CASE SERIES

Cervical cancer screening before hysterectomy in pelvic organ prolapse patients: Is it essential? A case series

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ABSTRACT

Objective: Pelvic organ prolapse (POP) results from weakening of the pelvic floor musculature. The reported prevalence of unexpected premalignant and malignant pathologies following hysterectomy ranges from 0.2 to 0.8%. This study aims to present a case series of patients with POP who underwent vaginal hysterectomy (VH) after preoperative evaluation for abnormal cervical cytology, which subsequently demonstrated more advanced histopathological findings.

Case Series: Case 1: A 55-year-old woman, P3A0, was diagnosed with third-degree uterine prolapse and cystocele. Pap smear revealed atypical glandular cells of undetermined significance (AGUS). Histopathological examination after VH demonstrated vaginitis and metaplastic chronic cervicitis with atypia progressing to mild dysplasia of endocervical epithelial cells/low-grade squamous intraepithelial lesion (LSIL). Case 2: A 62-year-old woman, P5A0, was diagnosed with third-degree uterine prolapse. Pap smear revealed atypical squamous cells of undetermined significance (ASCH). Histopathological evaluation after VH demonstrated high-grade squamous intraepithelial lesion (HSIL) up to carcinoma in situ with microinvasive glandular involvement and focal extension.

Conclusion: Given that cervical cancer remains the second leading cause of mortality among women in Indonesia, preoperative screening for precancerous gynecological lesions and malignancy is strongly recommended.

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Highlights:

- 1. More advanced cervical precancerous histopathological findings compared with cervical cytology are observed in POP patients undergoing vaginal hysterectomy.
- 2. Routine use of preoperative biopsy or ultrasound in POP patients undergoing vaginal hysterectomy cannot be recommended.



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INTRODUCTION

Pelvic organ prolapse (POP) results from weakening of the pelvic floor musculature and constitutes a global health issue affecting quality of life. The prevalence of POP ranges between 2% and 20%. The incidence of POP reaches its peak among women aged 60 to 69 years. Consequently, hysterectomy in postmenopausal women is frequently performed due to POP. Protrusion of the uterus beyond the vulva may result in infection, bleeding, and, rarely, malignancy. Cervical carcinoma and uterine prolapse are common in developing countries; however, their coexistence is uncommon. 3

The World Health Organization (WHO) has reported that cervical cancer remains the fourth most prevalent malignancy among women, with up to 604,000 new cases and 342,000 deaths in 2020. The highest mortality rates occur in low- and middle-income countries owing to limited access to HPV vaccination, cervical screening, early therapeutic intervention, and social as well as economic determinants.4 Cervical cancer generally develops gradually from precancerous lesions described as dysplasia or cervical intraepithelial neoplasia (CIN). These changes arise in the trans-formation zone in association with squamous meta-plasia. The cervical smear (Pap smear) is a simple test enabling detection of precancerous lesions for early diagnosis and timely treatment as part of secondary prevention. 5 In POP, direct mechanical irritation of the cervix is associated with chronic inflammation in at least third-degree prolapse, predisposing to cervical malignancy.¹ Conversely, another study suggested that uterine prolapse rarely coexists with cervical carcinoma, as cornified cervical epithelium confers resistance, while reduced vaginal secretions, absence of infection, and adequate drainage provide protective mechanisms against carcinoma.⁶ Nevertheless, this issue remains controversial.

The prevalence of unexpected premalignant and malignant pathologies following hysterectomy varies between 0.2% and 0.8%. 7-9 However, this remains an important concern for surgeons performing pelvic reconstructive procedures, as it may influence both surgical technique and patient outcomes. Accordingly, this report aims to present a case series of POP patients undergoing vaginal hysterectomy (VH) with preoperative identification of abnormal cervical cytology ultimately associated with more advanced histopathological results.

