

New Concepts in  
Surgical Pathology of the Skin

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Richard J. Reed, M. D.

# **New Concepts in Surgical Pathology of the Skin**

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## Series Preface

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Surgical pathology has been through a revolution! Although conceived by surgeons (one of many areas that can be ascribed to the genius of William S. Halstead), by the participation and leadership of pathologists, it has evolved from a subdivision of surgery to become a discipline of its own. Like all disciplines, its tools need definition. Of its many tools, the basic one is the approach to a specimen. This requires an understanding of tissue handling and is addressed to the solution of at least two questions: (1) What and where is the lesion for which surgery was performed? and (2) What is the best way to demonstrate this lesion on a slide? These questions are basic to our profession. The approach to their answers is not only the fundamental skill of a surgical pathologist, but will, in fact, determine how well the surgical pathologist discharges his responsibilities to his colleagues, his trainees, himself, and his profession.

The concern of the surgical pathologist for diagnostic and experimental endeavors is documented in the literature. We have excelled in these endeavors. We are better equipped than our professional forefathers, but may have faltered in the use of our equipment. This series was conceived to improve our "bench" job and to make this basic approach available to trainees and practitioners.

The why's and how's of specimen handling in surgical pathology are our primary concern. Experts in a given anatomic area will address specimen handling and, having done so, will have the opportunity to discourse on a subject or subjects in their area of expertise and interest.

It is our intent that these volumes fill a void that has existed in surgical pathology literature since Joseph Colt Bloodgood, the first American surgical pathologist. We do not intend them to become compendia of diagnostic criteria. Our success will be measured by how completely we answer the two basic questions. The usefulness of our undertaking will be measured by the physicians, surgeons, and pathologists in practice and training. If this is a successful and useful series, they will know, and the patients they serve will benefit.

WILLIAM HARTMANN, M.D.  
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## Chapter 1

# Introduction

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Surgical pathology was devised as a peculiar adaptation of techniques in pathology to the solution of surgical problems. It was evolved by surgeons, but later adopted by pathologists. Its history has been one of servitude. Until recently, it has been relegated to the role of stepchild. In the academic environment, it assumed the characteristics of a Cinderella whose needs were subservient to those of research. At this time, the academic disciples of pathology have turned a smiling face to their "Cinderella."

Surgical pathology has also had to share favors with clinical pathology. In a manner somewhat similar to the stepchild approach of the academicians, the hospital-based pathologist has favored the monetarily fruitful specialty of clinical pathology. The random section approach to a surgical specimen, which is used by many hospital-based pathologists, is reflected in a pathology report that is of little or no use to the surgeon. The surgeon's respect for the pathologist mirrors the latter's respect for a surgical specimen.

It is the duty of the surgical pathologist to provide the surgeon with prognostically significant information from a study of surgical material. The surgical pathologist records the gross characteristics of the material provided by the surgeon. If an immediate therapeutic decision is pending, he may prepare and interpret a frozen section of a representative portion of tissue. Routinely he sections the surgical specimen in a manner that will best demonstrate the nature of the disease process. Histologic sections are prepared, studied and interpreted. The interpretations are recorded and submitted to the surgeon to guide him in the diagnosis and treatment of disease.

The surgical pathologist functions as a consultant. His prime function is the interpretation of surgical material. He may make recommendations based upon his interpretation, but he does not dictate treatment. Occasionally his interpretations may provoke questions as to the appropriateness of surgical decisions or procedures. The answers to these questions are not his responsibility. Such questions are properly referred to a review board of surgical peers.

The surgical pathologist is skilled in the interpretation of gross specimens. His manipulations and dissections are based on knowledge of the anatomy, the vascular supply; and the lymphatic drainage of the area.

He supplements this information with a knowledge of the physical characteristics of diseases that commonly involve the area.

Many subspecialties of pathology have evolved under the direction of clinicians. The preparation and interpretation of biopsy specimens from the skin, liver, kidneys, and skeletal muscles all pose similar problems. They require special techniques and a familiarity with the terminology of clinical subspecialties. It has generally proved to be the path of least resistance to ignore these special requirements. As a consequence, these special fields often have functioned better under the direction of clinicians. Each inroad by clinicians into anatomic pathology is an admission by pathologists that they are too concerned with business to practice medicine. Many pathologists are primarily concerned with the monetarily fruitful business of the clinical laboratory and have failed to shoulder a responsibility for newer techniques in anatomic pathology.

A competent microscopist is not simply a storage site for microscopic verbiage. It is not enough to be able to recite by rote the microscopic findings once the clinical diagnosis is established. The ability to offer clinical differential diagnoses from the interpretation of microscopic findings is the mark of the mature diagnostic pathologist. In addition, he may record data that are prognostically significant or offer suggestions for pertinent clinical tests. The ability to recognize cytologic and histologic features is simply a beginning. The ability to integrate microscopic findings into a meaningful interpretation is the distinguishing characteristic of a pathologist and is the art of pathology.

Dermatology as a clinical specialty is an extension of gross pathology. It is a visual art whose practitioners depend almost entirely on visual images to diagnose and categorize disease. Dermatologic diagnoses are based on the recognition of such basic reaction patterns as erythema, edema, vesiculation, and necrosis. Additional diagnostic qualifications depend on the duration of the process, the distribution of lesions, and the presence or absence of systemic symptomatology. Once the preceding parameters have been noted, the final classification of the disease may depend on a relatively minor distinguishing detail. Often the process is then categorized by giving it the name of the physician who first defined the syndrome. The result of this empirical approach has been a bewildering terminology that represents a terrible burden for the neophyte in dermatology. In spite of these handicaps, dermatology is a satisfying specialty. It is possible to develop a diagnostic proficiency that is rarely attained in other clinical specialties.

Dermatopathology has evolved as an ancillary subspecialty of dermatology. The major thrust in its development has been the characterization of clinical syndromes by their morphologic patterns rather than their his-

togenesis. The neophyte in dermatopathology has been taught the clinical syndromes and has had to memorize a collection of verbiage that characterizes the histologic changes for each syndrome. With this approach, it is not surprising that there has been relatively little interest in dermatopathology by pathologists.

It is possible to approach dermatopathology as a study in histogenesis. The reaction patterns of the skin are limited. Once the histologic pattern is characterized it is usually possible to relate the pattern to one or more clinical syndromes. One of the satisfying aspects of dermatopathology is the close cooperation that is possible between clinician and pathologist. The clinician can usually supply the limits of the possible clinical syndromes.

The impact of histogenetic concepts on dermatologic terminology is just beginning to be felt. As a striking example we might consider the following clinical syndromes: bullous ichthyosiform erythroderma, ichthyosis hystrix, systematized epithelial nevus, nevus unius lateris, hard nevus of Unna, and palmar and plantar erythroderma. In each of these conditions, a histologic pattern characterized by peculiar edematous and dyskeratotic changes may be present in the stratum malpighii. This histologic pattern, which has been characterized as epidermolytic hyperkeratosis, is easily grasped by the neophyte pathologist. Once grasped, it may be correlated with the information supplied by the clinician to define a clinical syndrome.

The future of dermatopathology is somewhat uncertain. Dermatopathology has seldom been fully accepted as the responsibility of pathologists or pathology training programs. For the most part, it has remained more closely allied to the discipline of dermatology. By political design, its future will apparently be determined by clinicians, rather than by pathologists. Hopefully, it will fare better than other subspecialties of pathology, that, by default, have remained the responsibilities of clinical services.

