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Histopathological spectrum of non-neoplastic lesions of the cervix

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Abstract
Introduction: The uterine cervix is a significant gateway for non-neoplastic lesions in regular hysterectomies and biopsies from gynecological collections. Early detection of these cervical uterine lesions is improved by routine histological examination of suspected cases.
Aims and Objectives: This study aims to examine the prevalence and histomorphological patterns of nonneoplastic cervical lesions in tertiary care centers, while also exploring different types of endocervical epithelial metaplasias.
Materials and Methods: One hundred uterine cervical non-neoplastic lesion cases were assessed using cervical biopsy or hysterectomy tissues. The purpose of this study is to research various endoceevical malignancies and study the recurrence and histomorphological varieties of non-malignant cvervical pathologies at a tertiary care centre.
Results: According to our research, persistent nonspecific cervicitis was present in 48% of cases. Chronic polypoidal endocervicitis was the most often seen endocervical epithelial lesion (20%) and squamous metaplasia (36%) and the uncommon lesions included micro glandular adenosis (3.2%), endocervical glandular hyperplasia (4%), diffuse laminar endocervical glandular hyperplasia (0.8%). Large number of ectocervical pathologies include koilocytic changes and prolapse varieties like hyperkeratosis.
Conclusion: In regular histopathology specimens, the uterine cervix serves as the primary portal for non-neoplastic lesions. There are numerous non-neoplastic lesions that are extremely important to clinicians and pathologists since they are frequently overlooked, and the identification and treatment of these lesions is significantly neglected.

Keywords: Chronic cervicitis, squamous metaplasia, endocervical polyp

Introduction
Non-neoplastic cervical lesions refer to cervical abnormalities not associated with malignant growth. These lesions can present with a range of clinical features and arise from various causes. Knowing their pathogenesis is needed to do proper diagnosis and management. These pathologies usually involve the reproductive age group women.
Since they can lead to significant health issues, careful examination of cervical specimens is important. Most histopathological specimens from the gynaecology department consist of inflammatory lesions, with occasional tumour-like non-neoplastic lesions. Histological examination is essential in probing these pathologies.
When reporting nonneoplastic lesions, both acute and chronic inflammatory conditions of infectious and non-infectious origins are usually considered. However, nonneoplastic tumour-like lesions, such as cervical tunnel clusters, mesonephric and diffuse laminar hyperplasia, endometriosis, and micro glandular endocervical hyperplasia, which can resemble neoplastic conditions, often receive less focus.
Detailed investigation of histopathological type of these lesions is needed for proper treatment. In reproductive age group females chronic cervicitis is the most recurrent uterine cervical pathology and is associated with sexual activity. It also impacts postmenopausal women due to weakened immune systems and hormone replacement therapy.

Aims and Objectives
This study aims to examine the prevalence and histomorphological patterns of nonneoplastic cervical lesions in tertiary care centers, while also exploring different types of endocervical epithelial metaplasias.

Methods and Materials

A prospective study is done involving 100 cases of non-neoplastic cervical lesions. These cases were analyzed using cervical biopsy or hysterectomy specimens collected from the Department of Pathology at Raja Rajeswari Medical College in Bangalore.

Detailed examination of uterine sections revealed various lesions, which were subsequently categorized into three groups: Inflammatory, metaplasia, and epithelial alterations.

Results

Nonneoplastic cervical lesions are most commonly found in individuals aged 25 to 50 years. The typical symptoms include abdominal pain, abnormal uterine bleeding, vaginal white discharge, uterine prolapse, and post-coital bleeding.

The most prevalent ectocervical lesions are koilocytic changes (28%) and prolapse alterations (11%), marked by epidermidization with hyperkeratosis, parakeratosis, exocytosis, and suprabasal bulla formation.

For endocervical lesions, chronic nonspecific cervicitis is the most common (48%), followed by squamous metaplasia (36%), chronic papillary endocervicitis (31%), nabothian cysts (32%), chronic polypoidal endocervicitis (20%), with fewer cases of endocervical polyps (10%), endocervical glandular hyperplasia (4%), microglandular adenosis (4%), and rare instances of tubal metaplasia, follicular cervicitis, diffuse laminar endocervical hyperplasia, and endometriosis.

Categories & percentage of nonneoplastic uterine cervical lesions

Table 1: Distribution of Non-Neoplastic Cervical Lesions (N=100)

SL No.	Non-neoplastic lesions	No of cases/100	Percentage
1	Chronic cervicitis	48	48%
2	Squamous metaplasia	36	36%
3	Nabothian cyst	32	32%
4	Chronic papillary endocervicitis	31	31%
5	Koilocytic change	28	28%
6	Chronic polypoidal endocervicitis	20	20%
7	Prolapse changes	11	11%
8	Endocervical polyp	10	10%
9	Endocervical glandular hyperplasia	4	4%
10	Microglandular adenosis	4	4%
11	Tubal metaplasia	3	3%
12	Intestinal metaplasia (goblet cell metaplasia)	4	4%
13	Follicular cervicitis	3	3%
14	Diffuse laminar endocervical glandular hyperplasia	2	2%
15	Suprabasal bulla	1	1%
16	Exocytosis	2	2%
17	Cervical tunnel clusters	2	2%
18	Mesonephric rests	1	1%
19	Endometriosis	1	1%

