



Crosscut and Covey-Tunnel Clusters-Uterine Cervix

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Abstract

Tunnel clusters of uterine cervix articulate as a subtype of nabothian cyst delineating spherical aggregates of twenty to fifty intensely adherent tubules. Characteristically, lesion demonstrates a complex configuration of endocervical glands with multi-cystic dilatation. Subcategorized as type A and type B variants, type A tunnel clusters are constituted of miniature, non cystic endocervical glands whereas type B tunnel clusters exemplify cystic dilatation of endocervical glands. Of obscure aetiology, tunnel clusters are posited to represent a sub-involution within foci of endocervical glandular hyperplasia. Tunnel clusters are asymptomatic or may be associated with mucoid vaginal discharge. Type A tunnel clusters are composed of miniature, elongated, non-cystic endocervical glands layered with columnar to low cuboidal epithelium with mucinous cytoplasm, apical vacuoles and basal nuclei. Type B tunnel clusters are comprised of cystically dilated endocervical glands layered with bland, cuboidal or flattened epithelium and permeated with inspissated mucin. Tunnel clusters appear immune reactive to PAX2 wherein type A tunnel clusters with gastric metaplasia appear immune reactive to HIK1083. Tunnel clusters of uterine cervix require segregation from neoplasms such as minimal deviation adenocarcinoma or adenoma malignum, conventional endocervical adenocarcinoma, adenocarcinoma in situ, nabothian cysts and mesonephric remnants or mesonephric hyperplasia of uterine cervix. Tunnel clusters may be appropriately discerned with cogent histological examination of surgical tissue specimens of uterine cervix, appear devoid of precise, applicable therapeutic strategies and do not necessitate alleviation.

Keywords: Nabothian Cyst; Type A; Type B; Endocervical Glands

Introduction

Tunnel clusters of uterine cervix articulate as a subtype of nabothian cyst. Characteristically, a complex configuration of endocervical glands demonstrating multi-cystic dilatation is exemplified. Tunnel cluster emerges as an involutinal lesion devoid of specific clinical significance. Initially scripted by Fluhmann in 1961, tunnel clusters of uterine cervix are comprised of lobular aggregates of benign appearing endocervical glands embedded within the cervical wall. The incidentally discovered lesion with lobular configuration is subcategorized as type A and type B variants [1].

Type A tunnel clusters are constituted of miniature, non-cystic endocervical glands. Type A tunnel clusters appear associated with gastric metaplasia. In contrast, type B tunnel clusters exemplify cystic dilatation of endocervical glands.

Commonly, tunnel clusters of uterine cervix emerge as an incidental discovery upon morphological assessment of specimens of cone excision biopsy or total abdominal hysterectomy. Tunnel clusters are prevalent in elderly or multiparous women. Commonly, lesion is associated with gravid uterus and cervix. Tunnel clusters are comprehensively enunciated within multi-gravid women

or adult women > 30 years. Around 8% of adult women and 13% of postmenopausal women are afflicted by tunnel clusters [2,3].

Tunnel clusters commonly incriminate the endocervix. Of obscure aetiology, tunnel clusters are posited to represent as a sub-involution within foci of endocervical glandular hyperplasia. Lesion may appear secondary to preceding gestations [2,3].

Tunnel cluster is postulated to emerge as a result of stimulatory phenomenon engendered during gestation. Lesion may persist for a variable duration [2,3].

Typically, tunnel clusters are asymptomatic. Lesion may be associated with mucoid vaginal discharge. Exceptionally, lesion may be discernible upon colposcopy.

Tunnel clusters are comprised of benign endocervical glands and appear devoid of specific cytological features [2,3].

Grossly, type A tunnel cluster appears unremarkable. Type B tunnel cluster represents with a visible, singular, lobular tumefaction in up to 40% lesions whereas multiple lesions are encountered within 80% instances. Expansion of cervical wall is infrequently observed [4,5].

Upon microscopy, a well demarcated, spherical, lobular proliferation of endocervical glands is observed. Lesion demonstrates intensely adherent tubules of variable

magnitude layered by endocervical glandular epithelium.

Circumscribing endocervical stroma is devoid of desmoplastic reaction or an inflammatory cell infiltrate. Tunnel clusters appear subjacent to surface epithelium of endocervix. Lesion may be associated with Nabothian cysts [4,5].