## Chapter 2

# Ethics and Deportment

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### THE CLINICIAN AND HIS PROBLEMS

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It is difficult to translate the pathologist's interpretations of a surgical specimen into a doctor-patient relationship. The examination of material that is submitted to a pathologist is initiated under the direction of a clinician. The character and purpose of the examination are generally indicated on the request form supplied by the clinician. The pathologist's written interpretation of a test is in turn directed to the requesting clinician. The pathology report is a consultation between physicians. As a result of this consultation, the clinician may request additional tests or initiate treatment. The clinician has the responsibility of translating the information supplied by the pathologist into meaningful actions for the patient. He serves as an intermediary between the patient and the pathologist. Logically, the expenses for the clinician's consultation with the pathologist should be the responsibility of the clinician rather than the patient. Ethically, this arrangement has too many weaknesses to be a recognized or accepted practice.

With few exceptions, the written report of the pathologist is a commission. Extrapolations from this written commission by the clinician must be limited in scope. It is the responsibility of the pathologist to commit to his report all positive and negative findings. The clinician does not have the prerogative of supplementing the pathologist's report with his own interpolations into the written commission. An incomplete or inadequate report by the pathologist tends to encourage the clinician to interpret the omissions as having an importance equal to, or greater than, that of the commissions. A detailed microscopic report and an equivocal final diagnosis are an open invitation to speculation by the clinician. Under such circumstances, a common histologic finding, such as liquefaction degeneration at the dermoepidermal junction, may be equated in the mind of a clinician with the diagnosis of lupus erythematosus. The microscopic report details the reasoning of the pathologist in arriving at a diagnosis. It is a statement of positive and negative findings. It has unquestioned medicolegal significance. An interpretation by the clinician of the written description of microscopic findings that contradicts or is at variance with the written commission (final diagnosis) of the pathologist is indefensible. Clinicians who violate

this premise should be denied the benefit of a detailed microscopic description. They are jeopardizing the value of the pathologist's report.

The commission of the pathologist is entrusted to the clinician, who has the power to act in behalf of his patient. It is not a dictum. The clinician has the responsibility of integrating all the findings (historical, physical, and laboratory) interpreting them, and prescribing appropriate treatment. The commissions of the pathologist, particularly those relating to anatomic pathology, are often deciding factors in the clinician's interpretation. They may contain more than merely a final diagnosis. For rare or unusual lesions the pathologist, on the basis of his knowledge of similar processes, may elect to provide a statement regarding behavior and prognosis. The pathologist seldom, if ever, has available all of the factors that influence the clinician's interpretations. Therapeutic recommendations by the pathologist should always be general statements. They should not be offered as specific dicta. With an adequate commission by the pathologist, an error in a therapeutic decision by the clinician should not indict the pathologist as guilty by association. If dicta regarding therapy are offered by the pathologist, but prove in their execution to be in error, then the pathologist shares the guilt. The guilt does not extend to correct therapeutic decisions that are marred by technical errors.

The philosophy of the frozen section is pertinent to a discussion of the clinician and his problems. The frozen section is a consultation between physicians. It requires an authorization from the clinician in the form of a written request that also documents significant findings. Some clinicians look upon the frozen section as a contest requiring little or no cooperation with the pathologist. A few are so perverted that they may offer misleading clinical information. The pathologist must judge whether the gross specimen and the recorded clinical data warrant the preparation of a frozen section. If they are judged to be inadequate, the request by the clinician for a frozen section may be denied. A failure to exercise this prerogative may find the pathologist compromised if medicolegal problems arise.

In many hospitals the responsibility for the initial interpretation of a frozen section falls upon a resident, who is usually capable of handling most of the problems. However, it is doubtful if a final decision to await permanent sections (no frozen section diagnosis) should be made by anyone other than the surgical pathologist.

