PATHOLOGY
IN
SURGERY

BY

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DEDICATED

TO

THE MEDICAL STAFF

OF

ST. LUKE'S HOSPITAL

Chicago, Illinois.

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Preface

The organization of anatomic pathology in a busy hospital practice presents to the pathologist many problems beyond the strictly technical elements of his specialty. He is concerned, of course, with the processing of tissues removed by the surgeons and sent to him for diagnosis, and is responsible for the necropsies and the histologic study of the tissues obtained. His observations in each of these activities become descriptive records and diagnoses which he is required to keep for reference. A pathologist may consider adequate for his file the record of a surgical tissue examination which has only the name of the patient and the diagnosis of the tissue lesion removed. Another pathologist, believing that he can improve the quality of his work by carefully recording the details of the gross and histologic structure of the surgical and necropsy tissues presented to him for examination, needs a more extensive but simple system of records. Obviously, the surgical tissue reports and the necropsy records belong in separate files. Filing cards, for many reasons, are unsatisfactory in this system. The forms used in compiling the records from which most of the text and photographs of this treatise on surgical pathology are gleaned are (1) a sheet of good quality paper, $9\frac{1}{2}''$ x $8\frac{1}{2}''$, with suitable printed items, such as name, date, attending physician, room or ward number, and diagnosis for the surgical tissue file; (2) a similar special sheet for the necropsy file; and (3) a blank sheet of the same size for use in both series when more than one sheet is required for a record. Any other size of paper sheets or printed items can be used. This size is satisfactory for current filing purposes and later for binding into books. The surgical tissues are numbered consecutively beginning with one of each year, and each becomes a number of a certain year. This limits the numbers used for surgical tissues to a given year. The necropsy records are numbered in the same way in another series.

The surgical tissue reports are typed with carbon copies on regular typewriting paper. The original is retained for the record files in the laboratory, a copy is sent to the clinical record of the patient, another to the attending physician. A temporary index of patients' names with assigned tissue numbers is made on small sheets of paper and alphabetically arranged in an index file. These slips, placed in alphabetic sequence, are used later to type the permanent name index of each volume of tissue reports. Six hundred surgical tissue reports with included sketches, photographs and photomicrographs form a bulk convenient to bind into a volume. Each volume has (1) an alphabetically arranged index of the names of patients with the assigned tissue numbers, and (2) a simple cross-indexed, alphabetically

arranged list of the diagnoses reported in the volume. With a little practice these indices are quickly prepared.

Illustrations, as sketches or photographs, are important in the exchange of concepts whatever the subject content may be. In many circumstances illustrations are much more forceful than the written or spoken material because the illustrations attract attention and stimulate concentration. When these mediums are combined, a greater clarity of transmission of concepts is accomplished than with either alone. Photography has been used in many fields of medicine and is especially useful in pathologic anatomy. This is because photographs in black and white or color can serve several purposes: (1) to supplement a surgical tissue report or a necropsy record; (2) to illustrate lesions in discussions to student, intern, resident and attending staff groups; (3) to be collected, filed and displayed in a photographic museum of pathology; (4) to provide illustrations for publications or texts such as this.

A photograph approximates the appearance of a tissue, the black and white medium expressing this in shades of the dark and the light, the colored picture by contrasts of color. Lesions of tissues are reproduced and emphasized in contrast with other less important structures by each medium, sometimes with a better result by the shades of grey, sometimes with the colors. The preparation of a tissue for photographic purposes is the first important step. No photographer can reproduce more in a photograph than the tissue contains. It must be opened or cut so as to expose clearly the lesion or structures to be photographed. The elimination of high lights, and the reproduction of details and color are important objectives. Details of tissue structure are reproduced better in photographs made after proper tissue fixation than before. Prompt fixation of the tissues in fluids for preserving their color after suitable preparation of the lesion is important. Tissues carried through the Kaiserling I and II solutions, or Jores I solution are suitable for photographing in black and white and in color. A box built with an illuminated blue-green background, and with corner supports for a clear plate of glass placed at a higher level and on which the tissues are photographed, is required. Skill and experience in the art of photography are as essential in tissue photography as they are with other subject material. These brief comments emphasize the importance of tissue preparation and the skill and experience of the photographer necessary in this field to obtain satisfactory photographs.

Departments of pathology in medical schools have collections of tissues preserved in transparent containers which are used for teaching purposes. These containers are displayed on shelves or tables where they may be viewed by individuals or small groups. Accordingly, the use of such material is largely individual, and with large groups decreases in effectiveness. The

same limitations apply to the use of tissues displayed in pans or on trays. Considerable care and space are necessary to maintain such a museum of preserved tissues. Many of these tissues lose their color, become gray and rather lifeless. They have the advantage, however, of opportunities for re-examination of original material. Traditionally, the principle of such a collection of museum jars exists because this was the only method available for preserving tissue material for teaching purposes excepting the reproduction of tissue lesions by paintings and drawings. Doubtless the preservation of gross tissues in museum jars for teaching purposes will continue, but not in the volume that prevailed before the present level of photographic achievement was reached and also because of the many advantages of photographs. Actually only the exterior of a tissue can be seen.

