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REMARKS ON EXCISION OF THE SHOULDER-JOINT.

Read in the Section of Surgery.

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Among the operative measures as regards the merits of which surgical opinion is undergoing change, resection of the shoulder must be mentioned. It has recently been stated by a recognised authority, Mr. Holmes, that the results obtained after this operation are "probably inferior, certainly not superior, to those of natural ankylosis," and that, for this latter condition, "no cutting operation is justifiable." This view is one we should be slow to endorse, for now there are few surgeons of operative experience, and who understand the principles that should guide the after-treatment of such cases, who would not be inclined to say that the results obtained after this operation are not only satisfactory, but, in truth, as a rule, and that whether done for injury or disease, in childhood or adult life, are superior to those obtained after most of the other resections of joints. For example, the fact of the patient being an adult need not, as in the majority of other excisions of joints, excepting, perhaps, that of the elbow, deter the operator from entertaining favourable anticipations as to the result. There is, if correctly performed, less shock, difficulty, hæmorrhage, risk of wounding important nerves, and a greater probability of obtaining a freely movable false joint, than after any other similar operation. It is not difficult to understand the disrepute into which the procedure fell, justifying, perhaps, the remark quoted already of Mr. Holmes, when it was performed by such methods as those of Moreau, Manne, Sabatier, Morel, Lisfranc, Nélaton, and others—operations long since consigned to a well-deserved oblivion, and when lengthened fixation of the limb was rigidly enforced after the excision. The remarkable change for the better in the results now obtained is undoubtedly due to the abandonment of flap-methods of operating, to the adoption of the Ollier or Langenbeck-Ollier line of incision, to antisepticism, promoting thereby rapidity of union; and lastly, and perhaps as regards the ultimate result most important of all, to the early commencement of passive movements, exercises of the arm, and shampooing, which so materially aid in preventing the formation of fresh internal adhesions, and promoting restoration of muscular power. If the adoption of judiciously directed gymnastic exercises and shampooing be had recourse to at an early date after the operation, an all-important factor in the after-treatment of such cases, the good results above indicated, and which should be hoped for in all instances, can reasonably be expected, and that not only in early but in adult periods of life.

I can best emphasise these statements by relating—which I shall do with all possible brevity—the principal facts connected with three cases of interest in which resection of the shoulder-joint was indicated.

The first of these cases (from notes taken by Dr. J. F. Knott) was that of James McK., a strongly built man, aged 40, a farmer by occupation, who first came under observation in the Richmond Hospital in June 1879. He stated that, two years previously, he noticed for the first time a little stiffness and pain about the left shoulder-joint. This appeared without any assignable cause, and slowly but steadily increased. On making any sudden movement of the joint, a stinging pain suddenly caught him, which commenced in the vicinity of the acromion process, shot down along the outer side of the arm, and stopped as suddenly as the cessation of the motion which gave rise to it. This stinging pain always travelled along the whole length of the humerus, and invariably stopped short at the elbow. Movements of a rotatory nature were those most surely followed by it, and the combination of muscular actions called into play in—to use his own words—"putting on his coat in the mornin'," was found to act as a special irritant. Still, the pain was not very acute, and did not interfere seriously with his occupation as a labourer on his farm. At the same time, there was some tenderness on deep pressure, and he found he could not lie on that side—the left—without very considerable discomfort being experienced from a dull aching pain in the shoulder-joint and the upper third of the arm. There was no enlargement, nor superficial redness. The appetite continued good, and all the various excretory functions were duly performed. About five weeks before his admission into hospital, he had been exposed to severe cold and wet for a whole day. He was engaged in the formation of a drain in a "stiff gravelly soil;" and, as the nature of his task necessitated his being stripped to his shirt-sleeves, the affected limb was very much exposed to the cold and rain of an exceptionally severe day. The result was that he had a severe shivering fit on that evening after returning to his home; and after a night of disturbed and unrefreshing sleep, he found himself "sick and hot" on the following day.

