



# TEXTBOOK OF SURGERY

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## FOREWORD

It is common knowledge that although many excellent textbooks of surgery have been published and are readily available, there is still need for a new one. The perfect textbook has not yet been written. One presumes that it never will be written because surgery is not only a vast subject, but it is also a living, changing, evolving one. This evolutionary change appears subtle and slow but it is, nevertheless, difficult to keep up to date with it in producing a really modern textbook.

The difficulties are easily analysed. First, the day of the solitary author has passed for it is impossible for one man to have the knowledge and experience to write a good book alone. If he borrows from the literature the resulting 'second-hand' information never rings true. Also, by the time he has read up his weak subjects and written about them, what he writes is likely to be out of date.

Next the task of the compiler or the editor of numerous contributions is difficult. He has to select authors and then has to persuade them to write their pieces reasonably speedily before time has tainted them. Moreover different hospitals or surgical centres may have conflicting views and practice.

Even the so-called basic principles of surgery and surgical practice, which should be unchanging and therefore easily reproducible, are in fact not static. An alert imagination and insight is necessary on the part of the authors to avoid a repetition of things taught and learned in their youth which may not retain the permanence or the satisfying presentation which they seemed to possess.

The acceptable textbook of a generation, or more than a generation, ago cannot be so acceptable to-day. The presentation of surgery to the student must suffer a subtle change as the years pass and as individuals mature and pass maturity. Nor is the appearance of new editions of revised or reorganised works a satisfactory solution. This is why there is always room for another and newer textbook.

Mr. Guy Blackburn and Mr. Rex Lawrie have succeeded in mastering these difficulties. Their dual editorship is reinforced by the fact that each has written a substantial part of the book. Their coverage of the wide field of modern surgery is ensured by their fourteen co-authors, each a master in his particular subject; each up to date, yet simple, direct and comprehensive. All the authors are on the staff of Guy's Hospital and consequently as a book, in spite of the multiple authorship, it is welded together into a pleasing and impressive whole.

Mr. Blackburn and Mr. Lawrie have also overcome their third difficulty, that of delay, by driving themselves and cajoling their

## EDITORS' PREFACE

THE task of compiling a new textbook of surgery for undergraduate students has attracted us for some time. It was only rendered possible by the generous response of our contributors, who have worked very closely to schedule and enabled us to produce the compiled work in a time too short for any of the statements to be out of date by the time they appeared in print.

The omission of any mention of ophthalmology and oto-rhino-laryngology was an obvious first step to limit the scope of the work and the adoption of a general principle excluding operative detail or reducing it to an absolute minimum throughout materially helped to shorten the subject matter. In spite of this the book is still long but it attempts to give a comprehensive survey, succinctly and without cramming, of the field of general surgery and some of its ancillaries to the student preparing for final examinations.

Surgical pathology has necessarily been reduced to the bare minimum, as the student must read a separate work dealing with this. Emphasis has therefore been laid particularly on the clinical side of surgery with up-to-date accounts (in particular) of diagnostic methods of recent development.

For reasons that will be readily appreciated references to the literature have been omitted and we trust that a broad acknowledgment may cover this.

It is, however, a pleasure to record our thanks to many individuals for the help we have received in the preparation of this book. Our colleagues at Guy's Hospital come first and we wish to thank Mr. Hedley Atkins especially for placing the resources of the Department of Surgery at our disposal. Dr. S. de Navasquez has also helped and advised us invaluablely in reading many of the chapters and commenting on pathological aspects in particular. Sir Russell Brock very kindly read and commented on the chapter on the heart and great vessels, and Mr. P. V. Reading of the Department of Medical Illustration kindly arranged for the preparation of many of the drawings and photographs throughout the book. Dr. Hills and Dr. Dow of the Department of Radiology have been similarly generous in the loan of X-ray films.

Acknowledgment is also made to the following: Dr. Goulding, who helped with the preparation of the table in Chapter II; Professor M. Rushton, who provided most of the illustrations for Chapter XVIII, and Dr. B. E. D. Cooke for assistance on dental aspects of the subject matter of Chapter XVII.

