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PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*Acute Troubles of Bones.*^a By JOHN S. M'ARDLE, M.Ch. (*Hon. Causâ*), R.U.I., F.R.U.I., F.R.C.S.I.; Professor of Surgery, National University of Ireland; Senior Surgeon, St. Vincent's Hospital; Consulting Surgeon, National Hospital, Holles Street, and Children's Hospital, Temple Street, Dublin.

DURING forty years of strenuous hospital work I have been driven to the conclusion that much too little attention has been given to the diagnosis and treatment of bone disease. I have frequently heard even the Resident Pupil say as I went round the wards: "Oh, it is only a bone case!" and I have persistently forced upon you my idea that the word only has no place in our vocabulary. (The most trivial affection of bone deserves prompt and intelligent attention). At the present moment you see around you in this ward cases which justify my warning you as to the necessity for early diagnosis and prompt treatment where acute affections of bone arise.

The deplorable state in which you see these poor creatures should stimulate you to leave nothing undone

A Clinical Lecture delivered to the Students of St. Vincent's Hospital.

to make yourselves familiar with the course of such cases, so that later on you may deal with such patients in a thoroughly surgical manner. Modern surgery is simplicity itself if you become diagnosticians. Proficiency in diagnosis cannot be attained without a sound working knowledge of physiology and anatomy. I have often told you that the *minutiae* of these branches is not essential to success. Unless you have in addition a fair acquaintance with pathology and bacteriology your understanding of the problem of bone disease will be limited indeed. To-day I propose to sketch for you the life history of a case of osteomyelitis occurring in a young subject, then I hope to make clear to you the process which goes on in the bone and periosteum from the primary invasion to the death of the bone in cases that are overlooked. Afterwards I shall indicate the proper lines of treatment and show you the instruments which surgical genius has devised for the proper treatment of these disorders.

A lad playing football or hurley goes into the field apparently in perfect health; in the interval of the game he sits on a fence or on the cold ground; he then finishes the game. That night or some succeeding night he gets a rigor, tosses about in bed and is sleepless from local pain. Next day the pain is more marked over the affected part—hip, knee or ankle as the case may be. Tenderness soon supervenes and swelling follows, then redness, later superficial œdema. The changes are rapid, and general constitutional disturbances show themselves in an incredibly short time, profuse sweating, furred tongue, quick pulse and high temperature— 104° and 105° . The local signs progress rapidly, the limb takes on an erysipelatous appearance with much swelling, and now there is a point of marked tenderness usually near the line of the epiphyseal cartilage, the bone seems enlarged, but this is at first only periosteal and para-periosteal effusion. When in the course of the infective process, or when from any source pus-producing organisms (often staphylococcus) enter the blood—if a proper nidus is prepared for them by blood

stasis from cold or local trauma—these bacteria are stopped at the terminal capillaries of the nutrient artery, they proceed to multiply with great rapidity. The most frequent site for their arrest is on the diaphyseal side of the epiphyseal cartilage. A very short time suffices to materially impair the vitality of the neighbouring tissues, and soon the vessels of the medulla become thrombosed, thus producing further pabulum for the invading cocci. Later the vessels in the Haversian canals become engaged and a ready passage of the pus-producing material is allowed, then sub-periosteal effusion separates the vascular covering of the bone from the shaft, and soon necrosis follows. All this destructive process is only a matter of days at most, and will you remember that on your intelligent observation and prompt interference the limb, and often the very life of the patient, depends?

Here are many specimens of limbs amputated for the sole purpose of saving the lives of patients, the subjects of disease which in its early stage was quite easy of arrest. Some little time ago at the Surgical Clinical Examination I asked a student what he would do for a case of acute osteomyelitis, and he said "I would cut down and scrape the bone." He is still a student because he told me he would carry out such an insane procedure. It is this playing with surgery which has allowed you to witness so many grave cases as are now occupying these beds. Look at this specimen; the tibia of as fine a boy as I have ever seen. You saw me amputate his leg after I had studied the excellent radiograph produced for me by Dr. O'Hea.

(See Plate I.)

