

Prostatic-type tissue in the uterine cervix

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Abstract

The female genital tract can give rise to a variety of metaplastic and ectopic tissue types. We report a case of incidental prostatic-type tissue in a loop excision specimen for cervical intra-epithelial neoplasia (CIN). We also review the histogenesis, potential pitfalls and immunohistochemistry of this diagnosis.

Keywords cervical pathology; ectopic prostate; mesonephric remnants; Skene glands

Case report

A 34-year-old woman with moderate dyskaryosis on cervical cytology and a biopsy proven diagnosis of cervical intra-epithelial neoplasia 2 (CIN 2) had a single pass large loop excision of the transformation zone (LLETZ) performed at the colposcopy unit. The LLETZ measured 17 x 12 x 9 mm deep. On histological examination, it contained cervical transformation zone mucosa. CIN 2 was present in the majority of blocks, including the end-blocks. In addition to CIN 2, one of the end blocks contained enlarged endocervical crypts with extensive central squamous metaplasia (Figure 1). The periphery of the crypts contained small glandular profiles lined by an outer cuboidal and an inner columnar layer of epithelium. Cytologically, the cells were bland and contained regular round nuclei with an even chromatin pattern.

Immunohistochemistry was performed and the peripheral glandular profiles expressed prostatic acid phosphatase (PSAP) within the cytoplasm of inner columnar cells. Alpha-methylacyl-CoA-racemase (AMACR) expression was also identified (Figure 1). Both antibodies showed focal staining. Prostatic specific antigen (PSA) staining was not done. Taken together, the histology and immunohistochemistry gave the diagnosis of ectopic prostatic-type tissue with extensive squamous metaplasia within the cervix.

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Discussion

Prostatic-type tissue is a rare finding in the female genital tract and has been described in the vulva, vagina, cervix and adnexa.^{1,2} In the cervix, lesions are often incidental findings excised as part of a LLETZ procedure although they can form a macroscopically visible mass raising the possibility of a cervical fibroid or other soft tissue tumour.³ Morphologically, the lesions are typically within the stromal compartment and comprise variable proportions of double layered glandular epithelium with associated squamous proliferation. Mitotic activity and nuclear pleomorphism should not be present. McCluggage et al. described the immunohistochemical profile of prostatic tissue in the cervix.¹ Of six cases, all showed PSAP and AMACR staining whereas only half were positive for PSA. Cytoplasmic and nuclear androgen receptor staining was also present. A basal cell layer was generally demonstrated with high molecular weight cytokeratins. Importantly, p16 was consistently not expressed implying that this process is not HPV-related. In addition, all immunohistochemical markers demonstrated focal staining patterns. Ectopic prostatic-type tissue can be an important mimic of cervical malignancy and might be mistaken for either adenosquamous carcinoma or adenoid basal cell carcinoma at low-power.⁴ However, bland nuclear features together with the lack of desmoplastic stroma and characteristic immunohistochemistry of prostatic-type tissue should make this diagnosis straightforward.

The histogenesis of prostatic-type tissue in the cervix and vagina is disputed. Misplaced Skene glands are one possible explanation. These glands are normally found in the anterior wall of the lower vagina and are considered to be the female equivalent of the prostate. Malignant transformation of these glands around the urethra can give rise to Skene gland carcinoma which is morphologically similar to prostatic adenocarcinoma and has a similar immunohistochemical profile. Due to its rarity, it is unclear if the Gleason grading system can be applied to Skene gland carcinoma.⁵ To date, there have been no reported cases of malignant transformation of prostatic-type epithelium in the cervix. Another possible histological origin is metaplasia of mesonephric duct remnants. In men, the mesonephric (Wolffian) ducts give rise to the epididymis, vas deferens and seminal vesicles under androgenic stimulation. These ducts regress during female embryological development

