



COMMENTARY

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## Cytopathology and the Cell Collection

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### Description

A subspecialty of pathology called cytopathology investigates and characterizes illnesses at the cellular level. Papanicolaou, George Nicolas, created the field.

In contrast to histopathology, which examines complete tissues, cytopathology is typically employed on samples of free cells or tissue pieces. The term “cytology,” which means “the study of cells,” is widely used but is less accurate for cytopathology. In addition to helping with the diagnosis of cancer, cytopathology is frequently used to look into disorders affecting a variety of different body regions, including the detection of several infectious diseases and other inflammatory conditions. The Pap smear, a screening test used to find precancerous cervical lesions that may develop into cervical cancer, is one example of a common application of cytopathology.

Cytopathologic examinations are commonly referred to as “smear tests” because the samples may be smeared on a glass microscope slide before being stained and examined under a microscope. The preparation of cytology samples can be done in numerous ways, such as cytocentrifugation. Additionally, many smear tests may be utilized to diagnose malignancy. It is referred to as a cytologic smear in this context.

### Cell collection

Exfoliative cytology and intervention cytology are the two ways cells are obtained for cytopathologic investigation [1]. Exfoliative cytology technique involves gathering cells that have either been naturally lost by the body or that have been mechanically scraped or swept off of a body surface. The exfoliation of pleural or peritoneal cavity cells into the pleural or peritoneal fluid is an example of spontaneous exfoliation. The collection of this fluid for analysis can be done in a

number of ways [2].

Examples of mechanical exfoliation include Pap smears, in which cells are removed from the cervix using a cervical spatula, and bronchial brushings, in which a bronchoscope is inserted into the trachea and used to evaluate a visible lesion by removing cells from its surface and submitting them to cytopathologic analysis. In intervention cytology, the pathologist enters the body to collect samples [3, 4].

When performing fine-needle aspiration, also known as fine-needle aspiration cytology (FNAC), cells are extracted from lesions or masses in various body organs by micro coring [5, 6]. Suction is frequently used to boost yield. In order to sample deep-seated lesions within the body that cannot be localized by palpation, FNAC may be aided by ultrasound or Computed Tomography Scan (CAT). FNAC can be carried out under palpation guidance on a mass in superficial locations such as the neck, thyroid, or breast [7].

FNAC is commonly utilized in many nations; however the effectiveness percentage is based on the practitioner’s skill. The success rate of accurate diagnosis is higher when carried out by a pathologist alone or in collaboration with a pathologist-cytotechnologist [8]. This might be because a pathologist can examine samples under a microscope right away and restart the process if sampling wasn’t good enough.

Sediment cytology is a procedure in which the fixative that was used to prepare the biopsy or autopsy specimen is where the sample for cytology of sediment is taken from. The fixative is well combined, transferred to a centrifuge tube, and centrifuged. For smearing, the sediment is employed. These sediments are made up of cells that were shed during processing of the autopsy and biopsy samples [9].

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Imprint cytology is a procedure in which the target tissue contacts a glass slide and leaves an imprint of cells on the slide. After then, the imprint can be dyed and examined.

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