

is not only great but is continued far too long a time for other than wire sutures to withstand.

ANKLE-FRACTURES

As to ankle-fractures, I have wished to close with consideration of these injuries, because they best illustrate my general view as to operations. There are a few fractures close above the ankle—fractures of both bones—in which we must both operate and plate. In fractures involving the joint there seems to be no excuse for plates of any kind and in the fresh fractures no excuse for any operation save in one form of lesion, namely, the fracture by inversion (reversed Pott's), in which the large fragment of the internal malleolus is hard to hold and tends toward non-union. In three of these cases I have cut down, replaced fragments and fixed them with a buried staple or a drill used as a temporary pin. In no other ankle-fracture have I found an excuse for incision save for old poor results first seen when referred for correction.

In fibula fractures, in Pott's fracture and in the luxation with fractured malleoli, proper reduction and skilful or reasonably skilful handling of plaster, with early mobilization, give results that leave no excuse for operation. If these cases come to us late with a result that for any reason is poor, operation is called for and can correct any deformity or any disability save the results of overlong disuse, and can correct even these last in part.

Operations conceived to suit the case, based on carefully studied x-rays, operations based in general on the bimalleolar osteotomy first developed by Stimson—that is, based not on reproduction of the old fracture, but on a rearrangement of a joint made plastic, so to speak, not only by cutting but by the rupture of limiting ligaments and scar-tissue by great force—such operations, while not easy, give perhaps the most satisfactory average results of any undertaken on fractures of the joints. The maintenance of such correction once attained needs no more than a suture here and there, of chromic gut or tendon, and a properly applied plaster.

SUMMARY

Now that we have gone through all this detail may I sum up in this way? I believe thoroughly in operation on joint-fractures, and such operations have been a considerable part of my work for nine years past, but it seems to me that we have no right to fall back on open work because we have not kept up with the great advance in other methods due to better recent understanding of principles. Good results without operation are the desideratum; and good results do not necessarily mean absolutely exact reduction.

If we cannot reduce sufficiently well otherwise, then surely we must operate and reduce. Once we have so reduced, the question of retention comes up. In joint-fractures more than in shaft-fractures the use of foreign material is most undesirable and is to be reduced to a minimum. Holding reduction in fresh cases is mainly a matter of external apparatus, not of buried metal appliances.

The late operations in and about the joints are essentially corrections and reductions. They very often do not at all involve reproduction of the original joint-lesion. In a word these late corrective operations are carried out along the general lines of orthopedic operating. They do not belong to the orthopedist, but we must borrow his methods in the way of free bone-cutting, the use of much force in correction and the skilful manipulation of correction plasters for the best results.

483 Beacon Street.

THE SURGERY OF BONES AND JOINTS *

LEONARD W. ELY, M.D.
DENVER

The surgery of diseases of bones and joints has lagged behind. It is an important branch of medicine and will well repay our study. Possibly a wide-spread cult owes its inception to our neglect. No branch of the subject appears to be well established. The pathology, the symptomatology, the diagnosis, the treatment—in each confusion reigns supreme. I venture the opinion that no one statement I could make here to-day would pass unchallenged, whereas in abdominal surgery and in the surgery of various other regions, there is at least a common meeting-ground. Perhaps this difference of opinion is due to our reliance on clinical experience. We owe little in the progress of medicine to clinical experience—too little to justify a blind reliance on it, and yet often a new idea meets strenuous opposition because it seems to conflict with clinical experience.

It is hard to overestimate the importance of correct work on bones and joints. If we remove a normal appendix under a mistaken diagnosis, no great harm will probably accrue to the patient, but if we unnecessarily resect a joint or amputate a limb, we have partially destroyed the patient's usefulness for life.

I approach my subject, then, with some trepidation, and will say in preface that what I shall say is based on a laboratory study of about 100 specimens of bones and joints, checked up by a clinical study of some of the patients and by a study of the case histories. Part of it is not demonstrated fact. Some of it is theory, but theory based on careful pathologic work.

There are six tissues to be studied in bone and joint diseases; namely, bone-tissue proper, marrow, periosteum, cartilage, synovia and ligament.

THE BONE

Bone-tissue is the same wherever it is found and varies only in its arrangement and in its amount. It is not subject itself to inflammation, simply responding to the action of its contained marrow. Usually a mild irritation in the marrow produces a hypertrophy of bone, a stronger irritation an atrophy. If the inflammation in the marrow be very severe, it kills the bone. In almost all diseases of bones, the bone-tissue receives most of our attention, whereas it is of minor importance, like the walls of a factory in which various activities are carried on, or like the shell of an oyster. This passive rôle of the bone-tissue is recognized in some diseases of the shafts of the long bones, but has generally escaped attention in disease of their extremities. Here we are too apt to study the bone instead of its contained marrow. The condition is really the same in the two localities.

When we would find out why any disease locates itself where it does, we study the structure of the tissues in that locality. Thus, carcinoma often starts at a spot where the character of the epithelium changes; gonorrhea affects mucous membranes with a certain kind of cells. As far as I can ascertain, this method of study has never been followed with bone and joint diseases. We go far afield and adduce abstruse and difficult explanations, such as the arrangement of blood-vessels and the macroscopic structure of the bone.

* Read in the Symposium on the Surgery of Bones and Joints in the Section on Surgery of the American Medical Association, at the Sixty-Third Annual Session, held at Atlantic City, June, 1912. The other papers in this symposium, together with the discussion, will be published next week.

