News from Surgical Pathology and Histology
Frozen Section Diagnosis versus “Fresh” Specimens For Evaluation
By Eugenio Taboada, MD

The Frozen section and/or intraoperative consultations are powerful tools provided by Pathologists in the decision making process of surgical management. As any other tool, however, there are great benefits when it is used appropriately but there may be negative consequences when it is not. From the receiving of the tissue in the laboratory to rendering a diagnostic interpretation, the procedure frequently takes less than 20 minutes. On the other hand, there is the need to send specimens “FRESH” to our laboratory because they require special handling to perform special studies such as cultures, cytogenetic studies, biochemical analysis, molecular studies based on DNA or RNA extraction, etc. The need to send a specimen fresh to the laboratory, therefore, is not synonymous of needing a frozen section diagnosis. A “deferred” diagnosis is when the pathologist in charge of the consultation concludes that a frozen section diagnosis cannot be render for different reasons (sample limitations, artifacts, unacceptable uncertainty, possible harm to the patient, etc). Ideally the procedure is done when open communication with the surgeon, as well as other consultants, especially other pathologists, is available for reviewing the case. Free communication between the operating surgeon and the pathologist is critical for a successful consultation.

Most experts in the field agree that there are very specific indications for a Frozen Section request. A logical approach to ask for a frozen section diagnosis should be based on general rational principles:

1. As a diagnostic test, there are false positive and false negative results.

2. The procedure is needed when the results could change the physician’s mind as to what should be done for a patient DURING surgery.

3. Although tempting from the psychological point of having a peace of mind, the frozen section goal is not to satisfy curiosity.

Actually in a small proportion of cases the opposite may become true, meaning that the results may increase the levels of anxiety and uncertainty. If not indicated, it may also increase the levels of miscommunication with the patient or other care providers.

There is a very simple question that the surgeon should ask himself in deciding whether a frozen section should be done or not: Will the result of the frozen section examination influence in any way the surgical procedure? If the answer is no, the procedure is not indicated. By using this criterion, a large study estimated that almost half of the frozen sections done in some hospitals could have been avoided. If the frozen section is asked when the surgery is completed, the request is not justified unless there is a decision to return to the surgical procedure- a circumstance that occurs rarely, unless there is a surgical emergency.

Justifiable medical reasons to request a frozen section fall into one, two or all categories:

- To establish the presence and nature of a lesion when this information is required for the surgical procedure (malignant versus benign, inflammatory versus neoplastic, extent of resection based on this information, need to sample other structures for staging purposes, etc).

- To determine the adequacy of surgical margins (not only requiring microscopic examination but also macroscopic examination; i.e. opening of intestine or cutting a specimen to see if the lesion is in the tissue, etc).
To establish whether the tissue obtained contains diagnosable material (even if the exact diagnosis cannot be made on the frozen sample) or whether additional sampling is indicated.

QI and QA programs are active in our department to make sure that we keep and improve established standards in our mission of providing the highest level of medical care.

The frozen section cannot be a substitute for any of the clinical steps in dealing with medical problems. The need for a good medical history, physical exam, thoughtful use of ancillary and diagnostic tests such as radiology, image techniques and laboratory tests which lead to a sound differential diagnosis, is as fundamental now in the medical practice as it has been since the dawn of modern medicine.

To conclude, the following is extracted from Rosai’s introductory chapters in Ackerman Surgical Pathology. These words are so vivid in our everyday practice: “By its very nature, surgical pathology depends heavily on the input of clinicians and surgeons who are fully aware of the potentials and limitations of the specialty. They should know that a microscopic diagnosis is a subjective evaluation that acquires full meaning only when the pathologist is fully cognizant of the essential clinical data, surgical findings, and type of surgery. A physician familiar with the case should ideally complete the requisition slip for pathologic study.

News from Histology
Histologic Preparation Of Bone
By Solvey Chapman, HT (ASCP)

The Histology laboratory routinely receives bone specimens, including bone marrow biopsies, for microscopic evaluation. The Histology lab takes bone tissues and processes them to create slides with a thickness of only 3 to 4 microns (An erythrocyte is about 7 microns in diameter). The process of bone decalcification requires special techniques and skills. There are two types of bone that can be recognized macroscopically in the human skeleton: cortical or compact bone, which is solid, hard and immensely strong bone forms the shafts of long bone, i.e. the femur and tibia; and trabecular bone which is found in the marrow cavities. The most important step as is with all specimens is the proper fixation of the sample. Cortical bone fixes well with 10% Neutral Buffered Formalin and to enhance the cellular detail in the trabecular bone, we use a fixative called B-Plus which is a mercury substitute fixative. This is to assure protection of the bone cells and the surrounding soft tissues from the damage of the decalcifying procedure that follows. Next the bone is submitted, depending on the type of bone, to either a strong hydrochloric acid or a less harsh formic acid to remove the mineral component from the bone to make it soft and flexible. Depending on the size of bone and the type of sample, it could take as little as 15 minutes for a needle core biopsy to several days for a larger sample of cortical bone. Once the bone is soft enough to bend, the specimen is then processed as regular tissue. Frozen section diagnosis of bone is rarely optimal; in these circumstances other approaches are feasible such as touch imprints of the marrow or selection of the soft tissue component for examination.