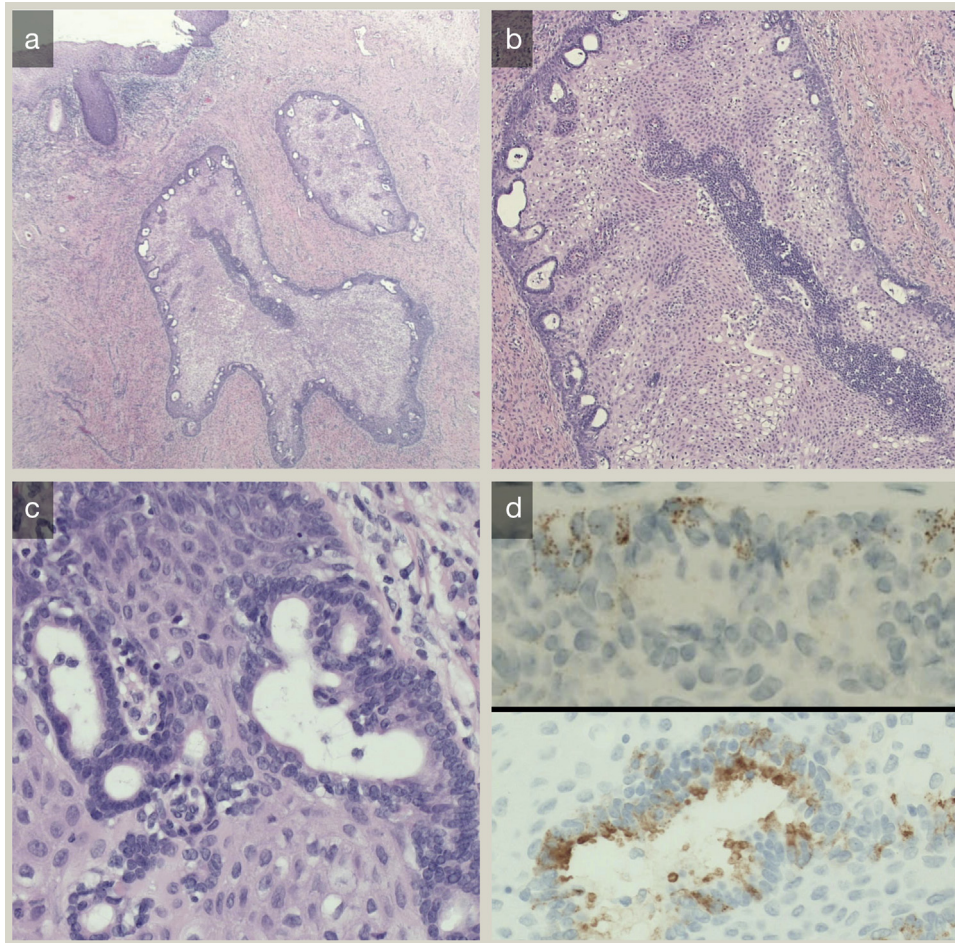


Figure 1 Morphological and immunohistochemical appearances of prostatic-type tissue in the female genital tract. **(a and b)**: Stromal location and abundant squamous proliferation seen at low and medium power, **(c)**: Double layered glandular epithelium, **(d)**: Focal staining with PSAP (upper panel) and AMACR (lower panel).

but persistent tissue could, in principle, give rise to male structures. Prostatic-type tissue in the anatomical location of mesonephric duct remnants has been described following androgen exposure in two scenarios: adrenogenital syndrome⁶ and exogenous administration of androgens in female to male gender transition.⁷ In both scenarios, the patients were adults at the time of androgen exposure implying that these embryological remnants retain androgen receptor expression and the capability to differentiate accordingly. A single case of prostatic-type tissue has also been described at the ovarian hilum in close proximity to the location of the mesonephric duct remnant.⁸ Notably this was separate from the ovary and no ovarian teratoma was present. Prostatic-type tissue and prostatic adenocarcinoma have been described arising within cases of mature cystic teratoma.² However, this histogenesis is different from that of prostatic-type tissue occurring elsewhere in the female genital tract. ◆

Practice points

- Prostatic-type tissue in the female genital tract is rare but may mimic malignant conditions
- A prostate-like immunohistochemical staining pattern is generally seen but is often focal
- The histogenesis of prostatic-type tissue in the female genital tract is not clearly defined but may represent misplaced Skene glands or mesonephric duct remnants

Multiple choice questions

1) What is the typical immunohistochemical profile of PSA in prostatic-type tissue in the female genital tract?

- a) Diffuse and present in greater than 90% of cases
- b) Diffuse and present in 50% of cases

- c) Focal and present in greater than 90% of cases
- d) Focal and present in 50% of cases
- e) Complete absence of staining

Correct answer: d.

2) Which immunohistochemical marker is typically negative in prostatic-type tissue in the female genital tract?

- a) p16
- b) AMACR
- c) PSA
- d) PSAP
- e) High molecular weight cytokeratin

Correct answer: a.

REFERENCES

- 1 McCluggage WG, Ganesan R, Hirschowitz L, Miller K, Rollason TP. Ectopic prostatic tissue in the uterine cervix and vagina: report of a series with a detailed immunohistochemical analysis. *Am J Surg Pathol* 2006; **30**: 209–15.
- 2 Halabi M, Oliva E, Mazal PR, Breiteneker G, Young RH. Prostatic tissue in mature cystic teratomas of the ovary: a report of four cases, including one with features of prostatic adenocarcinoma, and cytogenetic studies. *Int J Gynecol Pathol* 2002; **21**: 261–7.
- 3 Nucci MR, Ferry JA, Young RH. Ectopic prostatic tissue in the uterine cervix: a report of four cases and review of ectopic prostatic tissue. *Am J Surg Pathol* 2000; **24**: 1224–30.
- 4 Loureiro J, Oliva E. The spectrum of cervical glandular neoplasia and issues in differential diagnosis. *Arch Pathol Lab Med* 2014; **138**: 453–83.
- 5 Tregnago AC, Epstein JI. Skene's glands adenocarcinoma: a series of 4 cases. *Am J Surg Pathol* 2018; **42**: 1513–21.
- 6 Kim KR, Park KH, Kim JW, et al. Transitional cell metaplasia and ectopic prostatic tissue in the uterine cervix and vagina in a patient with adrenogenital syndrome: report of a case suggesting a possible role of androgen in the histogenesis. *Int J Gynecol Pathol* 2004 Apr; **23**: 182–7.
- 7 Singh K, Sung CJ, Lawrence WD, Quddus MR. Testosterone-induced "virilization" of mesonephric duct remnants and cervical squamous epithelium in female-to-male transgenders: a report of 3 cases. *Int J Gynecol Pathol* 2017; **36**: 328–33.
- 8 Smith CE, Toplis PJ, Nogales FF. Ovarian prostatic tissue originating from hilar mesonephric rests. *Am J Surg Pathol* 1999; **23**: 232–6.