), but the relationship between this infection and the physical finding was unclear.

The Case
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More History/Physical
Lucid woman who has no signs of acute discomfort. Temperature, 37.6°C (99.7°F). Lungs clear. Suprapubic area non-tender and non-distended. No costovertebral angle tenderness. External genitalia as shown.

**What's Your Diagnosis?**

- Adenocarcinoma
- Small-cell lymphoma
- Squamous cell carcinoma
- Urethral caruncle

*(Answer on next page.)*

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The correct diagnosis is Urethral Caruncle

Most primary care clinicians—myself included—feel less confident about interpreting results of examination of the genitalia than of any other part of the body. One primary reason is changes in anatomy across the life span. So let us first revisit landmarks and anatomy: The labia majora and labia minora are widely spread. The latter show a less finely wrinkled surface and a more pure pink color, so that they look more like mucous membrane than skin; their lack of hair supports this impression. The extreme right margin of the right labium minus, at its indistinct junction with the corresponding labium majus, looks a little atrophic, whitish, and wrinkly. One could suspect early vulvar dystrophy; however, the camera angle may mislead. In person, one could shift the angle of view by a bit to see if the pallor were artifactual.

**Case Discussion**

The clitoral hood at the superior junction of the labia appears intact, as do the small visualized portions of skin of the mons pubis, the uppermost medial thighs, and the slightly flattened skin below the posterior fourchette. The flattening is consistent with previous episiotomy, but absent a midline scar, mere positioning and spreading of folded skin can mimic the appearance of remote episiotomy.
A tiny area of vaginal mucosa is visible below and to the left of the catheter, just above the posterior fourchette. It is rugate, which indicates that this patient is either still cycling, newly postmenopausal, or using systemic or topical exogenous estrogen.

An aberrant bulge of highly vascular tissue surrounds and lies above a cleft into which the catheter disappears. One does not see the dimple of the normal urethral orifice. So one infers that the tissue, reminiscent of exuberant granulation tissue anywhere in the body, forms a sort of collar around the interior of the urethral meatus. By far the most likely lesion at this site is the non-neoplastic mass known as a urethral caruncle.

**Caruncles, Symptoms, and Urinary Tract Infection**

Although caruncle was described centuries ago,¹ we still understand almost nothing about it. Histologically, squamous or urothelial (transitional cell) mucosa covers a highly vascular stroma that shows chronic inflammation. There is wide variation in the degree of microscopic branching (papillomatosis), epithelial hyperplasia, intensity of capillary hypervascularity (the cause of the beefy red color) and prominence of endothelium, as well as in the extent of scarring, acute inflammation, and micro-ulceration. The vascular proliferation, while striking, is neither neoplastic nor a malformation such as the one that creates a port-wine stain.² If anything, the histopathology resembles that of the (confusingly misnamed) reactive lesion known as pyogenic granuloma.³

Urethral caruncles are not associated with human papillomavirus (HPV) infection, although if a lesion shows a warty configuration, or a patient has either HPV infection or a history of multiple sexual partners, condyloma acuminatum of the urethra enters the differential diagnosis and deserves exploration, whether by Pap smear, culture, biopsy, colposcopy, or some combination.

Given the locale—directly in the urine stream and adjoining the vaginal orifice—it is surprising that many caruncles prove asymptomatic and are discovered only incidentally on examination. When symptoms occur, they are often of painless hematuria, dysuria, or dyspareunia. A tiny bump that a patient feels on wiping herself after voiding may also alert her to the abnormality. Of course, if the lesion is asymptomatic, or the patient is reluctant to report it because of the very frequent shyness and phobia about genital lesions, and if the clinician unwittingly compounds the de facto coverup by "deferring" genital examination, it will go undiscovered.

The rarity of UTI attributable to caruncle defies explanation. Infection in the present case more likely related to the presence of the catheter, a familiar cause. One could ask whether UTI promotes the formation of a caruncle; with the high prevalence of UTI, it would appear that few or no urethral caruncles arise from infection of adjacent mucosa.

A parallel appearance is seen when exuberant granulation tissue forms at the site of a suprapubic catheter. Whether this reflects similar excess vascularization, and if so to what stimulus, remains unknown. One might also note a resemblance to everted mucosa seen in rectocele; in fact, the very rare urethrocele is another differential diagnosis of caruncle.

**Caruncles and Cancer**

About 5% of caruncles proved to be tumors in a 46-year-old study that is still quoted by every author who writes about caruncle.⁴ Of 400 clinical caruncles, biopsy revealed urothelial cancer in 1.5% and carcinoma in situ in another 0.75%. Thus, although a well-respected consumer health Web site claims no association between caruncle and urethral cancer,³ the clinician may be concerned. Many experts advocate excisional biopsy both for therapeutic benefit and prevention of later obstructive symptoms, and for definitive diagnosis.

Case reports have described many other kinds of neoplasms that are initially mistaken for caruncle, including squamous cell carcinoma in situ,⁶ adenocarcinoma of the urethra,⁷ and small-cell lymphoma.⁸ Even tuberculous granulomatous infection has been reported.⁹

**Who Is At Risk for Cancer?**

Most reports emphasize that caruncle generally occurs outside the reproductive years, typically
postmenopausally, and with a much smaller peak in young girls.\textsuperscript{10,11} Locale is often the posterior lip of the urethral orifice. Hypotheses about preferential posterior urethral localization—which is not shared by the present case—include dysfunction of Skene urethral glands, whose orifices lie in the distal urethra, at the posterior margin.

There are no other explanations for gender specificity, and there has been at least one report of caruncle in a man.\textsuperscript{12} If urethral glands are somehow implicated, the glands of Littr in men could play a corresponding part in pathogenesis.

A reasonable conclusion is that the patient most in need of gynecologic referral for probable biopsy to exclude cancer is one whose age differs from the usual, or whose caruncle seems, as in the present case, atypical. For this patient, excision with cautery of the base revealed squamous and urothelial mucosa with hemorrhage and the expected reactive atypia, but no cancer. There was abundant acute inflammation that likely reflected events during the period of catheterization, and focal ulceration of similar origin.

Final Comments
A method for extirpating caruncles by ligation of the base, causing hemorrhagic infarction and then auto-amputation,\textsuperscript{13} recalls rubber-banding of hemorrhoids. While the convenience factor sounds desirable, the authors' claim that tissue is then available for histopathologic evaluation appears overly optimistic.

A reputed connection of caruncle to distal urethral stenosis\textsuperscript{1} appears never to have been corroborated by other investigators. But as must be clear by now, for all the straightforwardness in the recognition and treatment of urethral caruncle, a host of questions about its origin, mechanism, and natural history cry out for investigation and illumination.

REFERENCES: