

"just enough". What he meant, of course, was that there are no all-encompassing rules; the nature of the case, appearance of the gross specimen, experience, and common sense should dictate how much is enough. For instance, one cassette is plenty for a case of herniated intervertebral disk submitted in numerous fragments, unless the pathologist has a burning interest in the pathology of the nucleus pulposus. Conversely, all tissue usually should be submitted in a diagnostic endometrial curettage. However, if the procedure was done for incomplete abortion and gross examination shows obvious products of conception, one representative section is more than adequate. The main problem is posed by specimens such as prostatic transurethral resections in patients without clinical suspicion of carcinoma. There is no question that the more fragments submitted, the more incidental carcinomas will be found.⁷¹ However, it is impractical and probably not justified to process all the prostatic fragments received regardless of the total amount. The guidelines that we have developed for these specimens are described in Appendix E.

Knowledge of the precise site from which sections were taken for microscopic examination is of great importance, especially when determining whether tumor is present at the surgical margins. This can be achieved by marking these sites and their corresponding numbers or letters in predesigned picture protocols, in a drawing of the specimen made at the time of gross examination, or in a digital photograph using a program specifically devised for that purpose.

Identification of the tissues submitted for histology and other pertinent information should be provided to the histotechnologist in a separate form or entered in the computer terminal at the time of the gross examination.

Failure to perform these relatively simple steps is responsible for a large proportion of the poor and sometimes uninterpretable microscopic slides being produced. Part of the problem arises from the fact that, in most pathology training programs, no exposure is given to basic histology techniques, such as embedding, cutting, and staining. We have found that even a 1- or 2-day learning session in the histology laboratory by the trainee just before rotation in the gross room is very effective in avoiding many of these problems.

Surgical margins

One of the most important components of a gross examination and sampling is the evaluation of the surgical margins, under the assumption that a positive margin will likely lead to local recurrence if uncorrected.⁶⁸ This is usually carried out by 'painting' those margins with India ink or a similar pigment before sectioning. This can be done on either the fresh specimen or after fixation by gently wiping the margins with gauze and carefully covering the entire surgical surface with India ink using a cotton swab stick. Special care should be taken to mark the lateral epithelial margins of the specimen when present. If it is of importance to know the exact topography of the margins involved, this can be achieved by the surgeon identifying them individually and the pathologist submitting them for histology with a unique code identifier or by using dyes of different colors. As already stated, the procedure is facilitated a great deal by identifying in an image of the specimen (digital, Xerox, or pencil drawing) the location of the margin in relation to the anatomic landmarks.

Identifying the true surgical margins is done with some specimens better than with others. The smoother the specimen contours and the harder the consistency, the easier the task. Unfortunately, some of the most common specimens on which margins are requested – breast lumpectomies being a prime example – hardly fulfill these desiderata, and the accuracy of the determination is

probably much less than that assumed by the pathologist and the surgeon. This possibility is underscored by studies in several anatomic sites showing a lack of statistical correlation between the status of the margins and the incidence of actual recurrence, and the fact that a good number of patients in whom margins are deemed positive but no re-excision is carried out remain free of disease.^{67,74} In some of these situations, one wonders whether it might not be preferable for the surgeon to remove the tissue in question, *then* take the margins from the surface that has just been created, and send those for histopathologic evaluation. With such a procedure, there would be no question that those are real surgical margins, nor would there be any issues about their exact location.

Two interesting variations on the theme of surgical margin evaluations have been the proposal to evaluate them on the basis of cytologic ('touch') preparations,⁷² and through detection of molecular alterations, such as *TP53* mutations ('molecular' margins).⁶⁹ Although cytologic evaluation can be a great adjunct at the time of intraoperative consultations (sometimes obviating the need for a frozen section altogether), we think it is perilous to rely on it for this specific purpose. As for the 'molecular' margins, to depend entirely on them at our present state of knowledge seems foolhardy, to say the least. The reasons, which ought to be self-evident, have been dutifully enumerated by several authors.^{67,74}

Guidelines for handling the most common and important surgical specimens

In order to achieve a certain consistency in the way the specimens are handled in the gross room, it is important for a manual of



Fig. 2.4 Gross room station incorporating personal set-up for digital photography and digital identification of sections for histology, a convenient and time-saving arrangement.

(Courtesy of Francesco Visinoni, Milestone Corp., Bergamo, Italy)

procedures to be available to the person performing the gross examination to assist in dissecting the specimen, describing it, taking the appropriate sections for microscopic examination, and performing whatever other additional tasks may be required depending on the nature of the case.⁷⁵⁻⁷⁹ These can be made available in the form of a printed manual or in computer-readable form, with the manual or computer terminal placed by the side of the dissecting area (Fig. 2.4).

These devices can be of great utility to pathology residents and other beginners, as long as one recognizes that they have not been designed to replace entirely the time-honored system of the seasoned practitioner transmitting to the apprentice, with his own words and hands, the secrets of the trade.

Some of these guidelines for handling of the most common and important surgical specimens (procedure, description, and sections for histology) are given in Appendix C.

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