A satisfactory photograph with some third dimensional effects in black and white and color transparencies for projection purposes has many desirable features, especially in demonstrations to groups. This is true in staff and other medical group meetings which have greatly increased in number and in attendance. Most of these discussions are aided by screen projections of photographed material.

Pathologists in hospitals are expected to present clinical-pathological conferences for the attendant and resident medical staff. The attendance of these conferences and the interest displayed in them are determined by the quality of the material offered. The pathologic material presented in these conferences is not to one individual or several, but rather to large groups, and for effective demonstration the use of screen projection is required. Printed and typewritten material, photographs and transparencies can be projected onto a large screen with opaque object and lantern slide projectors.

Photographs, mounted on $8\frac{1}{2}''$ by $10''$ cards or others suitable, can be collected according to systems in files, and indexed. The transparencies for projection purposes are also filed and indexed. These collections and the files of tissue reports and necropsy records, all in one numerical system become a museum of pathology. The photographs mounted on cards can be (1) used individually, (2) projected onto a screen, and (3) displayed singly and in collections on panels. The transparencies serve a similar function, projected or placed in illuminated viewing boxes. Sets of histological preparations, as unknowns, or with indices, arranged according to the specialties and with the same system of numbering provide training material in pathologic histology. When desired the surgical tissue report or necropsy record is available for consultation.

With these arrangements and the practice of keeping paraffin blocks of surgical and necropsy tissues in storage indefinitely, and for a reasonable time the Zenker-fixed and formaldehyde-fixed necropsy material, the hos-

pital pathologist is able to meet practically all of the demands of his tissue work. The photographic museum economizes in space and care requirements and the photographic department becomes available for the diversified needs of the hospital and staff as well as for specialized tissue photography. The photograph negatives are filed in numerical order by the year, just as are the surgical tissue reports and the necropsy records.

Many texts offer excellent and detailed directions for processing and staining histological preparations. Because they are adequate there is no good reason to repeat here these technical procedures.

The material discussed in this text, with rare exceptions, is the accumulation of experiences which any pathologist will have who serves a hospital where most of the specialized services in surgery are practiced. The terminology used in the tissue diagnoses is simple because as yet those concerned with formulating an acceptable system have been unable to reach an agreement. The pathologist in accumulating these experiences through the years must be familiar with general and special pathology. The application of these in the examination of surgical tissues becomes his specialized practice, that is, surgical pathology.

Readers should remember that this text is not one in either general or special pathology, although both are fundamental. Some may expect to find more detailed discussions than are given, or believe that some pertinent material has been omitted. There is always this possibility. The hope is that the text will be useful for pathologists, surgeons and surgical residents of the various specialties in hospitals and medical schools, and for medical students with some training in general pathology.

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CHAPTER 1

Respiratory System

NOSE

Rhinophyma

The skin at the tip and of the alae of the nose with rhinophyma is thickened, hyperemic and has large pores (fig. 1). The thickening of the skin and subcutaneous tissues produces grotesque bulbous deformities of the nose. A chronic inflammation, commonly an acne rosacea, is the cause of these changes in the skin. Histologically, the surface squamous epithelium is broad and the corium is thickened by fibrillar scar tissues containing foci of chronic inflammation and edema. The sebaceous glands are markedly hypertrophied and comprise large portions of the tissues in the sections (fig. 2A). The dilated pores of the skin are filled with desquamated and hornified epidermis. When crypts rupture into the surrounding stroma, the extruded hornified epidermis and lipid materials stimulate granulation tissues containing foreign-body giant cells (fig. 2B).

Paraffin Granuloma

Paraffin injected into the subcutaneous tissues of the nose and other parts of the face for cosmetic purposes produces foreign body granulomas. The granulomas may break through the skin, become ulcers and cause disfiguring scars. The paraffin stimulates growths of fibrous scar tissue and a chronic exudative cellulitis. Foreign-body giant cells, some with droplets of paraffin, develop along the margin of large and small globules of paraffin (fig. 3). When the face is exposed to warm sunlight or to artificial heat, the liquefied paraffin gravitates toward the jaw and neck. Chronic ulcers develop in these places. Although paraffin chemically is relatively inert, it is a solvent for lipids and their split products released from necrotic skin and subcutaneous fat tissues. These increase the irritant properties of the paraffin in the tissues.