THE MARROW

As you know, there are two kinds of marrow usually found in bone—the red or lymphoid, and the yellow or fatty. You know also where each of these is found. If we will recognize that the marrow is the essential factor in all bone-disease, and if we will bear in mind the situations in which each kind of marrow is found, we shall readily understand why certain diseases affect the shaft of the long bones, certain others their extremities, and possibly still others both shafts and extremities. We shall put aside such vague terms as “rapid growth predisposing to infection,” “congestion following injury” and shall study rather the constituents of the marrow at various periods of life and their vulnerability to certain kinds of infection. We shall lay less stress on “diminished resistance” following chilling of the surface as a cause of acute infectious osteomyelitis, and shall study instead the effect of chilling of the surface on the bone-marrow. When we find that acute pus infection occurs in the marrow of the shafts and tuberculosis in that of the extremities of the long bones, we shall seek the explanation in the different constituents of the marrow.

In chronic joint-disease we shall understand the bony atrophies and hypertrophies if we regard them as mere expressions of changes in the lymphoid marrow and synovia, and for a better knowledge of them shall push our studies in these marrow-changes. Study of the bone-changes themselves has hitherto been practically barren.

A proper comprehension of the location of disease in the meshes of the bone-marrow will soon relegate the popular operation of bone-scraping to the obscurity it deserves. The curet in bone-surgery does much more harm than good.

Bearing in mind that unmixed tuberculosis of joints is limited to the synovia and red marrow, we shall not recklessly plunge a knife into a cold abscess, and, by infecting it, convert a strictly localized and comparatively harmless disease into a wide-spread and very dangerous one.

THE PERIOSTEUM

In our study of the periosteum it will be necessary to remember that histologically it consists of two layers, an inner or cellular, and an outer or fibrous layer. The inner layer bears an analogy to the marrow of the subjacent bone and is vulnerable to the same diseases; the outer serves as an envelope for the bone, and in all bone diseases may be disregarded except for its mechanic function. In studying specimens under the microscope one gets the impression that the inner layer corresponds to the synovia, the outer to the ligament.

THE ARTICULAR CARTILAGE

The joint cartilage has been the subject of much discussion. I shall not here attempt to go into details, but shall say simply, as my personal opinion, that the cartilage is not subject to inflammation or directly to disease. I believe that its rôle is always a passive one. It reacts to disease of the subjacent bone-marrow and, to a lesser extent, to disease of the synovia. It changes in its structure according as there is motion or a lack of motion in the joint. It is absolutely unaffected by the presence of fluid in the joint. If layers of fibrin are ever precipitated on its surface (which I doubt), they are without effect on its structure. The cartilage atrophies and hypertrophies very much as do the bone-trabeculae. Only on this hypothesis of the passive rôle of the cartilage can the changes in it be explained.

THE SYNOVIA

The synovia, a lymphoid structure, a connective-tissue membrane, is to diseases of the joint what the marrow is to diseases of the bone. It is an active and important tissue in all joint-diseases. It may be involved by extension in disease of the lymphoid marrow, and *vice versa*. In all operations on the joints or wounds of them it is the infection of this tissue that is to be dreaded.

After destruction of the joint and complete ankylosis, the synovia and the lymphoid marrow disappear, and with them disappear all chronic joint-diseases that existed in them alone, such as tuberculosis and the mis-called arthritis deformans; hence the uselessness in resection of these joints, of attempting the tedious task of dissecting out the synovia and of removing all the infected marrow. All one needs to do is to produce an ankylosis in order to effect a cure.

THE LIGAMENT

The ligament, composed of fibrous tissue, plays a passive part in all joint-diseases and may be ignored except for its mechanical function. It should be regarded as the continuation of the fibrous layer of the periosteum.

In our study of all, or of practically all, diseases of bones and joints, we recognize three active tissues, namely, (1) the marrow of two kinds, (2) the synovia and (3) the inner layer of the periosteum, and four passive tissues, which in our treatment we may almost disregard. We focus our attention on the active tissues, and study the changes wrought in them by operation and by disease.

Our credulity in the matter of joint-diseases is remarkable. The painstaking and brilliant work of Nichols and others attracts little attention, but any enthusiast can get a trial for a panacea the efficacy of which is supported by no real evidence whatever.

The treatment of bone- and joint-diseases must be founded on a correct pathologic base. Until we require one who advances a therapeutic idea to found it on something else than his individual clinical experience, we shall never take the treatment of bone- and joint-diseases out of the realm of empiricism, but shall drift from one sort of injection to another, to trypsin, to thymus-gland extract, to passive hyperemia, to baking, to apparatus, to extension, to drugs, to confusion.

520 Metropolitan Building.

INTESTINAL COMPLICATIONS IN GYNECOLOGIC OPERATIONS *

LEWIS S. McMURTRY

LOUISVILLE, KY.

The intestinal complications associated with inflammatory diseases of the pelvic organs are the most serious as well as the most common of all the possible complications of gynecologic operations. Not only do these complications affect those portions of the intestinal tract which occupy the pelvis and are normally adjacent to the uterus and its adnexa, but remote portions of the intestines, such as the transverse and descending colon, may under exceptional conditions be involved.

As a rule the pathologic conditions leading to intestinal involvement under this head are inflammatory in

* Read in the Section on Obstetrics and Gynecology of the American Medical Association, at its Sixty-Third Annual Session, held at Atlantic City, June, 1912.