At the present time medical ethics are in a confused state. At one time, fee-splitting was considered a serious breach of ethics. Direct billing of the patient by the pathologist for services rendered is largely an outgrowth of efforts to combat fee-splitting. With the advent of automation and the influx of funds from insurance programs, many of our time-honored standards of ethics have disappeared. There is currently a trend in several

of the medical specialties for the clinician to usurp the role and the prerogatives of the pathologist. When surgical pathology was evolving as a specialty, it was a common practice for the clinician to function as a pathologist and to dissect, section, and interpret the products of his surgical endeavors. Histologic diagnoses, such as "chronic appendicitis," were common and offered justification for a number of questionable surgical procedures. The way was open for the incompetent surgeon to cover a variety of mistakes under a blanket of vague histologic diagnoses. We are faced with somewhat similar problems at present. The pathologist's hesitancy in accepting responsibility for specialized techniques, such as "thick" sections and immunopathology, has encouraged clinicians to evolve into pseudopathologists with limited, specialized skills. In the special realm of dermatopathology, there are serious objections to the clinician who also functions as his own pathologist. His incidence of errors in clinical diagnosis is likely to be remarkably low. If the clinician wishes to practice as a pathologist, he should be obliged to restrict such endeavors to material submitted by clinicians other than himself. Clearly, the pathologist should be a disinterested third party.

The competition offered anatomic pathologists by lay laboratories has made it easier for some clinicians to function as pathologists. It is possible to submit a biopsy specimen to certain lay laboratories and to obtain a satisfactory microscopic section for a reasonable fee. Unfortunately some pathologists have confused business with the practice of pathology and have offered clinicians a similar service. This practice represents a form of fee-splitting. It is not at all clear that clinicians who avail themselves of this type of service act in the best interest of the patient. Does the patient always know that his biopsy has been interpreted by the clinician? What is the clinician's charge for his histologic interpretations?

Among the many peculiarities of clinicians is a possessiveness in regard to their operative specimens. Evidence of this quirk is a disregard for hospital rules pertaining to the delivery of intact operative specimens to the pathology laboratory. Portions of the specimen may be removed from the hospital and delivered to a research laboratory or to a favored pathologist. This interference with hospital procedures may complicate the interpretation of the specimen and eventually may compromise the care of the patient. The diagnostically significant portion of the specimen may be the portion that was removed from the hospital by the surgeon. Often this violation of hospital rules may be additionally complicated by conflicting or differing interpretations by the hospital-based pathologist and by the surgeon's favorite. The guilty surgeon's reaction to this dilemma often is righteous indignation. Referral of the problem to the hospital tissue committee is the proper solution for the surgeon's indignation. A somewhat

similar breed is the clinician who takes multiple biopsies, submits each one to a different pathologist, and then confronts one or more of the involved pathologists with the conflicting reports.

## THE PATHOLOGIST AND CONSULTATIONS

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Every pathologist has been faced with the problem of the clinician who, slide in hand, wants an immediate consultation. If the pathologist obliges, but offers a diagnosis which differs from that of the pathologist whose laboratory prepared the slide, the surgeon is vindicated in his search for the truth. The surgeon's usual reaction to this controversy is that the first pathologist was in error and should be so informed. This comedy of errors may be avoided if proper procedures for consultations are followed. Consultations between pathologists do not require the clinician as an intermediary. If a consultation between pathologists is desired by a clinician, the material should be forwarded by the pathologist to the consultant. The consultant should be an authority who satisfies both the clinician and the referring pathologist. The consultant should direct his written opinion to the referring pathologist.

The ethics of a consultation are not defined. They border on mores that have been handed down from one generation to the next, but seldom, if ever, committed to writing. Consultations may be requested on a regular basis or may be infrequent or one-time occurrences. They may be informal requests for an opinion, or an informal sharing of interesting material. Formal requests may be a search for prestige in which a definitive diagnosis is confirmed by an authority, or they may represent a plea for help on the diagnosis, prognosis, and treatment of a problem case. They may occasionally be part of a contest in which representative sections of a problem lesion are submitted to two or more authorities with the anticipation that controversies will evolve. Finally, a clinician may request additional consultations. The clinician's rationale for such requests may be an expression of conflicts between clinical patterns and histologic diagnoses or of personality conflicts between the clinician and the pathologist. They may reflect the "Mayo Clinic Syndrome" in which only one authoritative source is recognized.

