Contributions to practical surgery / by William Stokes, jun.

Contributors

Stokes, Sir William, 1839-1900.
Royal College of Surgeons of England

Publication/Creation

Dublin : John Falconer, printer, 1868.

Persistent URL

https://wellcomecollection.org/works/g7ba99yp

Provider

Royal College of Surgeons

License and attribution

Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
https://wellcomecollection.org

CONTRIBUTIONS

TO

PRACTICAL SURGERY.

BY

WILLIAM STOKES, JUN.;

SURGEON TO THE MEATH HOSPITAL AND COUNTY DUBLIN INFIRMARY;

SURGEON TO THE RICHMOND SURGICAL HOSPITAL;

AND LECTURER ON SURGERY, CARMICHAEL SCHOOL OF MEDICINE.

[Reprinted from the Dublin Quarterly Journal of Medical Science, February, 1868.]

DUBLIN:

JOHN FALCONER, 53, UPPER SACKVILLE-STREET,

PRINTER TO HER MAJESTY'S STATIONERY OFFICE.

1868.

CONTRIBUTIONS

TO

PRACTICAL SURGERY.

On the Resection of Joints and Bones.

THERE are few procedures in operative surgery which have so many warm supporters or such bitter adversaries as resections of the larger joints. This difference of opinion among surgeons in regard to the value of these operations is due to many circumstances, among which may be mentioned the frequent occurrence of unsatisfactory results, and the unlimited faith which so many surgeons have in the value of rest in the treatment of all forms of articular disease. No one could be more convinced of the value of rest than I am; but I cannot but think that the surgeon who relies solely on this in the treatment of many forms of articular disease, rejecting all idea of operative interference until the vital powers of the patient become so seriously impaired as to render success in operating highly problematical, fails in duty to his patient, and to the cause of true conservative surgery. It is, doubtless, this tendency among surgeons to make operative interference the *dernier ressort* that has been so often the cause of want of success in these procedures, and brought them consequently into an ill-deserved disrepute. To the resection of the ankle-joint a special class of objections have been urged, based, first, on the mechanical difficulty of the operation; and secondly, on the difficulty, and, according to some, on the impossibility of determining, even approximately, the amount of disease that may have to be removed. With regard to the first of these,

it is unnecessary to dwell, for no mechanical difficulty should ever deter the surgeon from performing an operation that may be of ultimate advantage to the patient; and with regard to the second, although it cannot be denied the cases are very rare in which carious disease of the ankle-joint is sufficiently localized to justify resection, yet, should the disease be found too extensive to indicate this procedure, there is then nothing to deter the surgeon from amputating at the ankle-joint after the manner recommended by Professor Syme or Pirogoff.

Owing to the recent researches, practical as well as theoretical, of Professors Langenbeck and Hancock on the great surgical importance of resection of the ankle-joint in cases as well of injury as of disease of that articulation, the subject naturally is regarded by the surgical profession as one worthy of deep care and consideration. I have little doubt, therefore, that the particulars of the case in which the operation was performed by me, for the first time in Ireland, and which I am about briefly to record, will, in no small degree, be of interest to my professional brethren. Before, however, discussing this case, it may not be considered unimportant or devoid of interest to glance briefly at some of the particulars of the earlier cases in which this operation was performed.

In a paper by Professor Langenbeck, which he kindly sent me, on some cases in which he performed resection of the ankle-joint for gun-shot injuries received during the Schleswig-Holstein campaign of 1864, and also by the late Professor Velpeau [Med. Operat. 2 T. p. 739], it is stated that the first case in which resection of the ankle-joint was performed was at the battle of Fontenoy, in 1745, by a surgeon named Réad. The case, however, although of extreme surgical interest, should, I think, hardly be recorded as an example of the resection of the ankle-joint in the ordinary acceptation of the term. The following are some of the leading particulars of this remarkable case:—"Charles Amiens, a soldier belonging to the company of Gurerduc in the Beauvoisis Regiment, was struck, in the battle of Fontenoy, by a cannon ball, which carried off the lower extremity of the fibula. The inferior extremity of the tibia was fractured in several pieces, the injury also involving the astragalus, the ligaments, and other structures of the ankle-joint. The foot was completely displaced backwards and inwards. M. Réad's first idea was to amputate immediately, but owing to the entreaties of the patient not to do so, and there being no immediate danger, the operation was deferred. Several fragments of the bone were then

