ON SOME ELEMENTS OF SUCCESS IN EXCISION OF THE KNEE-JOINT.¹

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THE surgery of to-day is a science of great principles, but an art of small details. In view of the latter part of this postulate, I think it not without interest to relate a few of the practical conclusions I have come to with regard to certain methods to be followed in excision of the knee-joint, which, although small in themselves, help to greater ends. I do not purpose going into the subject generally, but stating some opinions I have formed as a result of my own practice, and my observation of that of others. It is manifestly of interest that surgeons should state their views broadly; we have too much in our current literature of details of cases, and too little of the general ideas arrived at by men of experience. My strong sense of the value of communications of this class is my reason for wishing to state the conclusions I have formed on two or three points connected with excision of the knee, for my operative material has been at least sufficiently large and extended to justify me in putting forward what it has taught me. Besides, in a city so well supplied with hospitals as Dublin, and where they are so close together, surgeons see an amount of the practice of each other which magnifies their opportunities.

While I would not say a word to disparage the operation of knee-excision in suitable cases, I think its results have been too favourably stated, and that many instances recorded early in their history as ones of cure have later on shown a return of disease. In Ireland our experience should naturally be less favourable, as the bulk of our cases occur among tuberculous subjects. Age has been over-estimated as an influence for good or evil in this operation. Two of the best results I have had in my own practice were in patients who were aged 5 and 39 years respectively. The first, a scrofulous subject operated on more than a year ago, is in active health, and able to walk with any ordinary child of her age; the second, a farmer whose right knee I excised seven years ago when he was dying of pain and hectic, leads an active life, and can walk vigorously all day long. It is not correct to teach that removal of an entire epiphysis from a young bone of necessity involves a short limb. The child above referred to had such extensive disease that the entire epiphysis of her femur was removed, but only the upper surface of that of the tibia. She has grown rapidly since the operation, but the limb on which I operated is not an eighth of an inch shorter than its fellow. Nature is a bountiful mother, and a compensatory growth often takes place in those epiphyses which are not removed, so as to preserve activity and symmetry. The immature human being seems to have certain qualities of free and exceptional growth, which are perhaps an approach to the conditions of those lower creatures to whom the human embryo is related more closely than the developed adult.

Given a case of disease of the knee-joint well selected for operation, there are three factors of superlative importance in its prospect of success—

1. Complete removal of all diseased structures.
2. Relative permanence of dressings.
3. Thorough fixation of parts.

1. As regards the first of these I agree with Professor Humphry that prolonged scrofulous suppuration is the most common cause of failure in this operation. It is of paramount importance to remove thoroughly not only diseased bone, but any soft structures which are engaged. The tissue which is at once the most rich in tubercular foci, and the most difficult to remove owing to its complex involutions, is the synovial membrane. I have latterly made it a general practice to divide the flap in the middle line as high as the synovial pouch extends, and to make a careful dissection of the exposed membrane. This is an extremely tedious and troublesome proceeding, requiring the use of the scissors and of Volkmann's spoon as well as the knife. Of late my knee-excisions occupy from an hour and a half to two hours, but surgeons who follow this practice will find their trouble rewarded by their results. I feel that some emphasis should be laid on this point, because it is not always sufficiently attended to; and no better proof of this can be found than the comparatively short period usually occupied by an operation which, in cases where the synovial membrane is much diseased, demands a special expenditure of time.

2. To the relative permanence of the dressings employed, too much importance cannot be attached. To change a dressing soon or frequently

means distress to the patient, want of rest to the part, and a greater risk of septic troubles. The thermometer, aiding the educated eye and hand, will tell the surgeon when he must unseal his dressings. In all my late cases, I have found it possible to keep the initial dressing on for from two to three weeks, and have once found the wound completely healed on its removal. The first essential to securing permanence in dressing is that the wound should be absolutely dry and free from all oozing. With a view to the better attainment of this end I have relinquished the use of Esmarch's bandage, which we formerly employed in the Richmond Hospital in most cases of excision of joints. I use no tourniquet; each vessel is secured by a catch-forceps, and tied as soon as possible. The hemorrhage is extremely small, and, independent of the disappearance of the subsequent bleeding which follows the use of Esmarch's bandage; no matter how skillfully applied, there is less actual loss of blood than when it has been employed. The method of dressing I have found most advantageous has been used in conjunction with such usual strict antiseptic aids as I need not detail, and is as follows:—The wound having been closed, the knee is carefully and evenly bandaged with carbolised gauze or sublimated muslin rollers, which keep the parts evenly and gently supported for some inches above and below the seat of operation. The knee is then enclosed in a thick covering of iodoform cotton, evenly applied with a bandage, so as to give uniform and elastic support. The entire limb is bandaged with flannel rollers, one being applied below the dressings, and a second above them; the splints are then applied.