#### EDITORS' PREFACE

Our thanks are also due to Miss P. Archer, who prepared some of the drawings, to the late Dr. Edgar Tomlin for assistance in reading proofs, to Mr. R. G. Beard for the loan of an X-ray, and to Mr. George Down, who collaborated very closely and provided nearly all the blocks for the illustrations in Chapter XL.

Permission to use illustrations has been kindly granted by *Guy's Hospital Reports*, Oxford University Press, Sir James Learmonth, *The Lancet*, Messrs. Hanger and Co., Henry Kimpton Ltd., Down Bros., and the *Proceedings of the Royal Society of Medicine*.

It is a pleasure to record our thanks to Miss Spriggs, who has shouldered the secretarial burden almost single-handed and executed it with considerable skill.

Mr. Per Saugman of Blackwell Scientific Publications Ltd. has been our greatest ally and has shown forbearance and patience in all our difficulties. We owe him a great deal and must thank him for much detailed assistance and for getting the job done so quickly.

Finally, the task has been completed with encouragement from our wives and families, who have patiently lived with editorial problems for more than two years. Theirs has, indeed, been no small part in solving them.

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*June, 1958.*

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## FOREWORD

colleagues so firmly that the book has been written and produced in a remarkably and commendably short time. It is more than hot from the press—it is hot from the pen.

A surgical textbook to-day cannot be short. This one contains over a thousand pages but the material could not be more concisely presented; the lucid restrained text is fully supported by numerous illustrations and diagrams. The inclusion of the six chapters on transfusion, on disturbances of water and electrolyte metabolism, on the principles of anaesthesia, on radiology of the abdomen, on the principles of radiotherapy and on common surgical instruments is a happy decision. Chapters on the oesophagus and mediastinum, the lungs and the pleura, the heart and the major blood vessels cover the newer specialities.

It is, however, invidious to mention any one contributor or any one chapter from a book which is so well constructed, so well written and so well produced that it forms a complete whole.

The paper and printing both deserve mention because they form an important integral part in presenting any subject clearly and easily. The chosen style is pleasing and successful.

I am sure that this new book of surgery contains the qualities that must be present to ensure its success with the student. I know it deserves to succeed, and I wish it and its authors a long life and many new editions.

RUSSELL BROCK.



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## HISTORY AND EXAMINATION

SURGERY is the study of treatment by operative methods. By this is meant the selection and preparation of patients for operation, details of the operative procedure and post-operative care, and the management of the phases of recovery and rehabilitation until the patient returns to normal activity.

The first steps in every case are to take a full history and make a complete physical examination. The findings are then written down in an orderly fashion and constitute the first part of the case record. While preparing this record, it is helpful to remember its three principal functions:

### (1) GUIDE TO DIAGNOSIS

The first aim in surgical case-taking is to make a diagnosis, upon which treatment and prognosis both depend, and these are of prime importance to the patient: 'What will have to be done to get me better?' and 'What is the risk to my life and future physical fitness?'

At this stage a working clinical diagnosis is made, on the basis of the available evidence, and is then confirmed and made more complete, where necessary, by special tests and investigations. The complete diagnosis takes into consideration four aspects of the case:

(a) *Anatomy*: the exact anatomical position and the structure or organ in which the lesion arises.

(b) *Pathology*: whether it is congenital or acquired, and whether due to inflammation, injury or growth; or mechanical or vascular causes.

(c) *Associated findings*: important findings in the other systems (e.g. dental sepsis, bronchitis or prostatic enlargement) may need pre-operative attention or may influence the wisdom, timing or extent of the operation undertaken.

(d) *Constitutional factors*: either causing or resulting from the main complaint (e.g. anaemia, emaciation, dehydration, diabetes or cardiac failure) may have to be considered.