CASE SERIES



Case I

A 55-year-old woman, P3A0, presented with a protruding vaginal mass that had developed two years prior to admission. She had a history of three previous cesarean deliveries with birth weights ranging from 3,000 grams to 3,800 grams. She had been in menopause for four years and remained sexually active. On Pelvic Organ Prolapse Quantification (POP-Q) assessment, she was diagnosed with third-degree uterine prolapse accompanied by cystocele. She elected to undergo VH. During preoperative evaluation, her Pap smear revealed atypical glandular cells of undetermined significance (AGUS) (Figure 1). Histopathological examination following VH demonstrated vaginitis and metaplastic chronic cervicitis with atypia progressing to mild dysplasia of endocervical epithelial cells/low-grade squamous intraepithelial lesion (LSIL) (Figure 2).

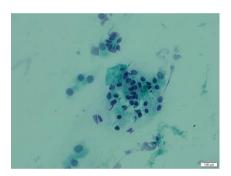


Figure 1. Pap smear of atypical glandular cells of undetermined significance (AGUS).

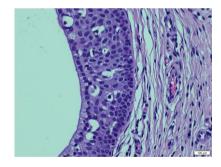


Figure 2. Histopathology of low grade squamous intraepithelial lesion (LSIL).

Case 2

A 62-year-old woman, P5A0, presented with a protruding vaginal mass that had developed five years earlier. She had experienced five vaginal deliveries, with the largest birth weight recorded at 4,000 grams. She had been menopausal for 10 years and was not

sexually active. On POP-Q assessment, she was diagnosed with third-degree uterine prolapse and elected to undergo VH followed by colpocleisis.

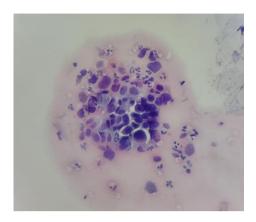


Figure 3. Pap smear of atypical squamous cells of cannot excluded HSIL (ASCH).

Preoperative Pap smear demonstrated atypical squamous cells, cannot exclude HSIL (ASCH) (Figure 3). Histopathological examination after VH revealed high-grade squamous intraepithelial lesion (HSIL) progressing to carcinoma in situ with microinvasive glandular involvement and focal extension (Figure 4). These cases underscore the need to evaluate the role of cytological cervical screening in POP patients prior to hysterectomy.

SCOPING REVIEW

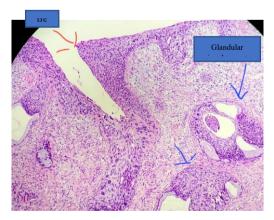
This scoping review was carried out in accordance with the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for scoping reviews (PRISMA-ScR). The search strategy was implemented through PubMed, Ebscohost, Cochrane, and Google Scholar for studies published up to August 1, 2024, without restriction on earlier publications. The following keywords were applied: "pelvic organ prolapse," "cervical cancer screening," and "Papanicolaou test." In Cochrane and PubMed, Medical Subject Headings (MeSH) terms were employed as provided by the databases. All study types were included, encompassing original articles, case reports, systematic reviews, and meta-analyses. Exclusion criteria comprised studies consisting only of abstracts, editorials, conference or meeting proceedings, letters, lack of available full text, and animal studies.

Results of the scoping review

Figure 5 illustrates the PRISMA flow diagram of the study selection process. Initially, 256 articles were identified across PubMed, Ebscohost, Cochrane, and Google Scholar. Two duplicate entries were removed, yielding 254 records. After abstract screening for relevance to the topic, 6 studies were selected for eligibility assessment. Ultimately, 4 articles were included in the review. Table 1 summarizes the findings of the scoping review (n = 4).