extracted of the inferior extremities of both fibula and tibia, as well as some portions of the astragalus. The wound was then dressed, the foot being supported by a suitable apparatus, which was not removed for four days. No accident occurred during the patient's convalescence, which lasted about four months. When he left the hospital of Valenciennes to go to the Invalides, he was able to walk without any support. There was no re-formation of the portion of the fibula which had been removed."

The next case occurred in the practice of the elder Moreau, in 1792. The case was one of extensive caries of the left ankle, which was induced by a severe sprain the patient received about a year before coming under the care of M. Moreau. "There was a fistulous ulcer on each side of the joint, from which a sanious and fetid pus was discharged; and the probe being introduced through the openings, the articulating surface of the tibia, as well as that of the fibula, and the body of the astragalus, were felt to be bare. The foot and lower part of the leg were swelled. There was a dull pain in the dieased part, and the patient could not lean his weight on the limb."[a] As there is apparently great confusion and probable inaccuracy in the description of the operation, we shall not enter into any discussion as regards the procedure. The result, however, of this operation we may state; the patient was not "able to lean his weight upon the foot till the sixth month after the operation. During the seventh he used crutches. In the eighth month he could walk with a stick, and by the end of the ninth month he walked without any assistance whatever, and in such a way that he could do what he pleased!" It is to be regretted that although the result of the case is described as being "surprising," no mention is made as to whether any sinus or other evidence of existing disease remained after the operation. As a detailed account of the cases of greatest interest in which the operation of excision of the ankle-joint has been performed since the time of the Moreaus, has been given by Professor Hancock in his deeply interesting and valuable Lectures on the Surgery of the Human Foot, delivered at the Royal College of Surgeons of England in last June, it is unnecessary for me, on the present occasion, to give a renewed account of them. As far as I can determine, it appears that the operation has been performed fifty-one times, and of these thirty-eight have been successful, and thirteen unsuccessful, which gives about seventy-five per cent. of

[a] Cases of Excision of Carious Joints. By P. J. Moreau. Trans. by J. Jeffrey, M.D., Glasgow, 1806.

successful cases. This will be seen by a glance at the accompanying table, a great number of the cases in which I am indebted to Professor Hancock for kindly furnishing me with. I may mention in passing that the cases in this table include all those in which the operation was performed as well for injury as disease:—

EXCISION OF THE ANKLE-JOINT.

Name of Surgeon	Cases	Successful	Unsuccessful
Réad, . . .	1	1	0
The Moreaus, .	2	2	0
Jœger, . . .	1	1	0
Gooch, . . .	1	1	0
Textor, . . .	1	1	0
Buchanan, . .	1	0	1
Hancock, . .	5	4	1
Jones, . . .	1	1	0
Statham, . .	2	2	0
Catton, . . .	1	1	0
J. Holmes, . .	3	2	1
Langenbeck, . .	9	8	1
Humphrey, . .	2	2	0
Simon, . . .	1	0	1
Erichsen, . .	5	3	2
Hussey, . . .	1	0	1
Morton, . . .	1	1	0
Canniff, . . .	1	1	0
Burnell, . . .	1	0	1
Paget, . . .	3	2	1
Canton, . . .	1	0	1
C. Heath, . .	1	0	1
Moore, . . .	1	1	0
Davis, . . .	1	0	1
Delagarde, . .	1	1	0
Neudörfer, . .	1	1	0
Sédillot, . . .	1	1	0
Bœckel, . . .	1	1	0
	51	38	13

We may now proceed to discuss the particulars of the case in which I performed the operation of resection of the ankle-joint last April. H. M'G., aged twenty-seven, was admitted into the Meath Hospital, under my care, on the 10th of last April. He stated that about eight years previously he received a kick of a horse over the inner malleolus. The joint swelled after this, and was extremely painful. This seems to have subsided under suitable antiphlogistic measures. The swelling, however, never entirely disappeared.

