

NEUROPATHOLOGY GROSSING GUIDELINES

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Note: For Pediatric Brain Tumors: See Pediatric Grossing Guidelines

IF YOU EXPERIENCE ANY CONFUSION OR DOUBT ABOUT WHAT TO DO WITH A GIVEN SPECIMEN, OR SUSPECT THAT IT NEEDS TO BE PROCESSED IN NEUROPATHOLOGY, PAGE OR CALL THE NEUROPATHOLOGIST ON CALL OR THE NEUROPATHOLOGY FELLOW (X5-0544) OR CALL THE NP LABORATORY (X5-5792). Page and phone numbers (including cell phone numbers) for the NP attendings on call are listed on the 'Neuropathology on call' schedule.

A. OVERVIEW AND GENERAL TIPS

Brain (including pituitary gland) or spinal cord, together with their overlying meninges, will in general undergo a neurosurgical procedure for one of several reasons, as follows:

1. To establish the presence and etiology of and/or resect a **space-occupying lesion (SOL)**, most commonly a **primary or secondary neoplasm, vascular malformation, abscess, empyema, hematoma (blood clot), etc.** The surgical procedure in this case will be either (a) a stereotactic/CT/MRI-guided biopsy through a burr hole, (b) an open biopsy, or (c) a larger resection, including 'lobectomy', multilobar resection or even hemispherectomy, each of the three procedures yielding progressively larger fragments of material. Lobectomy/hemispherectomy is often done for epilepsy (see 3, below).
2. To establish the specific cause of an **inflammatory/infectious disease, vasculitis, or dementing disease** (including CJD, sarcoidosis, demyelinating diseases, etc).
3. As the definitive treatment for **epilepsy** – usually a temporal lobectomy or other cortical resection in adults, or an even more radical resection, possibly including hemispherectomy, in children and infants.

B. SPECIMEN HANDLING

In general, categories '2' and '3' yield material that is handled directly in Neuropathology. Call or page the NP Fellow (X5-0544), or the Neuropathologist on service if you encounter such a specimen and have questions about optimal handling. **Special caution needs to be exercised when handling tissues from patients in category '2', because DEMENTIA patients may have prion diseases [Creutzfeldt-Jakob disease (CJD)].** Handling of brain, eye or pituitary tissue from patients with suspected or confirmed CJD is done exclusively in the Neuropathology lab. Prions remain potentially transmissible even after the tissue is formalin fixed and paraffin embedded. The Neuropath lab has special protocols in place for effective inactivation of prions and decontamination of all material that has been in contact with potential CJD tissue. Biopsies from patients with suspected CJD cases are done very rarely and the OR has a special protocol to handle them, but if you encounter such a specimen, please communicate immediately with the neuropath staff. HIV-infected brain tissue is rendered non-infectious by routine formalin fixation, and handled similarly to tissues from other body parts.

Handling and description of category '1' specimens (MASS or SPACE OCCUPYING LESIONS) follows the same general rules as pertain to any other surgical specimen. All specimens should be measured, and large specimens and intact lobectomies should be weighed.

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Resection margins do not have the same significance as in other specimens (and have very little biologic meaning in the case of gliomas) and therefore do not need to be inked. In all cases of 'intact' specimens, representative sections need to be submitted and (in general) the whole specimen in any case should be submitted for micro sections. This is especially important in the case of gliomas or meningiomas, where different histologic features, rates of mitosis, degree of nuclear atypia and anaplasia, etc. may vary markedly over 2-3 mm and such diagnostically important variation will be missed if only a few sections of the specimen are submitted. In further describing the specimen, pay particular attention to grossly visible departures from normal brain appearance, relationship of the lesion to normal anatomic landmarks (e.g. cranial nerve in the case of a suspected nerve sheath tumor, dura or brain in the case of a suspected meningioma, dura in the case of suspected pituitary adenoma; gliomas, for instance, are characterized on cut section by effacement of the normal cortex-gray matter junction within brain [cerebral cortex] in the case of low grade gliomas, while high grade tumors show heterogeneity of the mass, regions of necrosis, etc.).

Cerebral (intraparenchymal), subdural/epidural hematomas should be weighed and measured, and representative sections submitted. Look carefully for brain fragments or any other tissues other than blood. This seemingly uninteresting 'clot' of blood may well contain the explanation of the cause of the hematoma in paraffin sections (e.g. 'occult' vascular malformation, unsuspected primary or secondary neoplasm, vasculitis, microangiopathy or other vasculopathy, etc.). This is especially important in the case of intraparenchymal hematomas, where brain fragments adjacent to resected blood clot often contain clues as to the etiology of the cerebral hemorrhage.

CAVITRON contents need to be filtered using paper 'tea' bags and are generally submitted in toto.

Medical Nerve and Muscle biopsies are handled in the Neuropathology lab, because of the need for highly specialized studies on every case. These biopsies have to be delivered **FRESH** to the NP lab immediately, or discussed with the neuropathologist on call for after hour specimens. Nerve and muscle tumors (Schwannomas, neurofibromas) can be processed as for regular surgical specimens. Sarcomas are the purview of the Soft Tissue/Bone Team not neuropathology and should be discussed with that excellent team. **Any other nerve or muscle specimen warrants discussion with the neuropathology team as to whether there is special processing required.** Have a very low threshold for contacting Neuropathology because of the need for us to freeze fresh tissues in many cases.

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C. NEUROPATHOLOGY GROSSING TEMPLATES

Specimen Type: BRAIN RESECTIONS

Gross Template:

Labeled with the patient's name (***), medical record number (***), designated "****", and received [fresh/in formalin] is a [tan-pink, soft] portion of tissue measuring *** x *** x *** cm. [*Describe brain surface, meninges, any abnormalities*]. The specimen is serially sectioned to reveal [*describe cut surfaces*]. The specimen is entirely submitted in [*describe cassette submission*].

Number of cassettes

Metastases	All if up to 3 cm. If greater than 3 cm, submit 1 cassette per cm
Meningiomas	All if up to 3 cm. If greater than 3 cm, submit 1 cassettes per cm
Hematoma, Intraparenchymal	All if up to 3 cm. If greater than 3 cm, submit 1 cassettes per cm
Hematoma, Subdural or Epidural	Submit 1 cassette (unless there is clinical concern for malignancy, when 1 cassette per cm should be submitted)
Low grade gliomas	Submit all. Upper limit: 15 cassettes per specimen part
Tumors of uncertain type	Submit all. Upper limit: 15 cassettes per specimen part
High grade gliomas	Submit all. Upper limit: 10 cassettes per specimen part
Recurrent gliomas	Submit all. Upper limit: 15 cassettes per specimen part

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