### (2) STUDY OF THE NATURAL HISTORY OF DISEASE

Most of the conditions we now recognise have emerged from the study and correlation of careful case records, and it is from case-taking that every doctor gradually accumulates the fund of experience upon which his diagnoses rest. It also teaches him the habit of quick, methodical routine examination, which is the basis of clinical practice.

### (3) PERMANENT RECORD

The notes are subsequently completed by the addition of the results of investigations, descriptions of operations performed, a day-to-day progress note and a final note of the condition on discharge. This should state whether the main symptoms were relieved and describe the local condition in detail. A note should also be made of the patient's general physical fitness.

In this way, the record should contain such a clear picture of the patient that a person who never saw him can understand exactly what he was like and what happened to him. Such painstaking and accurate records are of great value for clinical research, for continuity of treatment and for statistical purposes. In addition, they are of special use in medico-legal cases, both for the precise information they contain, and because they provide evidence of a high standard of medical care.

It is impossible to over-emphasise the value of systematic, concise and efficient case-taking, and it is important that even the most obvious case should have a full routine history and examination, as other unsuspected findings of great significance may be the result.

History taking and examination are fully described in text-books of the practice of medicine and it will suffice here to outline the principles and distinctive features of surgical case-taking.

The difference may be summarised by saying that whereas a good medical case record is *exhaustive*, a surgical one is essentially *purposive*. By this is meant that attention is concentrated on the symptoms complained of and relevant positive findings, by means of a method of selective questioning which can be acquired with practice and experience. Thus it is possible to focus on what is important and pay the very close attention to detail which is necessary in surgical practice of the highest standard.

Where relevant, personal, psychological and domestic issues must be closely considered, always remembering that one is treating a patient in his own environment and not simply removing a pathological lesion by means of an operation.

## HISTORY

The case history is best taken under the following headings and in the following order:

### (1) IDENTITY

The patient's name, age, address and occupation are recorded.

### (2) COMPLAINT

The main complaints and their duration are written down in order, usually in the patient's own words; e.g. 'Indigestion for three months', or 'A lump in the breast for two years'. The patient's description of

his complaint is probably more significant and accurate than any medical term by which one is tempted to paraphrase it.

### (3) NARRATIVE HISTORY

This is the patient's own account of the onset and development of his symptoms, and it is written down in his own words as far as possible. It is sometimes reasonable to select and condense the story.

### (4) QUESTIONING

The information so far obtained indicates the possible nature of the complaint, and the patient's narrative is now supplemented by well-chosen and purposive questions to clarify points which he may have omitted. For example, in suspected biliary disease, it may be necessary to ask if there has been any jaundice.

*Bodily Functions.* Questions should also be asked about all the other systems of the body in turn, to ascertain if there is any other condition which needs to be followed up. For example, it is wise to enquire about the appetite, the bowels, urinary, menstrual and gynaecological symptoms, lack of energy and loss of weight. Many patients appear to be unaware of such symptoms or of their significance unless prompted, and often the whole story can only be obtained by a combination of persistent questioning and sympathetic listening.

When *pain* is a symptom, enquiry should be made into seven of its aspects:

- (i) site;
- (ii) timing—onset, duration, and whether continuous or intermittent;
- (iii) quality—whether aching, colicky, burning, or stabbing;
- (iv) severity;
- (v) radiation to other sites;
- (vi) aggravating and relieving factors; and finally
- (vii) association with other symptoms—relation to meals, bowel action, menstruation, movement, etc.

### (5) PAST HISTORY

The patient should always be asked if he has had any other illnesses, accidents or operations. A history of previous occupation or residence abroad may be pertinent. The events are entered in chronological order year by year and not as 'five years ago', which leads to confusion.

### (6) FAMILY HISTORY

There are few surgical complaints in which this is significant, but after taking the full history above, points of relevance may become apparent such as a family history of tuberculosis, goitre or varicose veins.

### (7) PERSONAL HISTORY

In most surgical patients this is not very important and it is a mistake to devote much time and space to a long biographical account. The note should be confined to positive findings, such as a mention of smoking in pulmonary cases, excessive drinking in dyspepsia, etc.