Tunnel clusters are categorized as ~type A tunnel clusters composed of miniature, elongated, non-cystic endocervical glands layered with columnar to low cuboidal epithelial cells impregnated with mucinous cytoplasm demonstrating apical vacuoles and basal nuclei. Epithelial cell layer may manifest with pseudo-stratification, mild cytological atypia, nuclear enlargement, hyperchromatic nuclei, vesicular nuclear chromatin or prominent nucleoli. Mitotic activity is minimal to absent. An estimated 15% lesions depict concurrent gastric metaplasia. ~type B tunnel clusters are comprised of endocervical glands enunciating cystic dilatation, layering with cuboidal or flattened epithelium and permeation with inspissated mucin. Layering epithelial cells are bland and pervaded with elliptical nuclei. Cytological atypia and mitotic activity is absent. Type B tunnel cluster is additionally designated as cystic endocervical tunnel cluster (CETC) [4,5]. The nabothian cyst like lesion may be comprised of an admixture of type A and type B tunnel clusters. Tunnel cluster manifests as a benign, pseudo-neoplastic glandular lesion of uterine cervix. Lesion is comprised of spherical aggregates of twenty to fifty intensely adherent tubules of variable magnitude [4,5].

Cytological features	HSIL with glandular involvement	Glandular lesion
Architecture	Syncytial clusters	Loss of honeycomb pattern
	Peripheral nuclear flattening	Loss of nuclear polarity
	Central whirling	Nuclear crowding with overlapping
Nuclear features		
Chromatin pattern	Coarse	Fine
Nuclear grooves	Frequently present	Absent
Nucleoli	Absent	Frequently present
Cytoplasmic features		
Cytoplasmic processes	Present	Absent
Vacuolation	Absent	Present

HSIL: high grade squamous intraepithelial lesion

Table 1: Differentiation between HSIL with glandular involvement and glandular lesion [3].

Tunnel clusters appear immune reactive to PAX2 whereas type A tunnel clusters with gastric metaplasia are immune reactive to HIK1083. Type A tunnel clusters associated with gastric metaplasia may be stained with Alcian blue- Periodic

acid Schiff's stain which may highlight neutral mucin to red or magenta hues. Tunnel clusters appear immune non-reactive to carcinoembryonic antigen (CEA) or p16. Ki67 proliferative index is minimal [6,7].

Tunnel clusters of uterine cervix require segregation from neoplasms such as minimal deviation adenocarcinoma or adenoma malignum, conventional endocervical adenocarcinoma, adenocarcinoma in situ, nabothian cysts

and mesonephric remnants or mesonephric hyperplasia of uterine cervix [6,7]. Tunnel clusters may be appropriately discerned with cogent histological examination of surgical tissue specimens of uterine cervix [8,9] (Figures 1 & 2).

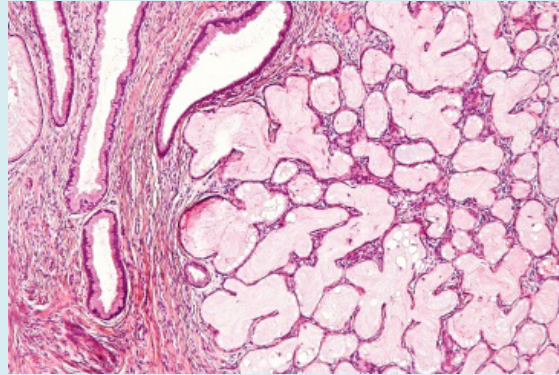


Figure 1: Tunnel clusters of uterine cervix composed of endocervical glands with cystic dilatation. Layering cuboidal to columnar epithelium is bland with apical intracytoplasmic mucin vacuoles and basal nuclei. Cytological or nuclear atypia is minimal to absent. Circumscribing stroma is fibrotic [8].

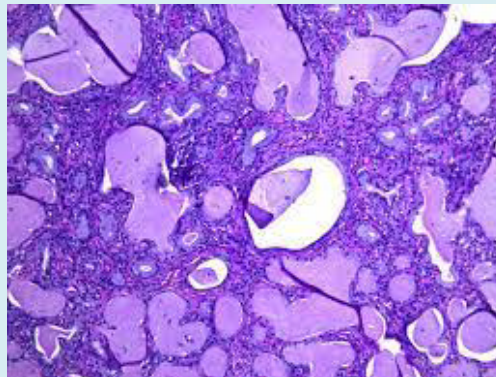


Figure 2: Tunnel clusters of uterine cervix delineating cystic dilatation of endocervical glands. Lining cuboidal to columnar epithelium is bland with apical, intracytoplasmic mucin and basal nuclei. Cytological and nuclear atypia is minimal to absent. Encompassing stroma is fibrotic [9].

Tunnel clusters appear devoid of cogent, applicable therapeutic strategies and do not necessitate alleviation. Tunnel clusters are associated with superior prognostic outcomes. Lesion reoccurrence or malignant metamorphosis appears absent [6,7].

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8. Image 1 Courtesy: Wikipedia.com

9. Image 2 Courtesy: Pathology outlines.