You will observe that there are many loose pieces of dead bone (called sequestra) lying in the centre of a very enlarged and rarefied involucrum, through which many openings are visible. Corresponding to each of these openings you saw on the skin masses of granulation tissue the size of a split lemon, all bathed in pus. These excrescences marked the site of incisions through which

the tibia had been scraped. Now can you see why I did with that student what I am always loath to do?

Common sense is the bed-rock of surgery. Is it not plain that a disease engaging the centre of a bone cannot be relieved by any superficial procedure? To reach the diseased focus you must get through the bone, and after you have incised, raised and retracted the periosteum you must chisel or trephine the bone; for choice, the latter.

(Fig. 1)

M'Ardle's Trephine for Long Bones.

And I now show you a special trephine which I introduced thirty years ago for this particular purpose.

You cut down on the "point of greatest tenderness," because this is the place where the diseased focus will be struck readily and quickly. Then the offending material and the surrounding invaded tissue are removed with a strong scoop. The cavity is now swabbed with pure carbolic acid, and afterwards flushed for some time with normal saline solution to remove the redundant acid.

Then the bone cavity and the wound are tamponed with iodoform gauze or gauze saturated with magnesium chloride solution. In the meantime you should have an autogenous vaccine made so as to hasten up local repair, as the tissues still harbour some of the germs.

If taken early this procedure will most certainly prove successful, and should you elect to watch carefully the cases now under treatment you will find that healing by granulation takes place rapidly.

Where a large piece, say of the tibia, dies suddenly, the question arises :—Do you remove the sequestrum now or at a later period? With a normal fibula acting as a splint I would remove the sequestrum now. Keep the limb in extension with a Neville's splint until healing occurs, and then remove a length of bone from the sound tibia and fix it to the ends of the resected side by bronze wire suture. This new piece serves as a scaffolding for the growth of the new tibia. The essential condition before implanting the new piece is that suppuration has ceased to exist.

When the acute trouble does not destroy a mass of bone, but is limited in extent (owing to the vitality of the patient) as in the case of E. M., 19 years old, who, after a slight injury to the upper arm by a hockey stick, suffered acutely for some time and then got comparative relief.

You will notice in Plate II. a clear space indicating the locality in which a staphylococcal invasion occurred causing absorption of bone A., Plate II. In the same plate there is ample evidence of sclerosis of the shaft of the humerus at B. Trephining, with after treatment, as mentioned above, completely cured this case.

If a long sequestrum be present the best procedure is to trephine either end of the bone and join these openings by a properly adjusted Albee double saw, thus removing a fairly wide and long strip of the involucrum. This procedure gives a free entrance to the medullary canal and the necrosed bone, removal of which is sometimes fol-

lowed by much bleeding. The skin, soft tissues and periosteum are pressed into the cavity leaving a sulcus, which, after disinfection, is packed with iodoform gauze, and allowed to granulate. In most cases a useful limb is the result. Should the shell of sound bone be very thin, osteoplastic operation may be necessary later.

You saw the patient from whom I removed this leg, as great a picture of misery as you will ever witness—years of pain, years of personal discomfort, years of misery for those about him. This is only a faint word picture of this man's state. All could have been avoided had someone just taken the trouble to think. Beginning as an acute osteitis, immediate and thorough operation offered a sporting chance of rapid and complete recovery, instead multiple skin incisions were made, sufficing only to drain the subcutaneous tissue.

The result of persistent periosteal thickening was a cutting off of the blood supply to the skin leading to the extensive ulceration which you witnessed. Here are the bones showing the extent to which unchecked osteo-periostitis may go. Plate III. is a good picture and makes quite clear that nothing short of amputation would be of use in this case; add to the long suffering, with sleepless nights and trying days, the loss of a limb, and think how sad it is that all this was unnecessary if early diagnosis and prompt treatment had been available.

ART. II.—*Some Preliminary Points in the Diagnosis of Amæbic Dysentery.*^a By JOHN SPEARES, B.A., M.B., B.Ch, B.A.O. Univ Dubl.; Assistant to the Professor of Pathology, School of Physic, Trinity College, Dublin; Temp. Capt., R.A.M.C.

I HEARD a very distinguished protozoologist, Col. Wenyon, stating that, in his opinion, in the next great European war, should one unfortunately occur, each soldier will be

^a Read before the Section of Pathology in the Royal Academy of Medicine in Ireland on Friday, December 7, 1917.