The ailing shoulder now felt very stiff; and, on examining the part more particularly, he found that it was very much swollen, the tumefaction engaging, also, the upper half of the arm. Still, there was no superficial redness, and there was no acute pain. The original stinging pain was rather diminished than increased. The sensation was one rather of fulness and stiffness. The swelling so formed never disappeared; on the contrary, it increased very slowly indeed, but surely, up to the date of his presenting himself at the Richmond Hospital.

On examination at the time of admission, there was obviously very considerable thickening of the upper half of the shaft of the humerus. The enlargement evidently engaged the head of the bone as well, and a direct result was the interference with the freedom of the movements of the joint, and a grating sensation was conveyed to the hand when the elbow was removed to any considerable distance from the side of the body.

The case was treated mainly by fixation of the limb by means of leather and poroplastic splints and mercury; the latter being administered by means of inunction. After some weeks, a marked improvement was observed, and the patient returned home; but, on February 11th, 1880, he was readmitted into hospital, when I found that two sinuses had formed in the neighbourhood of the shoulder-joint; one on the anterior, and a second on the posterior, aspect of the joint, below the spine of the scapula. To determine more accurately the amount and situation of the disease, I made an exploratory incision, posterior to the joint, over the spine, down to the bone, and along the track of the sinus, but failed to find any denuded bone. On this wound being healed, I then (February 25th) exposed the head

of the bone by a long anterior incision (Langenbeck-Ollier), and found the head of the bone partly absorbed, and completely denuded of cartilage. This was then removed by a somewhat oblique incision carried from above downwards and inwards. The appearance of the bone through the line of section was satisfactory. No disease in the glenoid cavity was observable. A conical antiseptic pad being placed in the axilla, a drainage-tube was inserted in the wound, and the usual Listerian antiseptic dressings applied. No splints, or any mechanical appliance other than the antiseptic gauze-bandages, were applied. Primary union took place. The drainage-tube was removed on the third day, and the process of union progressed steadily, without suppuration, but with a certain amount of serous discharge. On March 5th, the wound was closed, and the gymnastic exercises commenced. These consisted in flexion and rotation, circumduction, abduction, and adduction of the arm, combined with daily shampooing of the muscles of the shoulder. On April 24th, he returned home, all the portions of the joint being, to a great extent, restored; and, a year subsequently, I obtained a letter from the medical gentleman, Dr. Faussett, who forwarded the case to me, to the effect that there was excellent restoration of the movements of the arm, and that the patient was able even to use his spade in digging the fields, and other agricultural employments.