It will be seen that this order encourages the doctor to make his history-taking purposive, concentrating on asking relevant questions and amplifying intelligently the narrative history the patient has given. In this way the habit is formed of obtaining all the necessary information quickly and with the minimum of padding.

For the sake of clarity the history should always be kept separate from the examination findings.

### EXAMINATION

Like the history, the surgical examination is essentially purposive. The purpose is to discover a lesion which may necessitate treatment by operation, and assess it and the patient as a whole from this point of view. The patient's personality and attitude to illness are both important and should be taken into account, together with his constitutional fitness, before deciding on a plan of treatment. Particular attention should also be paid to the cardiovascular and respiratory systems and the general nutrition.

The local examination is pursued with the same unswerving purpose, to appreciate all the physical properties of the lesion; each movement and test is performed definitely, so as to provide as definite an answer as possible. Vague fumbings are avoided, and, when the examination is complete, it should not be necessary to return to the patient because part of the examination has been omitted or the findings forgotten.

There are bound to be cases in which uncertainty remains, despite the most careful examination; for example, a lump may be too small or the patient too obese for physical signs to be demonstrable with certainty. In these circumstances, it is permissible to record the finding as 'doubtful': e.g. 'There was a doubtful mass in the epigastrium', or 'There was doubtful attachment to the overlying skin'. This is more accurate than to omit reference to what may prove to be an important though indefinite finding.

Whenever possible, accurate measurements should be taken and written down in inches, centimetres or degrees, as the case may be. This is just as quick as to write 'The size of a walnut', and far more useful in assessing a subsequent change in size of the lesion.

Physical signs are elicited to establish some physical feature of a lesion and, as they nearly all consist of ordinary sensations and observations, special experience is not needed to elicit them. It is within every student's power to make an accurate and complete examination and

description of the physical signs of a localised lesion. On the other hand, their interpretation is much more difficult, calling for experience and specialised knowledge.

It is most important in performing an examination to confine it to a demonstration of physical signs and strictly exclude the temptation to mix signs with interpretation; this always leads to confusion and sometimes to mistakes in diagnosis.

The examination must be conducted in a good light, with the patient sufficiently stripped for the part to be examined properly. Never be content with a glimpse of a small portion of the patient's anatomy through a gap in the clothing. Adequacy of exposure varies with the nature of the patient's complaint: it involves a view of the whole of the affected part, examination of the regional lymph nodes and comparison with the opposite side.

The patient must be warm, comfortable and relaxed; with the exception of minor ailments, it is nearly always necessary for him to lie on a comfortable couch, with his head on a pillow. This applies, for example, to an examination of the abdomen, hips, knees, etc. In the case of the back, he should be completely stripped, as otherwise it is easy to miss important physical signs.

Some parts are better examined with the patient sitting (e.g. the breast) or standing (e.g. the spine, the inguinoscrotal region and varicose veins); and in many affections of the lower limbs the gait must be observed.

The examination is best recorded under the following headings:

#### (1) GENERAL NOTE

This is meant to convey an idea of the patient as a person: his appearance and posture; whether he looks young and fit, fat or thin; and whether his approach to his illness is frank, or unusual in any way.

#### (2) THE AFFECTED PART

It is usually best to examine the affected part first, rather than perform a full routine clinical examination, which may happen to come to the affected part last. This order is advantageous to the doctor and usually appeals to the patient.

After the affected part has been fully examined, the findings may immediately lead to the examination of other related parts or structures.

#### (3) THE REMAINING SYSTEMS

These should be examined more or less thoroughly, as the case requires.

*Rectal examination* should rarely be omitted. Among other things, it frequently provides evidence of habitual constipation, prostatic enlargement, or unsuspected carcinoma of the rectum.

*Urine testing* should always be carried out. Diabetic glycosuria and

ketosis are important findings in many surgical conditions—notably in boils, carbuncles and infective gangrene.

The application of these principles may be illustrated by reference to examination of a patient with a lump or ulcer.