3. Thorough fixation of the parts is a problem the difficulty of solving which is shown by the variety of splints and methods of suturing the bones which have been proposed. The splints I have used of late years are those of Mr. Patrick Heron Watson, as modified by my colleague, Mr. Thomson—that is to say, they are made of hoop-iron instead of cylindrical metal. When so constructed they can be used without cross-pieces, and are not likely to slip to the side. The bridges opposite the knee afford every facility for changing the dressings without disturbing the splints. The use of plaster-of-Paris as a means of applying the splints I have abandoned; it is likely to get defiled by discharge, if there be any, or by excreta in children, it soon becomes loose, and its removal causes great pain and disturbance to the patient. If the splints are applied with flannel bandages they can be removed without inconvenience, particularly when the bones have been secured by the method presently to be detailed. No splint will, however, give by itself anything like perfect fixation to the divided ends of the bones, and all recorded means of suturing them which I have seen tried have been either defective or actually injurious. In considering this difficulty, I devised a plan of securing the tibia and femur to each other, which I first put into practice on March 3rd, 1886, and which meets the want. I showed a dry preparation to illustrate the method, and a patient in whose case it had been used, at the Academy of Medicine on May 21st, 1886. I also brought the treatment and the result of its application before the Dublin Biological Club on October 16th, 1886, when my friend, Professor Bennett, suggested the application of the term "dowelling" to the procedure—a good explanatory name, and one which I have adopted.

The old saying, that there is nothing new, is borne out in this case, for in the JOURNAL of February 12th of the present year Mr. Morrant Baker records a method of securing the bones, which resembles mine so closely that I might be supposed to have taken the idea from him, as he has used his plan since 1872. It was, however, not derived from the practice of any other surgeon; and, as it differs somewhat from his, and has given most satisfactory results, it may be worth description.

When the wound is ready to be closed, having punctured the skin on each side of the tubercle of the tibia with a tenotome, I insert a steel awl into the bone at each of these points. The instrument is made to enter the tibia in a direction upwards, backwards, and outwards from the middle line of the limb. It is only pushed into the bone for about three-quarters of an inch, so as to penetrate its compact covering, and give the proper direction to the silver dowels afterwards used. A silver wire, a shade larger in diameter than the awl, having its end filed to a chisel-shaped edge, is then pushed into each perforation, and the femur being held in good relation with the tibia, is made to penetrate the upper bone as far backwards as the compact covering of its popliteal surface. The dowels may be either made to diverge or approximate as they pass upwards. The former direction is best, as they will, when so introduced, give greater fixity and freedom from rotatory motion than when crossed, as directed by Mr. Morrant Baker. They should not be parallel, as they then offer little resistance to vertical displacement. In the case of very young children, one dowel introduced in the middle

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line below the tubercle, and directed upwards and backwards, will be found sufficient. It is important that the dowels should be a little larger than the awl, so as to fit tightly. The size most suitable is No. 14 Birmingham wire-gauge, that is, about the calibre of a French No. 7 bougie. The soft edge of the silver passes readily through the cancellous tissue, but with difficulty through the compact layer which covers it, and therefore, with a view to avoid entering the popliteal space, silver should be preferred to the steel recommended by Mr. Marrant Baker. It seems to me to be also preferable to the bone pins recommended by Mr. Howard Marsh, more easily introduced, with less injury to the cancellous tissue, and less liable to give way under any sudden strain. The dowels are then cut half an inch from the skin, and their ends included in the dressings. I have usually removed them at the first or second dressing, from two to three weeks after the operation, and generally found the bones firmly united. It is better to use the dowels themselves to bore their way into the bone, once the initial direction has been given by the punctures with the awl, as they fit more tightly, and thus afford greater immobility. They cause no irritation, and the sinuses remaining when they have been withdrawn heal almost immediately. Should these sinuses be found, on larger experience, occasionally to remain open, it would indicate the necessity for bone-drainage, which it seems to me they are capable, under the circumstances, of effecting.

Diagram of front of right knee, to show position of dowels when introduced.