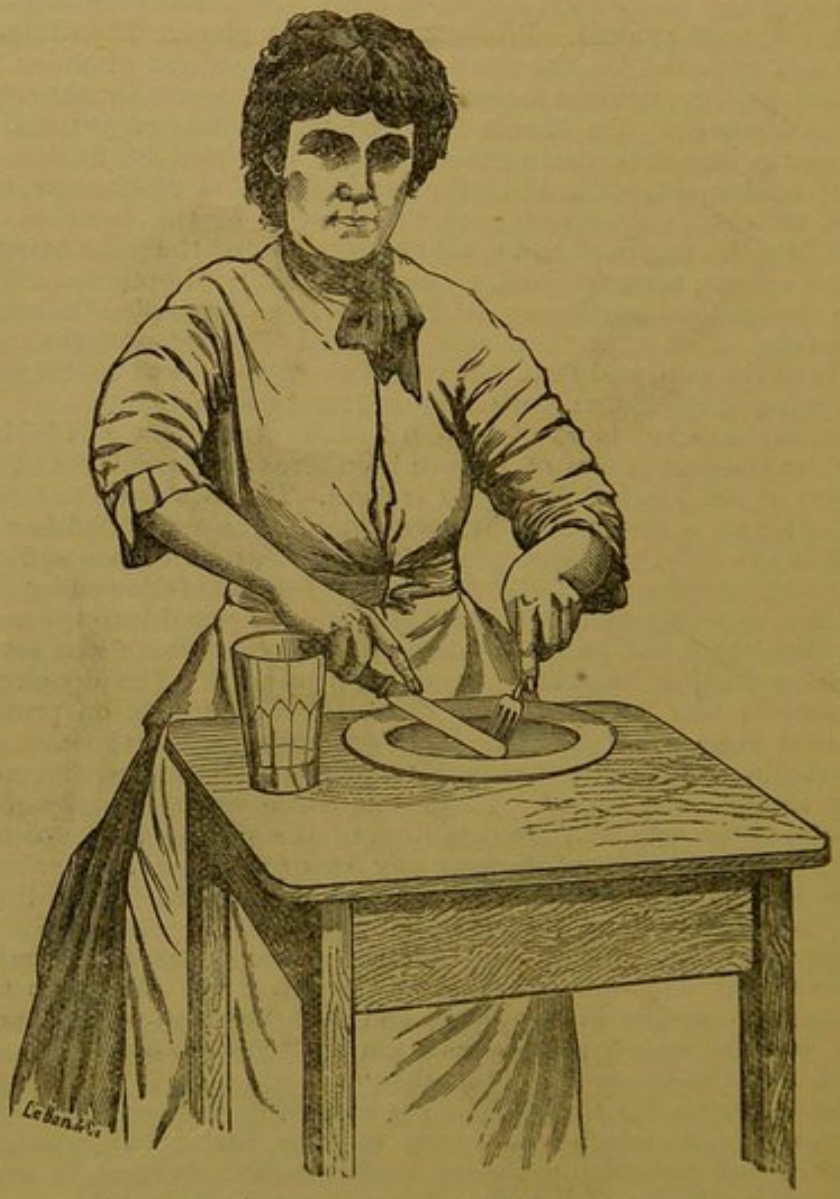
The second case is one to which I shall very briefly allude, inasmuch as the particulars of it have been already the subject of discussion at the Surgical Society of Ireland. The patient was a female, aged 24, and a housemaid by occupation. She attributed her ailment in the right shoulder-joint, from which she had been suffering for twelve months, to a fall downstairs. This was followed by pain, swelling, and ultimately by an abscess, which opened into the axilla. The swelling in the joint subsided, but the pain, which was severe, and of a darting, shooting character, continued. The opening of the abscess was followed by a sinus, through which, on probing, denuded bone could be felt. Any attempt to move the arm was attended with the acutest pain, so much so as to make her scream when the arm was stirred. There was considerable atrophy of the muscles of the arm, and the condition of the patient was such as to completely prevent her following any occupation; and, to her mind, there was no alternative to the removal of the limb but a life of suffering and misery in a workhouse hospital.

The view I took of this case—one which was subsequently verified—was that it was one rather of ulceration of the cartilages than any carious process in the bone, and that the well-marked ankylosis was due mainly to the formation of adventitious fibrous bands which held the bones firmly together.

The operation, like that done in the preceding case, was by a single oblique incision, which commenced midway, and a little above the coracoid and acromion processes, and extended downwards and a little outwards for a distance of four inches and a half. Owing to the great amount of ankylosis, there was much difficulty in protruding the head of the bone through the wound. When it was accomplished, it was found to be completely denuded of cartilage. The healing in this case was somewhat more protracted than in the last case, and, consequently, I was not able to commence passive motion until the early part of January. This was not borne well at first, but she soon became used to it, and in a short time got such power with the arm, that she was enabled to render considerable assistance to the nurses of the ward in which she was located. Subsequently she became a wardmaid herself, in which capacity she had to scour floors, clean fire-places, make beds, and, in fact, perform all the duties of her former vocation.

A remarkable feature in connection with this case is the short

time that elapsed between the period of the operation, and that at which good use of the arm was obtained. Mr. Hodges states "that the average length of time before some use of the arm was commenced, as calculated from thirty-one of the cases in my table, was over four months; and a much longer period than this was required, however, to elapse before the limb could be said to become really serviceable."



The third case was that of a young married woman, aged 26, who was under my care last March. She was suffering from pain, of a dull, aching character, in the right shoulder, which was rigidly ankylosed, and the muscles of which the deltoid especially, were much atrophied. The limb, in consequence of these troubles, was wholly useless to her. She stated that early in 1882 she had a miscarriage, and a few days subsequently got what she termed a "fever," on account of which she entered the Whitworth Hospital, where she remained for some months. While in hospital, she suffered from what was apparently an attack of acute arthritis of the right shoulder. This was followed by abscess-formations in the neighbourhood of the joint, one of which was opened close to the insertion of the deltoid, and the others below the clavicle.

