
COLLECTION AND HANDLING OF SURGICAL PATHOLOGY AND CYTOLOGY SPECIMENS

PURPOSE:

To ensure appropriate treatment of fluid or tissue removed in regard to fixation and availability of ancillary diagnostic techniques such as immunofluorescence, electron microscopy, cytogenetics, flow-cytometry and microbial culture. For ancillary testing, direct communication with the pathologist about a certain case (preferably prior to the procedure) will ensure the most appropriate handling of tissue. Alternatively, known cases requiring special techniques could be scheduled on the pathologist's on-site days.

PRINCIPLE:

- A. **Immunofluorescence analysis** has been proven to be useful in certain skin diseases and glomerulonephritis (kidney biopsy).
- B. **Electron microscopy** is useful in the analysis of soft tissue tumors, tumors of unknown origin, and medical renal disease among others.
- C. **Cytogenetic analysis** is diagnostic in pre and postnatal diseases of the newborn, patients with sex-chromosome abnormalities and certain hematologic disorders such as the leukemias and soft tissue tumors etc.
- D. **Flow cytometry** has been used in hematologic disorders such as leukemia and lymphomas and should be considered with every bone marrow and lymph node biopsy.
- E. Tissue removed during debridement of soft tissue, or to diagnose organ infection should be primarily considered for **microbial culture**.

PROCEDURE AND MATERIALS:

NOTE: All tissues submitted for testing must be received in a properly labeled container with at least 2 complete and approved patient identifiers. These identifiers must be unique including either full name, date of birth, or medical record. Additional information which is useful but is not considered a unique identifier includes submitting physician, date/time of collection, and site of origin.

A. HISTOLOGY SPECIMENS

Routinely, all tissues removed should be submitted in 10% formalin, **EXCEPT** if any of the ancillary techniques listed in the principle are considered. (Formalin is

available in the operating room). The volume of formalin should be approximately 4 times the volume of the specimen.

- a. **Breast biopsies or excisional specimens** must be placed in formalin within one hour following removal from the patient. The OR must record the date and time that the specimen is removed from the patient and the date and time that the specimen is placed in formalin.

B. PLACENTAS

Deliver fresh to laboratory. If pathology aide is not available, keep refrigerated.

C. MICROBIOLOGY

Submit tissues considered for culture fresh in a sterile container.

D. FROZEN SECTIONS

Frozen sections can be submitted fresh for immediate evaluation or in saline if there is any delay. Most frozen section examinations must be scheduled prior to the surgical procedure.

E. KIDNEY STONES

Submit dry in a container.

F. CYTOLOGY

Specimen

Smear Slides

Sputum, Brushings and Washings

Body Fluids: pleural, abdominal, etc.

CSF

Fine needle aspirate (needle rinses)

Urine

Fixative

Place immediately in 95% alcohol

Cytolyte or 50% alcohol

Entire specimen should be submitted fresh.

Cytolyte or equal amount of 50% ethanol

Cytolyte or RPMI

Submit fresh, specimen will be spun and pellet placed into Cytolyte.

G. ANCILLARY TESTS

Contact the laboratory for any of the other techniques. On days that the pathologist is on-site, the case will be discussed with him/her. On the days that the pathologist is off-site, the operating room personnel should request the following tissue media from the laboratory if applicable. If clinically possible, the case will be discussed with the pathologist by telephone.

1. For cytogenetic analysis: Hank's Solution
2. For flow cytometry: RPMI Media or Special Heparin tube (bone marrow)
3. For immunofluorescence: Michel's Media
4. Electron Microscopy: Karnovsky's Solution

If the pathologist is not present on site, the following applies to ancillary testing on both fatty tumors (cytogenetics) and lymph nodes (flow cytometry): The OR will immerse the tissue completely with sterile saline and notify the laboratory that tissue is coming fresh, and cytogenetics and/or flow cytometry is required. The lab will send the specimen on ice (for cytogenetics) and at room temperature (for flow cytometry) to UVMCC. Alternatively, the OR can also submit a section of the tumor in Hank's solution for cytogenetic analysis or in RPMI for flow cytometry.

NOTE: Clinical judgement should be used on how much tissue of a certain specimen should be submitted in the special media. Generally, 1 cm³ is sufficient for most techniques. The remainder should be submitted in formalin.