For medicolegal purposes, the informal verbal consultation is practically worthless. The recipient of such a service must also recognize that a written report invariably represents a greater expenditure of mental effort by his consultant. During the preparation of a written report the consultant is allowed time to reflect upon subtle histologic changes and to return to problem areas several times for significant clues. Finally, his signature

over a written diagnosis is a documentation of the thought and effort he has expended.

Formal requests for a consultation on material that is submitted with a definitive diagnosis are not particularly stimulating for a consultant. In such cases, the submitting pathologist is impressed with the prestige that is derived from a confirmatory written report by an authority. When faced with such a problem, the consultant occasionally may offer a significantly different diagnosis, but in general the challenge of the difficult lesion is lacking.

A formal request for help on a problem lesion by a troubled pathologist offers the greatest challenge to a consultant. Some lesions present problems that exceed the capabilities of the consultant. Some of these problems may be related to the way the specimen was originally sectioned and processed. Occasionally, the consultant may request additional material. In some of these problem cases, the additional material may provide significant clues to histologic or biologic problems. For occasional lesions the consultant must admit his inadequacies, but, if possible, should direct the material to a consultant with appropriate expertise. For some difficult lesions the consultant may be able to offer significant histologic interpretations of patterns of growth, mitotic rate, and biologic potential in the absence of a definitive diagnosis.

The pathologist who simultaneously submits material to two or more consultants should be prepared to reap the whirlwind. If they are informed of the contest at the time they receive the histologic preparations, the consultants may agree to participate. If they are uninformated contestants, they may become extremely agitated when faced with conflicting diagnoses.

The clinician who requests a consultation because a pathologist has rendered an astute diagnosis on an unusual lesion will precipitate a reaction of some sort from the pathologist. When the clinical picture does not correlate with the histologic diagnosis, such a request may be reasonable but irritating. At the other extreme the clinician, who has attained a degree of snobbery that reflects the "excellence" of his training, may assume that astute diagnoses issue only from the center where he was trained and may request that all unusual material be forwarded to that center for review and confirmation of the diagnosis.

Finally, we are faced with the problem of patients who are referred to specialized treatment centers. The pathology staff in these centers need not reflect the same degree of competence as that of the referral group. Verbal reports may be given to patients for transmittal to the referral group. These verbal reports are often confusing and contradictory. The patient may report that the lesion was benign but may show the stigmata of radical surgery. Several months later, a corrected report may issue from the treat-

ment center. These treatment centers are faced with problems that require expertise and extreme care in public relations. If conflicts arise between the diagnosis from the pathology group in the treatment center and that of the referral group, it is the responsibility of the group in the treatment center to share their opinions and material with the referral group promptly.

If consultations are submitted on a regular basis, the referring pathologist should work out financial arrangements with the consultant. If consultations are only occasionally submitted, the referring pathologist should expect a bill from the consultant for services rendered. If a bill is not submitted in a reasonable period, the pathologist should contact the consultant and establish the latter's fee for a consultation. Although the case may appear to the referring pathologist to have intrinsic value for the consultant, the latter is obliged to spend his time and that of his secretary in preparing a written report.

The pathologist often receives requests from clinicians for the loan of histologic preparations. Preferably these requests should be answered by a query to the clinician for the address of a pathologist who is readily available and responsive to the needs of the clinician and the referring pathologist. By political design or by necessity some clinicians may also function as pathologists. From their review of histologic sections they may correlate their histologic and clinical findings to formulate a diagnosis. They are strongly influenced by clinical findings and tend to interpolate their clinical impressions into their histologic interpretations. Their histologic interpretations may be at variance with or may contradict those of the pathologist who furnished the histologic sections. As a matter of courtesy, the clinician should furnish the pathologist a copy of a pathology report based upon the clinician's interpretations of the pathologist's histologic preparations. Medicolegal implications necessitate such a report. If the clinician ignores these responsibilities, the pathologist should communicate the deficiencies to the negligent clinician. Subsequent requests of a similar nature do not bind the pathologist. The burden becomes that of the clinician to furnish the name of a pathologist (consultant) who satisfies the needs of the clinician and the referring pathologist.