DISCUSSION

In the aging population, POP is commonly encountered with diverse manifestations ranging from vaginal and lower urinary tract symptoms to defecatory and sexual dysfunction. As a less invasive procedure, vaginal hysterectomy has become a preferred treatment option for patients with POP. 10



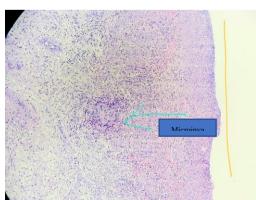


Figure 4. Histopathological result of HSIL up to in situ carcinoma



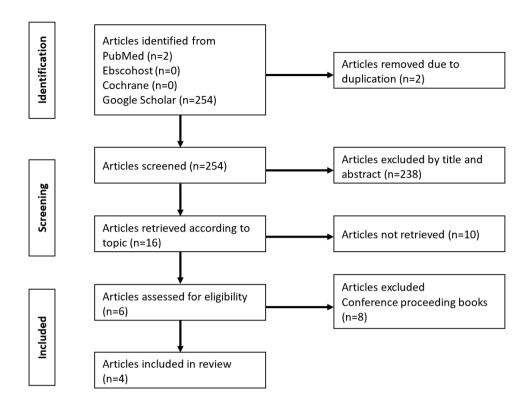


Figure 5. PRISMA flowchart of article selection process

Table 1. The results of scoping review (n=4)

References	Type of Study	Focus	Results
Tailor HJ, 2015	Retrospective cohort study	To evaluate the Pap smear finding in patients with uterine prolapse and compare it with nonprolapse cases	Of 1,427 cases, we have received only 5 cases of ASCUS in 233 uterine prolapse cases.
Grigoriadis T, 2015	Retrospective study	The incidence of malignant and premalignant gynecological histopathological findings among POP women who underwent a VH	Five out of 333 women who underwent VH consisted of 1 case of cervical cancer (0.3 %), 1 case of cervical intraepithelial neoplasia (CIN) III (0.3 %), and 3 cases of CINI (0.9 %).
Barakzai S, 2023	Retrospective study	The rates of unanticipated premalignancy and malignancy at the time of hysterectomy performed for pelvic organ prolapse in an underscreened population	For patients undergoing hysterectomy for pelvic organ prolapse in an underscreened population, the rates of cervical dysplasia or cancer were 0.42% (3/729).
Suphattanaporn O, 2023	Retrospective cohort study	Prevalence of precancerous or malignant lesions of the cervix among POP patients underwent vaginal hysterectomy	Nine of the 530 patients (1.7%) had precancerous or malignant lesions of the cervix and/ or endometrium. Precancerous cervical lesions were found in five patients (0.95%): ciN ii 0.38% and ciN iii 0.57%.



Unexpected premalignant and malignant pathologies identified during hysterectomy may arise in both endometrial and cervical tissues. According to the International Federation of Gynecology and Obstetrics Working Group guidelines, preoperative biopsy or ultrasonography in POP patients is not recommended as a routine procedure prior to hysterectomy. 11 The 2019 guidelines of the American Society for Colposcopy and Cervical Pathology (ASCCP) did not address the management of cytological abnormalities in POP patients scheduled for hysterectomy. 12 Conversely, several studies have reported that women with POP who are candidates for VH should undergo preoperative diagnostic evaluations including blood testing, cervical cancer screening, ultrasonography, and endometrial sampling, particularly in those presenting with abnormal uterine bleeding. 13,14

Bayan M, et al. 15 in a study from Jordan reported that among 5,000 routine Pap smears, the prevalence of abnormal results in the general population was only 3.8%. Meanwhile, Syem B, et al. 2 concluded that the incidence of unexpected cervical premalignancy (CIN2 or higher) was 0.42% (3/729 cases) in POP patients undergoing hysterectomy. Another study by Ornthicha, et al.¹⁴ demonstrated a prevalence of CIN II and CIN III of 0.38% and 0.57%, respectively. All patients were postmenopausal and Pap test-negative, with no transformation zone (TZ) detected. The reliability of cervical cancer screening is limited due to the high false-negative rate of Pap testing, estimated at approximately 5% to 35%. 16,17 In fact, co-testing with HPV increases detection of CIN3 or greater lesions twoto threefold. Furthermore, co-testing has demonstrated a higher negative predictive value compared with cytology alone. 18 Data published in 2023 confirmed that high-risk (HR) HPV screening exhibited high sensitivity (98.66%) and specificity (87.15%) for detecting preneoplastic lesions in clinical practice. 19 Although HR-HPV testing is highly sensitive, false-negative outcomes may still occur since no screening tool achieves 100% sensitivity. Co-testing is therefore considered an alternative strategy to improve sensitivity in detecting HPV-negative subtypes of adenocarcinoma (ADC). 20,21 Unfortunately, in Indonesia, HR-HPV screening is not performed routinely due to its high cost.