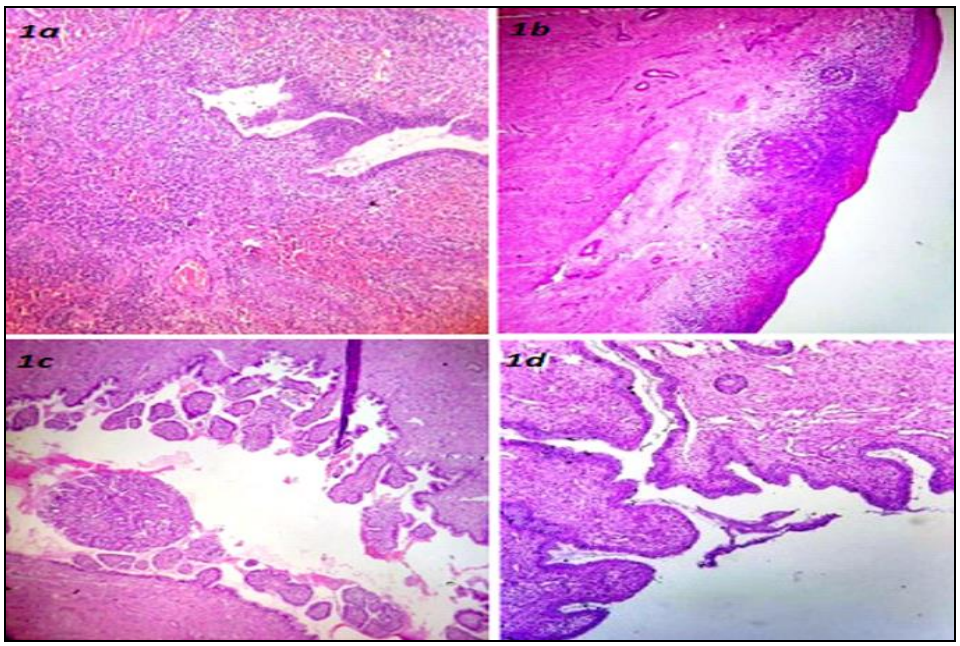

Fig 1: 1a: Chronic cervicitis, 1b: Follicular cervicitis, 1c: Chronic papillary endocervicitis, 1d: Chronic polypoidal endocervicitis.

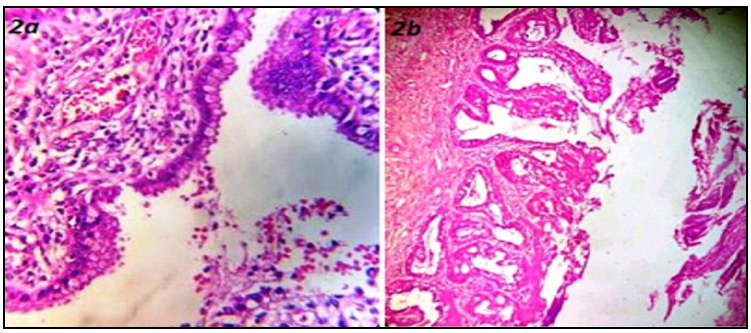

Fig 2: 2a: Tubal metaplasia, 2b: Goblet cell metaplasia

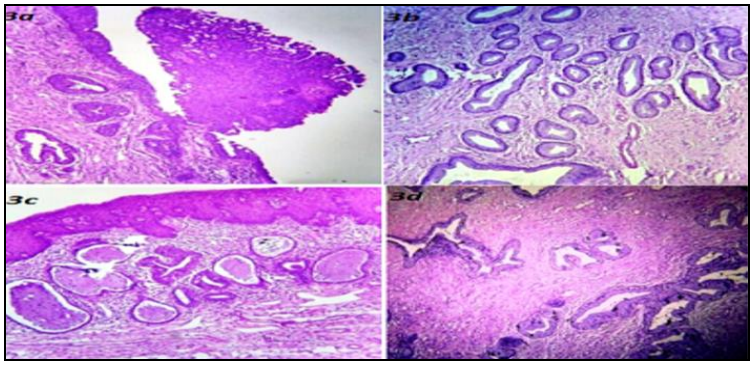

Fig 3: 3a: Endo cervical polyp, 3b: Endocervical glandular hyperplasia, 3c: Microglandular adenosis, 3d: Diffuse laminar endocervical glandular hyperplasia.