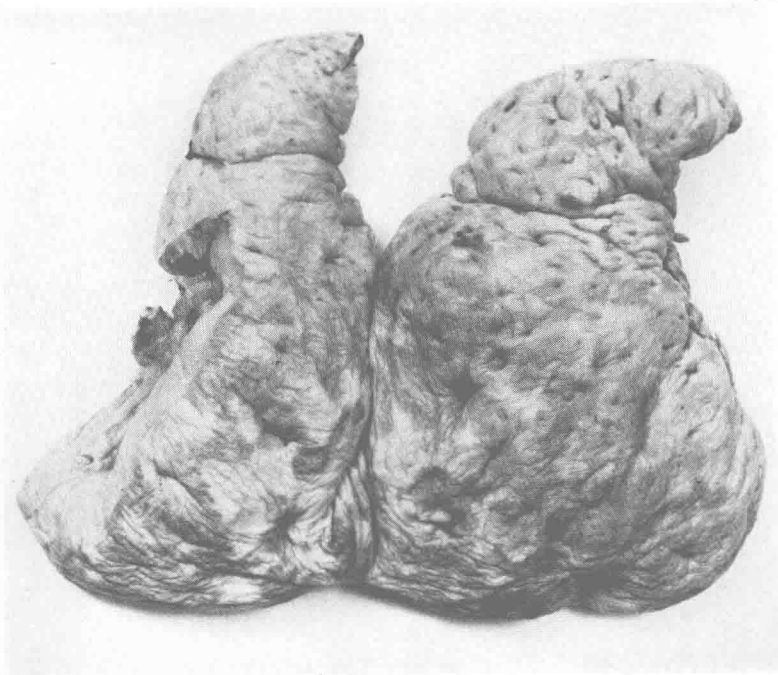

FIG. 1. Photograph of thickened tissues with large pores excised from a rhinophymatous nose.

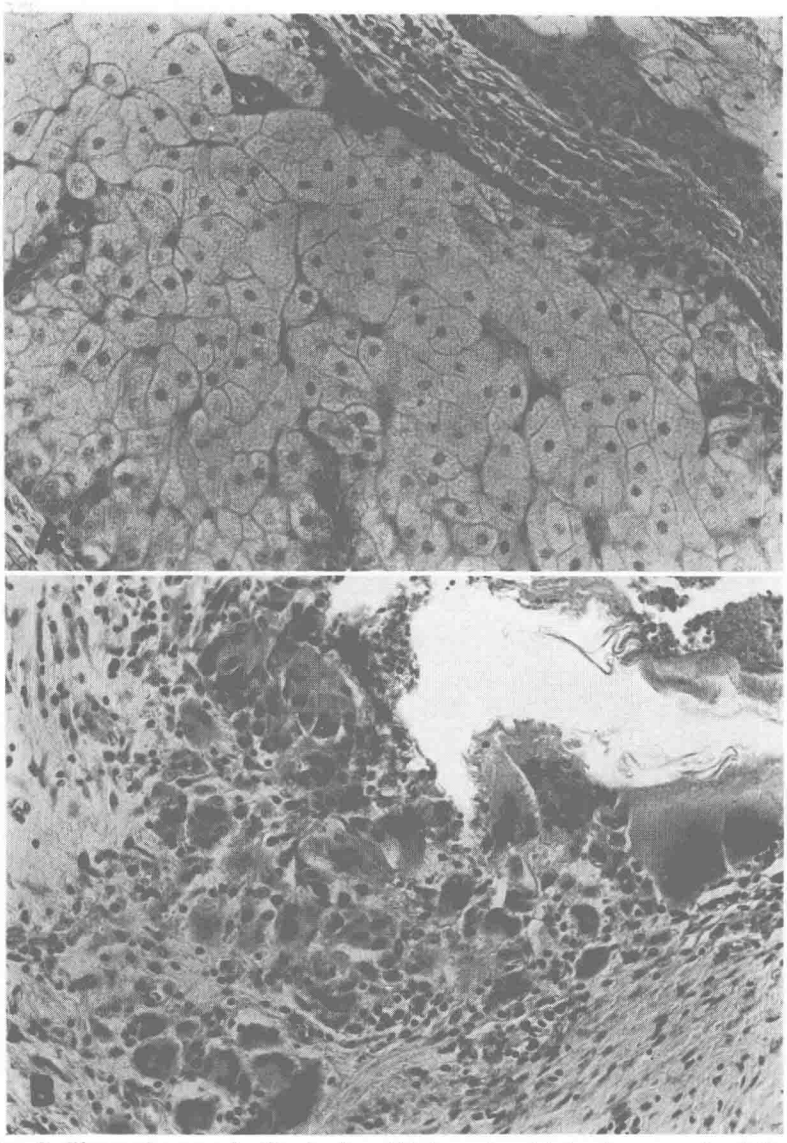

FIG. 2. Photomicrographs illustrating (A) hypertrophied sebaceous gland tissues, and (B) the foreign body granulation tissues at the site of rupture of a crypt.