In Indonesia, data from 2020 indicated 36,633 new cases of cervical cancer and 21,003 deaths related to the disease. Cervical cancer remains the second most common cause of mortality among Indonesian women, as nearly 70% of cases are diagnosed at an advanced stage. Thus, early detection of cervical cancer is crucial to decrease preventable deaths. Our cases demonstrated worse histopathological findings compared with cytological results. In the first case,

AGUS identified on cytology corresponded to mild dysplasia or LSIL on histopathology. In the second case, ASCH detected during screening was confirmed as HSIL progressing to carcinoma in situ on histopathology following VH. According to the ASCCP guideline, patients who have undergone hysterectomy for benign disease but present with high-grade cytology (HSIL, atypical squamous cells—cannot exclude high-grade squamous intraepithelial lesion/ASC-H, or atypical glandular cells/AGC) should immediately undergo vaginal colposcopy. 12

Although cytology is the standard primary method for cervical precancer screening, in low-resource settings such as rural Indonesia, significant barriers exist including limited availability of specialists, high costs, and the requirement for multiple visits. Visual inspection with acetic acid (VIA) and Lugol's iodine offers a simpler approach for early detection of cervical precancerous lesions. VIA involves identifying acetowhite plaques near the squamocolumnar junction of the cervix following application of acetic acid.1 Reported sensitivity and specificity of VIA range between 50-88.6% and 66.7-89.7%. A study by Wang S, et al. in China found that among HPV-positive women, adherence with VIA was 93.9%, reducing colposcopy referral rates to 18.3%. Another study from India concluded that VIA performed by trained female health workers was safe, acceptable, and effective for detecting precancerous lesions in resource-limited rural regions.1

Given the slow progression of cervical cancer and its high prevalence in Indonesia, preoperative screening for precancerous gynecological lesions and malignancy is strongly recommended. This should include endometrial assessment by transvaginal ultrasound and cervical evaluation through cytology or co-testing in asymptomatic postmenopausal women. Although the incidence of unanticipated cervical pathology at hysterectomy for POP is relatively low, cytology screening performed preoperatively can guide clinicians in optimizing management and counseling of patients undergoing VH.

The strength of this case series is to emphasize to gynecologists that cytological screening in postmenopausal POP women prior to VH may yield less severe results than histopathological findings. Even though the incidence of unexpected cervical premalignancy is reported at less than 1%, gynecologists should counsel patients to undergo cytology and HPV testing before VH in POP, particularly in consideration of life expectancy in Indonesia. In addition, careful history-taking regarding prior cervical and endometrial cancer screening is essential to assess individual risk



factors. The limitation of this case series was the absence of further follow-up after VH.

CONCLUSION

There is no routine recommended guideline of preoperative biopsy or ultrasound in POP patient. Since cervical cancer still become the second most common cause of mortality in Indonesia, it is recommended to screen preoperatively for precancerous gynecological lesion and cancer before POP surgery.

DISCLOSURES

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Conflict of interest

The authors declare that there is no conflict of interest related to this study.

Patient consent for publication

The patients included in this study provided signed consent for publication to contribute to the advancement of knowledge in gynecological cases.

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Author contribution

All authors contributed to this study, including preparation, data collection, case description, drafting, revising, and submission of the manuscript for publication.

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