These dowels have been used during the past year not only by myself and my colleagues, Sir William Stokes and Messrs. Corley and Thomson, but by Mr. Franks, of the Adelaide Hospital. They all speak highly of their merits. The fixity of the bones is so complete that the patient is quite free from pain, and does not fear to move the limb or submit it to dressing or manipulation. Those who have seen the pain and terror of examination felt by children after this operation, and the constitutional disturbance due to these causes, will understand the advantage of a method which allows the limb to be moved freely when necessary.

As examples of the advantage of dowels, I may quote three cases in which I have used them.

CASE I.—Maggie M., a delicate strumous-looking girl, aged 17, with extensive disease of the bones, cartilages, and synovial membrane of the right knee, and much suppuration about the joint, was operated on in the Richmond Hospital on March 3rd, 1886. The first dressing was on March 17th, when one dowel was removed. The second

dressing was a week later, when the second was withdrawn. The part was afterwards dressed occasionally at long intervals, and the patient left the hospital perfectly recovered and able to walk, exactly three months after the operation.

CASE II.—Hannah Q., a scrofulous child, aged 5, with enlargement of the epiphyses of most of her bones, and with pulpy disease of the entire synovial membrane of her left knee, and extensive suppuration in the joint, was operated on in the Richmond Hospital on April 5th, 1886. This case recovered without any suppuration, pain, or rise of temperature. It was dressed only twice; the first dressing being fourteen days subsequent to operation. In five weeks from the date of excision the child could walk without pain or assistance, and in a little over six weeks was exhibited at a meeting of the Academy of Medicine, perfectly strong and well.

CASE III.—Richard C., aged 10, a delicate boy in a hectic condition, with extensive suppuration and disease of all the hard and soft tissues about his left knee, was operated on in the Richmond Hospital on November 3rd, 1886. The first dressing, when the dowels were removed, was on the sixteenth day. The bones were then firmly attached to each other. He suffered no pain or local inconvenience, but soon developed pulmonary phthisis, from which he died in the February following the operation.

These three cases, all occurring under unfavourable circumstances, both local and constitutional, afford fair examples of the use of silver dowels in fixing the bones. In my own practice I could quote no other group of three such unpromising cases, where the older methods of fixation were employed, where such rapidity of union occurred, and such complete immunity from suffering. These cases are not selected ones; they are the only instances in which I have myself used the dowels, and were taken at random as they offered themselves for treatment. My colleagues, who have all employed the same procedure, can add to the list of its successes.

LICHEN ANNULATUS SERPIGINOSUS (WILSON).

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ON January 8th of the current year there appeared in the JOURNAL a short paper with the title given above, by my friend, Dr. T. Colcott Fox. In it the author briefly describes three cases which came under his observation, and suggests that these represent the disorder termed by American dermatologists "*seborrhoea corporis*"; and that this was the malady to which the late Sir Erasmus Wilson gave the title, "*lichen annulatus (seu circinatus) serpiginosus*."

As the subject is both suggestive and interesting, I take occasion to point out a somewhat different view of the disorder, which seems to me indicated by one of these titles. It is proper, however, to begin by admitting very freely that the reproach of dermatology is its bungling nomenclature; and that, in the present instance, it is responsible for a part of the confusion which it is desirable to remove.

The disease which seems to me to be at least included in the description appended by the late Sir Erasmus Wilson to his term *lichen annulatus serpiginosus* does not correspond with what my American colleagues would generally agree to call *seborrhoea corporis*; and yet, unless I greatly err, they would be willing to use this latter name as descriptive of the interesting cases described by Dr. Fox.

Now, laying completely aside, for the moment, the several names which have been employed in this connection, let the reader understand, clearly and without reserve of any kind, that there is a particular disease of the skin, *sui generis*, differing from all other cutaneous affections, shading, perhaps, into others at some points, but perfectly distinguishable by an expert in its specific identity, relatively rare of occurrence, and, under different titles, recognised, defined, and limited by a group of authors. This disease is characterised in both sexes, at a relatively early period of life, by a superficial efflorescence, displayed chiefly over the anterior and posterior surfaces of the upper portion of the trunk, less often over the extremities, in the form of multiple, discrete, and at times confluent, definitely circumscribed, ovalish or roundish discs, split-pea to large coin in size. They are slightly elevated, occasionally slightly depressed beyond the general level of the integument; and on careful inspection, these discs are seen to be made up of macules, papules, or maculo-papules, coloured in a faintly rosy, yellowish, tawny, or somewhat darker hue, and covered with typical, scanty, rather adherent,