

# Cytopathology in Gynecology and Gynecologic Oncology: Updates, Recent Advances, and Practical Considerations

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The role of cytopathology in the diagnosis, management, and follow-up of patients with gynecologic neoplasms has expanded tremendously since the introduction of the Papanicolaou test, more than 50 years ago. Evidently, advances in HPV testing have revolutionized cervical cancer screening, which now faces new challenges in the setting of increasingly available HPV vaccines. In addition, recent changes in gynecologic tumor nomenclature and staging of gynecologic neoplasms have introduced challenges specific to cytopathology, which if not taken into consideration, might lead to incorrect diagnoses, confusion on the part of the patients and their clinical teams, and potentially suboptimal patient care. We are pleased to present this special issue of *Acta Cytologica* entitled *Cytopathology in Gynecology and Gynecologic Oncology: Updates, Recent Advances, and Practical Considerations*, aiming to shed light on some of these issues in a concise and practical manner, to serve as an easy reference for all our cytopathology colleagues dealing with these situations in their daily practice.

This special issue has been divided into two main sections. The first articles focus on the evolving role of cytology on cervical cancer screening, particularly in the context of HPV testing and vaccination. Following numerous trials demonstrating its increased sensitivity for the diagnosis of significant cervical pathology, HPV testing is now either a major portion of or has entirely replaced cervical cytology as the primary method of cervical cancer screening in many countries around the globe. In addition, the experience and data from countries with mandatory, government-led, and school-based HPV vaccination programs implemented over 10 years ago is starting to emerge, consistently showing a decrease in the prevalence of cervical dysplasia and cancer. These changes invariably raise questions regarding the future relevance of cytology as a screening method and its viability as part of the cervical screening algorithms.

In countries with well-developed vaccination programs, the full impact of HPV vaccination on disease prevalence will only take effect once herd immunity is reached, a difficult goal in countries with limited resources and low vaccine acceptance. Best screening practices in places with high vaccine prevalence are still to be determined, but primary screening with HPV testing, followed by secondary screening with cytology and additional an-

cillary testing methodologies, including HPV genotyping, p16/Ki-67 dual staining, and methylation assays, have been proposed as viable options.

Stark differences remain among high development index and low-to-middle development index countries in relation to access to preventive care as well as availability of liquid-based cytology, HPV testing, and vaccination. While cervical cytology as a primary screening method appears to be the most realistic option in these populations, alternatives such as self-collection with HPV testing could increase overall participation in screening programs in underserved areas and areas of difficult accessibility.

The second part of this special issue focuses on the role of cytology in the setting of gynecologic malignancies, both in fluid specimens as well as in fine-needle aspiration samples. A classification system developed by the International Academy of Cytology and the American Society of Cytopathology for reporting serous fluid cytology has recently been proposed. While this certainly represents a meaningful effort to standardize reporting of these samples, its applicability in the setting of certain gynecologic neoplasms with peculiar nuances (primarily ovarian borderline tumors) may be difficult. If one adds recent changes in the terminology and staging of gynecologic neoplasms to this equation, strict application of these proposed diagnostic criteria might not be possible, and a thoughtful discussion about how to best address these situations is relevant and necessary. Evidently, the utilization of any reporting system is based first and foremost on the correct interpretation of the cytologic samples, and a thorough discussion of the diagnostic criteria, mimics

and pitfalls, and utilization of ancillary tools such as immunocytochemistry are all included in these reviews. Lastly, aspiration cytology is, in many instances, the method of choice in the initial workup of metastatic gynecologic malignancies. In many instances, metastases may appear cytomorphologically different from the primary tumor, lacking some of the diagnostically characteristic elements, situations in which ancillary techniques might again be of great relevance.

We sincerely hope that this special issue of *Acta Cytologica* will provide the readership with the background knowledge, relevant information, and necessary tools to best deal with some of these difficult situations in a practical manner, always keeping the patient's interest and well-being as the number one priority of our daily work.

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