After some time abscesses and sinuses formed, which never healed, and from which purulent matter, varying as well in consistence as in quantity, continually oozed up to the time of his admission into hospital. In other respects the patient was in good health, though, as might be expected, much debilitated by the long confinement and the continuous discharge from the sinuses. On probing these, I found that the direction of all was towards the astragalus, a circumstance which went far in making me come to the conclusion that the disease was probably limited in extent, and possibly localized in the astragalus and articulating surface of the tibia. Having formed this opinion, I deemed the case a fitting one for excision, and I proposed it to the patient, who gladly acceded, and, my colleagues concurring in the propriety of the operation, I performed it on the morning of the 29th of April, in the following manner:—

A long vertical incision was made along the posterior edge of the fibula, and then brought obliquely forwards and inwards towards the internal cuneiform bone. A somewhat triangular-shaped flap was then dissected backwards, a step in the operation which was attended with much difficulty, owing to great matting and thickening of the soft parts. This having been done, the next step was to excise the end of the fibula. This was effected with great difficulty, owing to the fibula being firmly anchylosed below with the tibia. The outer portion of the extremity of the fibula was found softened and diseased. A chain saw was then passed round the fibula about two inches and a-half above its extremity, and the bone divided. Owing, however, to the firm anchylosis below, it could not be removed until a section was made, separating it from the tibia, by one of Langenbeck's small resection saws. This having been done, the excised portion of the fibula, with a small portion of the outer edge of the tibia, to which it was attached, was easily removed. It then was obvious that not only the extremity of the tibia, but also the astragalus, was extensively diseased. The greater portion of the latter was removed, chiefly by the straight and rectangular gouges. As we saw then that the inner malleolus was extensively engaged, we deemed it advisable to attempt the dislocation of the tibia outwards through the wound. Mr Porter, whose assistance at this and every stage of the operation was invaluable, made the attempt to dislocate the extremity of the tibia through the wound. It was found impossible. More of the diseased structures were then removed, sometimes by the gouges, Langenbeck's and Hey's resection saws, and also by an ingeniously-constructed American forceps, of great

power, which was kindly lent to me by my friend Dr. E. O'Grady. A second, and then a third attempt was made to bring the extremity of the tibia through the wound. The last attempt proved successful, and our efforts were well rewarded, for it was plain that had we trusted to the instruments we had previously been using, we never could have removed all the disease we found situated in and about the inner malleolus. The accompanying chromolithograph, executed by Mr. Lewis with his accustomed skill, from a drawing by Mr. Burnside, represents accurately the condition of the diseased osseous structures which I removed. There was no necessity found for removing the periosteum by any of the raspatoria for the purpose, for it was found detached and thickened, lying loosely on the surface of the bone. A slice of the tibia, about a quarter of an inch in thickness, was then removed by an ordinary amputation saw, and the resection was then complete. One vessel only had to be secured, which I did by acupressure, adopting the method of "half rotation," or first variety of the fifth or Aberdeen method. Nothing could have been more entirely satisfactory than the way the hemorrhage was arrested by this procedure. A piece of dry lint was then placed in the wound, and the edges brought together by five or six points of silver wire suture. A gypsum bandage was then applied from the toes to the junction of the upper with the middle third of the leg, in the manner I have already described in the *Dublin Quarterly Journal* for May, 1865, the particulars of which I need not therefore now enter into. The patient was then placed in bed, with the limb slightly elevated, and ordered forty drops of Battley's sedative, in a little sherry.

8 P.M.—Pulse 136; suffered from considerable abdominal pain during the day; no sleep as yet; no pain in ankle. Ordered a draught with sol. mur. morphiæ, gtt. xxxv., in an ounce of cinnamon water.

April 30, second day, 10 A.M.—Had a restless night; pulse 140; had several attacks of retching during the night; ordered iced beef-tea and champagne to be taken in small quantities every second hour; also, the following draught to be taken at once:—

℞ Liq. mur. morphiæ, gtt. xxxv.
Spt. chloriformi.
Tinct. cort. aurant, aa ʒss.
Aquæ lauro cerasi, gtt. xx.
Aquæ, ʒvii.
Fiat haustus. ss.