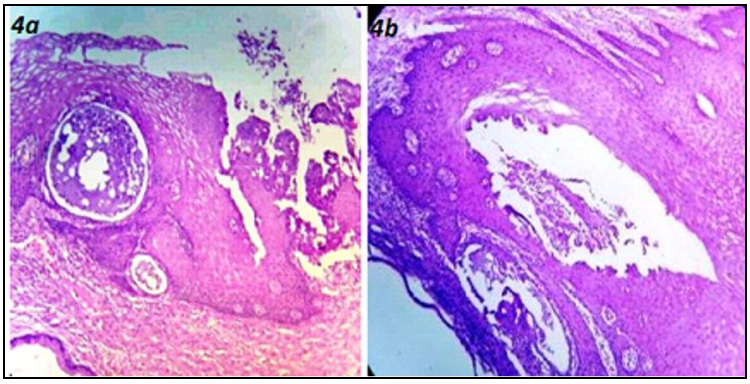

Fig 4: 4a: koilocytic change along with exocytosis, 4b: Suprabasal bulla and cervical prolapse

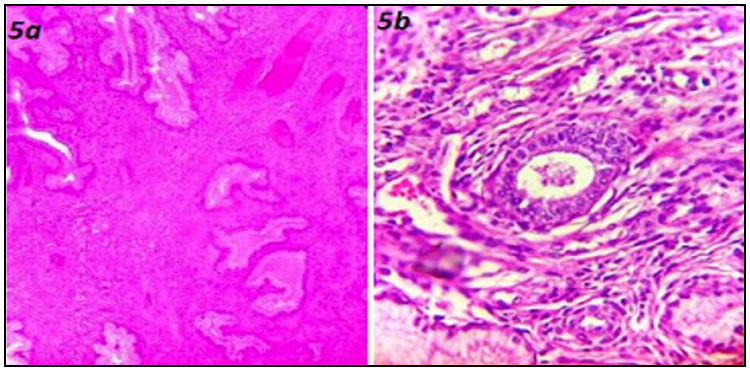

Fig 5: 5a: Cervical tunnel clusters, 5b: Mesonephric rests.

Discussion

A discussion on the histopathological spectrum of non-neoplastic lesions of the cervix centers on understanding the various non-cancerous pathologies that can affect the cervix, which are commonly encountered in both clinical and histological practice. These lesions are important because they often mimic neoplastic processes and can cause significant symptoms. Histopathological examination plays a key role in differentiating them from precancerous or cancerous changes [1].

The cervix is frequently subjected to physiological, infectious, and inflammatory insults. Non-neoplastic lesions are more common than neoplastic ones and include a wide array of changes-ranging from congenital anomalies to inflammatory and reactive processes [2]. Many of these lesions are detected during routine cervical screening or

evaluation for symptoms such as vaginal discharge, bleeding, or pelvic pain [3].

Common non-neoplastic lesions of the cervix: Histopathological Features

- **Chronic Cervicitis:** Histology: Dense lymphoplasmacytic infiltrate in the cervical stroma; squamous metaplasia, sometimes follicle formation. Clinical Significance: Often asymptomatic or associated with vaginal discharge or postcoital bleeding. Etiology: Can be due to infections (bacterial, viral, fungal) or mechanical irritation [4].
- **Nabothian Cysts:** Histology, Mucin-filled cysts lined by endocervical columnar epithelium. Clinical Significance: Common incidental finding; generally asymptomatic. Cause: Blockage of endocervical glands due to squamous metaplasia [5].
- **Squamous Metaplasia:** Histology: Replacement of endocervical columnar epithelium with stratified squamous epithelium. Clinical Significance: Physiologic response, may mimic dysplasia. Importance: Needs differentiation from cervical intraepithelial neoplasia (CIN) [6].
- **Endocervical Polyps:** Histology, Fibrovascular core covered by endocervical epithelium, often with chronic inflammation. Clinical Significance: May present with abnormal bleeding or discharge. Benign Nature: Easily treated by excision [7].

- **Cervical Endometriosis**: Histology: Presence of endometrial glands and stroma within the cervical stroma. Clinical Significance: Can cause bleeding, especially postcoital. Etiology: Often iatrogenic (post-procedural implantation) [8].
- **Tunnel clusters** are results of localized proliferation of endocervical glands, with side channels growing out from them. This may be accompanied by dilation resulting from accumulation of inspissated,deeply eosinophilic secretions in the lumen. Tunnel clusters have been divided into type A and type B. Sometime the former accompanied by a florid glandular proliferation and certain degree of atypia [9].

- **Mesonephric duct** rests undergo cystic dilatation or affected by florid and even atypical hyperplastic changes. This hyperplasia may have a lobular, diffuse, or ductal pattern [10]. Rarely malignant tumors arising from these structures also occur. Microscopically it is a superficially located lesion composed of delicate connective tissue stalks covered by a layer of cuboidal cells and is probably of mullerian derivation [11].

Conclusion

Non-neoplastic cervical lesions are diverse and frequently encountered. Despite being benign, some of these lesions may cause significant symptoms or mimic malignancy. A thorough histopathological examination, combined with clinical correlation, is crucial for accurate diagnosis and appropriate patient management. Awareness of the spectrum of these lesions helps prevent overtreatment and unnecessary anxiety in patients

Conflict of Interest
Not available

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Not available

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