OBJECTIVE
To critically analyze the available evidence regarding the incidence, etiopathogenesis, and management of prostate cancer (CaP) in transgender women. In addition, this article aims to present a recent case report of a transgender woman with a unique presentation at the author’s institution.

MATERIALS AND METHODS
An electronic nonsystematic literature search was performed to identify pertinent studies. PubMed search engine was queried by using the following search terms: “prostate cancer,” “male to female transsexual,” “transgender patient,” “androgen + prostate cancer,” “estrogen therapy + prostate cancer,” and “health care barrier.” In addition, a clinical case managed at our institution was reviewed and critically discussed.

RESULTS
Including our case, there have been only 10 documented cases of CaP in transgender women. Additionally, an emerging body of literature has questioned the role of androgens in the development of CaP and suggested that estrogen therapy may not be as protective as initially thought. Therefore, the current evidence suggests that the transgender woman should be screened for CaP the same as a nontransgender man. Barriers to care in the transgender female population include accessing resources, medical knowledge deficits, ethics of transition-related medical care, diagnosing vs pathologizing transgender patients, financial restrictions of the patient, and health system determinants.

CONCLUSION
Although rare, CaP in transgender women has been documented. Both the mechanism and the impact of receiving a bilateral orchiectomy on disease development are unclear. Future study is needed to examine these factors, and to further shape the treatment and screening regimen for these patients. UROLOGY 110: 166–171, 2017. Published by Elsevier Inc.

Gender identity describes how one views his or her own gender. When a person’s gender identity and expression do not match his or her physical phenotype, the person is classified as being “transgender.” Furthermore, the urge and execution of living as the phenotypically opposite sex somatically, psychosocially, and legally is termed “transsexualism.” This set of conditions was previously medicalized as gender identity disorder. However, the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, now labels this constellation of findings as gender dysphoria (Fig. 1).1

A variety of studies have shown the upward trend in the prevalence of transgender individuals. In 2011 it was estimated that there are roughly 700,000 transgender individuals in the United States.3 A subsequent study by Flores et al estimated that there are 1.4 million transgender adults in the United States.4 This population’s increased prevalence and acceptance by society has been echoed in the business world. Schuster et al highlighted that in 2015, 375 Fortune 500 companies prohibited discrimination related to an individual’s gender identity.3 This number was a steady increase from only 15 companies in 2002. Although only 16% of people in the United States know a transgender individual, the total population of these individuals is rapidly increasing.1 Therefore, it is important that physicians increase their literacy on this subject to adequately care for transgender individuals. Although most of the controversy surrounding these individuals is psychosocial in nature, there can be medical implications associated with the process of gender reassignment. One is the development of prostate cancer (CaP) in transgender women.

To achieve a successful male to female transition, there are various medical or surgical interventions that an individual must go through. The main goal is to deprive the phenotypically male body of androgens through GnRH agonist, testosterone (T) antagonist, or bilateral orchiectomy.
while simultaneously supplementing the body with estrogen therapy to obtain the female phenotype. Although the prostate is biologically a male organ, it is not customary to perform a prostatectomy during the “transition” as this operation is associated with complications such as urinary incontinence.7

Despite the lack of androgens and high level of estrogens in these patients, rare cases of CaP have been reported in transgender women.6-14 The development of CaP in these patients has puzzled many as it opposes the tenants of the androgen hypothesis that CaP is dependent on serum androgen levels.15 In addition to these scattered case reports, there have been numerous basic science projects demonstrating the multifactorial nature of CaP development. Some studies have identified a potential role of estrogen in the development of cancer.16-18 The purpose of this article is to highlight the literature on existing cases of CaP in transgender women, the hypotheses as to why CaP occurs in this unique setting, and the psychosocial barriers and implications of caring for these individuals. We will also present our own recent case report of a transgender woman with a unique presentation. To the best of our knowledge, this is the first article that comprehensively integrates all these categories.

MATERIALS AND METHODS

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RESULTS

Literature Search

Nine cases of CaP in transgender women have been reported in the literature between 1975 and 2017 (Table 1).6-14

Clinical Case

We present the case of a 65-year-old transgender woman who presented to our urology clinic for evaluation of an elevated prostate-specific antigen (PSA). She reported having identified as a female since an early age and began feminization in her 20s with oral and injectable estrogen for roughly 20 years. She achieved feminization including increased breast volume but did not undergo further gender transition interventions such as orchiectomy because of financial restrictions. She ceased supplemental estrogen at the age of 55, leaving a 10-year gap after receiving estrogen therapy.

Her referral to our urology clinic was ultimately a byproduct of her complicated medical history including diagnoses of human immunodeficiency virus, stage IV chronic kidney disease, prior cerebral ischemic event, diabetes mellitus type 2, and hypertension. In June 2015 her worsening chronic kidney disease led to an evaluation for renal transplantation, which included a PSA value of 7.5 ng/mL in February 2011. Her family history was negative for CaP. At the time of presentation, her PSA had increased

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**Figure 1.** Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, criteria for gender dysphoria diagnosis.
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