### (A) LUMPS

A superficially-placed lump is often visible as a prominence, but the essential feature of a lump is *a change in consistency*, enabling it to be distinguished from its surroundings by palpation. In certain circumstances, the terms *swelling*, *mass*, *tumour* and *nodule* are used in preference to the word *lump*, and with approximately the same meaning.

The diagnosis of a lump can often be made by accurate clinical observation:

#### HISTORY

Special points may have been elicited in taking the history, or may come to mind while examining the lump: e.g. a family history of lumps in cases of neurofibromatosis; details of previous operations where the possibility of a metastasis arises; whether it was present at birth; what the patient thinks caused it—for example an injury; and whether it changes in size and in what circumstances—for example the expansile impulse of a hernia on coughing.

#### LOCAL EXAMINATION

This is usually performed in the order: *inspection*, *palpation* and *special tests*, including *percussion* and *auscultation*. From these it should be possible to state the site, size, shape, surface, consistency, degree of attachment to superficial and deep structures, temperature, tenderness, translucency, pulsation, reducibility, and the effect of coughing or straining. The regional glands must always be examined.

#### SITE, SIZE AND SHAPE

The description of a lump starts with its site, size and shape: e.g. 'In the left posterior triangle there was an irregular mass measuring 3 inches by 2 inches'.

#### SURFACE

Next, its properties should be described in greater detail. The mass itself may be smooth, lobulated, craggy, clearly or ill defined; and there may be changes in the overlying skin: e.g. in colour, temperature or vascularity. There may be skin atrophy or oedema and, in the case of a sebaceous cyst, a punctum should be sought.

#### CONSISTENCY

Only five adjectives are used to describe the consistency of lumps. These are: soft, firm, hard, elastic and fluctuant.



*Hard* in physical examination is reserved for a mass as hard as cartilage or bone. Anything short of this is *firm* or *very firm*.

*Fluctuant* is the consistency of a liquid contained in an elastic capsule. It is found not only in a great many cysts and some abscesses, but also in a number of subcutaneous lipomata, and in normal muscle. A bony tumour covered by a substantial layer of muscle may give a misleading impression of fluctuation; it is the muscle which imparts the sensation.

Fluctuation is elicited by placing a finger and thumb on each side of the lump and then dipping the forefinger of the other hand into the middle of it. If it is fluctuant, the finger and thumb are felt to be moved apart by a fluid impulse. This test should be performed in two different planes, as it is positive in some normal tissues such as muscle, which will give the sensation across the fibres but not along their length.

#### TEMPERATURE

The temperature can usually be best appreciated by the ulnar border of the hand, which should be moved about quickly from the affected part to a normal area of skin. Allowance must be made for spurious differences; the affected part may have been wrapped up in a dressing, or left uncovered in a cool room, and the extremities are liable to be much colder in normal people in cold weather.

#### TRANSLUCENCY

This is a test that has to be performed with care. Normal subcutaneous fat is faintly translucent and some subcutaneous lipomata brilliantly so. In some parts of the body, such as the thyroid, transillumination is out of place as it may be misleading. Its chief use is in inguinoscrotal lumps, lymphangiomata and some cysts of the breast.

#### PULSATION

An impulse in a swelling must be carefully examined to see if it is a true expansile impulse or merely a transmitted one. For example, an impulse can be felt in the normal groin on coughing; but an expansile impulse indicates a hernia. Where this is present, if the swelling is gripped lightly between finger and thumb, an expansile impulse will be felt to push them apart, and the swelling to increase in all dimensions.

The same sign must be sought in cases of arterial pulsation; for example, in some subjects a normal abdominal aorta causes transmitted pulsation of any structure lying over it, but only aneurysms show genuine expansile pulsation. Where possible, the artery should be occluded proximal to the mass, which will then cease to pulsate and become smaller and less turgid.

#### PERCUSSION

This is of limited application in the examination of surgical masses. In the abdomen it may be used to map the outline of a distended bladder