On recovery from these troubles, almost complete ankylosis of this shoulder was found to have supervened.

I first endeavoured to break down the adhesions by manipulation, the patient being under ether; but though I did succeed to a certain extent in doing so, the result of the operation was not satisfactory, for it was followed by a great increase of the pain, and without material improvement in the ankylosis. I accordingly excised the

shoulder in the same manner as in the preceding cases, and, in the after-treatment, did not deviate from the method adopted in them. The operation was performed on April 26th, and on May 3rd the wound had quite cicatrised. Passive movements, shampooing of the muscles of the shoulder and arm, were then commenced, and carried on daily up to the end of June, at which time the accompanying photographs were taken, which illustrate some of the different positions into which the arm can be placed. I may mention that, since the patient left the hospital, she has been engaged as a laundress.

The method of operating which in all cases I have adopted is a modification of the Ollier-Langenbeck periosteo-capsular method. The incision was in all instances commenced a few lines external to the tip of the coracoid process, and carried downwards and slightly outwards, avoiding the cephalic vein, for a distance of about four inches, and a little external to the inner border of the deltoid muscle. By this, there is avoidance of the posterior circumflex artery and nerve, and there is the minimum amount of interference with the deltoid. The functions, therefore, of this muscle are by this procedure better preserved than by any other of the suggested operations ; and there is great facility attending the division of the capsular muscles of the shoulder, notably the subscapularis.

In reference to the osseous section, the importance of not removing more of the bone than is absolutely necessary should be borne in mind. Mr. Holmes is undoubtedly right in holding that the cause of the usual inability in these cases, after operation, to elevate the arm above a horizontal line, depends more on the absence of a point of support for the humerus than on any loss of muscular power. The chances of getting that power will naturally be increased, the smaller the amount of bone removed. The last case mentioned affords an illustration of the possibility of obtaining the power of elevation of the arm beyond the horizontal line—a rarely obtained result, I admit; but it can only be hoped for in those cases where the disease is of sufficiently small extent not to necessitate the removal of more than a very limited amount of bone.

In connection with preservation of periosteum in this operation, I confess I am disposed to modify very materially the views I at one time held as regards its surgical value in resection of the shoulder and other joints. In the elbow, I have unquestionably seen as good results obtained without periosteal preservation as with it. In the shoulder, I would only be disposed to adopt it in traumatic cases, such as the remarkable one recorded by Sir William Mac Cormac, in which he excised the shoulder and elbow joints on the same side and in the same individual, on account of a severe gunshot injury. In this case, there were three important factors which indicated preservation of the membrane—the youth of the patient, a previously healthy condition of the parts, and, lastly, the fact that a portion of the shaft of the humerus had, owing to extensive comminution, to be removed. In pathological resections, however, such as I have drawn attention to to-day, it is very questionable if a reformation of the portion of bone removed be necessary or desirable ; as it sometimes happens—notably in resections of the elbow—that the newly formed bone is irregular in form, and interferes with the motions of the joints.

These somewhat depreciatory remarks in reference to preservation of periosteum in resection of joints do not, of course, apply to resection of bones in their continuity, in which undoubtedly the advantages of the practice are signal and distinct. Another important matter is the advisability or otherwise of using splints in the after-treatment of these cases. In resection of the shoulder, as well as of the elbow, I think them as unnecessary as they are indispensable in the hip and knee. Objections have been urged to their abandonment in the two former procedures, on the ground that, by so doing, the surgical axiom that repose is necessary to repair is violated, and that a "perpetual motion" style of practice is substituted. I am inclined to think, however, that this alleged "perpetual motion"—doubtless a very exaggerated term—instead of being a disadvantage, is a desirable feature in the after-treatment alike of resection of the shoulder and of the elbow-joint; and I am strengthened in so thinking from knowing that the late Professor Syme, a surgeon far in advance of his time, and whose sagacity was only equalled

by his foresight, held a decided opinion as to the desirability of not rigidly fixing the limb to splints for any lengthened time after these operations. The "perpetual motion" bogus, therefore, need not be much dreaded; for, if proper antiseptic precautions be adopted, the absence of fixation does not interfere with that rapidity of union which is so important a factor in facilitating the adoption, at an early date after the operation, of those exercises all-important in enabling the patient to get good subsequent movements and use of the limb.