# Chapter 3

## General Guidelines for a Dermatopathology Laboratory

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### IDENTIFICATION OF SPECIMENS FOR MAILING

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The proper identification of specimens, particularly multiple biopsy specimens, is the responsibility of the clinician. Often multiple specimens are included in a single bottle of formalin. Seemingly insignificant lesions, such as cellular nevi, may occasionally prove on histologic examination to be life-threatening processes that require identification of site of origin. The information supplied by the clinician should include site of biopsy, duration, and pertinent historical and physical findings. If multiple specimens are submitted from one patient, they should be properly identified on each of the bottles of formalin and on the pathology request forms. This is best done by identifying the site with an appropriate letter or number on both the request form and the corresponding specimen container. It is also an aid to indicate the total number of separate specimens on each bottle (i.e., if there are three separate specimens, then each bottle is identified with a specific number and a total number as 1 of 3, 2 of 3, and 3 of 3).

If specimens must be mailed to the pathologist, it is the clinician's responsibility to identify each specimen bottle properly. Each formalin container should be labeled with the address of the laboratory in addition to the identifying data supplied on the cardboard mailing container. Since the lid of the mailing container is often detached and lost in the mail, and the formalin container may separate from the paper container, each of these containers needs identifying data.

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### EXAMINATION OF GROSS SPECIMENS

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The purpose of the gross examination of a surgical specimen includes one or more of the following points.

1. Documentation of physical characteristics.
2. Evaluation of patterns of growth (if neoplastic).
3. Selection of areas to be submitted for microscopic examination.
4. Proper labeling of sections submitted for microscopic examination to facilitate their identification and to permit correlation of microscopic features with the gross appearance of a lesion.

Unfortunately the gross examination of surgical specimens is often presented to a resident as an onerous duty. This attitude may persist after completion of training. An appreciation for and feeling for gross pathology are difficult to develop, but once obtained permit the practicing pathologist to fulfill his duties with increased confidence and pleasure. It would be a mistake for this book to merely describe various routine techniques to be used in the preparation of surgical specimens. The mechanics of the preparation of surgical specimens depends, in part, on the facilities available for special techniques. The purpose of this book is to record some of our experiences and mistakes in the hope that they will benefit others.

The examination of a gross specimen and the selection of areas to be submitted for microscopic examination should facilitate the diagnosis of lesions being studied, and, if possible, should provide information about the prognosis of the lesion. The manipulation and description of the specimen at the cutting board cannot be reduced to stereotyped procedures. Routine stereotyped procedures for processing and describing specimens may become ritualized, so that the importance of the procedure in the mind of a pathologist may overshadow that of the specimen itself. Each specimen is unique and presents special problems that may be obscured or not appreciated if the performance of these procedures becomes stereotyped. If a specimen has been improperly handled, either through ignorance or through carelessness, it is seldom possible to return to the wet gross and obtain the same degree of information that would have been available if the specimen had been properly handled initially. Microsections of a difficult borderline lesion that are technically unsatisfactory because the specimen was not properly prepared prior to fixation are inexcusable. Specimens that have remained in the fresh state in a refrigerator over the weekend for the convenience of the pathologist seldom yield sections of a comparable quality to those produced by proper fixation within a few hours after surgery.

The proper manipulation of a surgical specimen and the selection of adequate blocks for microscopic examination depend on a knowledge of the anatomy of the organ and of the behavior and spread of disease within the organ. With the exception of rare and unusual diseases most of the problems in surgical pathology can be recognized and diagnosed with some degree of confidence at the cutting board. For neoplastic diseases it is