This rapidity of union can undoubtedly be best obtained by a rigid adherence to Listerian antiseptic practice, both during and subsequent to the operation. I can quite endorse M. Ollier's statement, that Lister's method not alone prevents inflammation without arresting the physiological processes of repair, but "accelerates the healing of wounds, in its enabling the surgeon to arrest, after the operation, those changes in muscular and nervous tissue which are the result of prolonged suppuration associated with prolonged immobility of the limb." (*London Medical Record*, April 1881, page 137.)

Lastly, I would mention one or two encouraging statistical facts connected with both traumatic and pathological resections of the shoulder. As regards the former group, we learn, from the researches of Sir William Mac Cormac and Professor Billroth, that the rate of mortality is far smaller proportionately than the so-called conservative treatment, namely, 35 per cent., as compared with 52 per cent. These statistical facts do not, it is true, coincide with what was observed during the American war, when the mortality after excision was 36.6 per cent., against 27.5 per cent. after "expectancy." "If," however, as Dr. Edmund Andrews has observed (*Encyclopædia of Surgery*, Ashhurst, vol. iii, page 728), "we reflect that the cases selected for this plan were the least seriously injured, the apparent statistical advantage is more than accounted for by the mildness of the cases. He would be a rash man who would be so infected with conservatism, as to leave to unaided nature a shoulder-joint filled with bony gravel from the comminution of the humerus."

Another equally important and interesting fact is that, even in the pre-antiseptic period, the statistics of pathological resections of the shoulder, as given by Heyfelder, Hodges, and others, record a mortality of only about 17 per cent. The next statistical record made of such resections, whether performed for traumatic or pathological, suppurative or non-suppurative lesions, will doubtless show a vast diminution in this percentage.

From the foregoing remarks, we may, I think, state the following conclusions.

1. The operation should be performed by the Ollier-Langenbeck method, avoiding, however, in pathological resections periosteo-capsular preservation.
2. The excision of bone should be as limited in amount as is compatible with the removal of disease.
3. Preservation of the periosteum is only indicated in traumatic resections, where there is much involvement of the shaft of the humerus.
4. The use of splints is not indicated in the after-treatment of resection of the shoulder-joint.
5. Rapidity of union is strongly indicated after this operation, and can best be obtained by a rigid adherence to Listerian antiseptic practice.
6. Passive movements, gymnastic exercises, and massage, should be commenced as soon as possible after the operation.
7. The statistics of the operation, whether done for traumatic or

pathological, suppurative or non-suppurative lesions, are eminently satisfactory and encouraging.

Mr. COATES (Salisbury) had hoped to hear that Mr. Stokes was prepared to advocate early operation in cases of disease of the shoulder, as he had ably done at Ryde in regard to the knee-joint. His own practice, especially in hip-joint disease, was to excise as soon as it was evident that absorption of the cartilages had taken place. He called attention to the jumpings of the limb, evidenced by outcries at night, when not under extension.

Mr. HENRY MORRIS (London) endorsed Mr. Stokes's arguments in favour of not fixing the limb after excision of the shoulder and elbow; and said that, in addition to not fixing the arm in cases of excision of the shoulder, he also took measures, by means of a large wedge-shaped pad between the side of the shoulder and limb, to keep up abduction of the arm operated upon.

Mr. KEETLEY (London) differed from Mr. Martin Coates in regard to the indications for excision of the hip. So far from ankylosis in bad position, such as might follow non-operative treatment, being worse than the results of excision, it was a fact that, even if this bad position were allowed to occur, osteotomy would easily and safely rectify it; while the ultimate result of excision was that, in nine cases out of ten, the patient was condemned to go about permanently with a crutch. These observations were not meant to condemn early operative treatment of the nature of erosion, drainage, and the injection of iodoform.