4 P.M.—Found the patient much quieter, but pulse is still 140 I cut a large oval-shaped window in the gypsum bandage over the situation of the wound, and then applied, with a large camel-hair brush over the bandage, a solution of Dammar resin in sulphuric ether, to prevent the action of the water in the continual bath from softening the gypsum. The limb was then placed in the bath, being supported in it by a coarse net. This gave the patient great relief; the pulse fell almost instantaneously to 120.

May 1, 9 A.M.—Had a quiet night; pulse 120, full and strong; no pain in ankle; had several hours sleep.

3.—Pulse 100; skin cool; tongue moist. Free suppuration from the wound; appetite good.

On May 14, I took the limb out of the bath, removed the gypsum bandage, and placed the limb in a box splint. The wound was then dressed with Dr. Richardson's styptic colloid, which I continued to use for upwards of a fortnight. I have had much reason to be satisfied with it, not only in this but in some other cases in which I have employed it. On May 29, the wound being nearly healed, I took the limb out of the box.

I shall not, on the present occasion, discuss the various modes which have been suggested and practised by surgeons for performing the operation of excision of the ankle-joint. The method which I adopted differs from those recommended originally by Moreau, and subsequently by Professors Hancock, Langenbeck, and others. The operation, as performed by me, leaves the extensor tendons intact. There is no risk either of injuring the tendon of the tibialis posticus muscle, or posterior tibial artery, and as there is only a single incision required, the chances of rapidity of healing are increased, as the suppurating surfaces are necessarily less in extent. Lastly, there is no danger of wounding the anterior tibial artery.

Towards the end of August the condition of the joint was as follows:—The wound was completely healed, but along its track were two or three openings of sinuses, through which oozed occasionally a little thin purulent matter. In every other respect his health was excellent. He was quite free from all pain, and was beginning to be able to walk a little with the aid of sticks. In October the sinuses were completely healed, and the patient was able to walk up and down the ward without any inconvenience. The immediate results, therefore, of the operation were completely successful, and I was most sanguine that I would be able to add this to the list of cases said to have been permanently cured by the

operation. I have recently, however, heard from the patient in the country that the sinuses which were so long closing have re-opened, which, in all probability, is evidence of a return of the carious process in some one or more of the bones of the foot. It is, I think, much to be regretted that the eminent surgeons who have published so many "successful" cases of resection of the ankle-joint for caries, have not stated at what period after the operation they were recorded as such. It would, of course, be unphilosophical to generalize on the value of any surgical procedure from the result obtained in a single case; but I cannot help being inclined to the opinion, that although I believe the operation is specially indicated in gunshot and many other grave injuries of the ankle-joint, the cases in which the operation is suitable for the removal of carious disease must be very few indeed, in consequence of the great rarity of meeting with cases in which the disease is sufficiently localized to justify this procedure.

II. *Sub-periosteal Resection of the Elbow-joint.*—There can be little doubt that of the articulations, for disease of which, resections are now so frequently practised, the elbow-joint must be held to be the one which is specially suited for this operation, inasmuch as unfavourable results are of such rarity, and also from the fact that the operating surgeon is now in a position to expect, with good reason, not only the subsequent attainment of perfect flexion and extension in the joint, but also a re-formation, more or less complete, of the removed osseous structures which, in the great majority of cases, undoubtedly can be attained, either by careful preservation of the periosteal fibrous envelope, or, when it is possible, by the method of *évidement*, which has been recommended in preference by the eminent Strasbourg surgeon, M. Sédillot. A glance at the table of 333 cases of excision of the elbow-joint which have been collected from various sources, and published in the "Archives of Clinical Surgery," Vol. vi., p. 86, by Dr. Dontrelepont, will at once satisfy the most sceptical surgeon in regard to the great rarity of unfavourable results in these cases. They are as follows:—

In 333 cases—

Death,	40, or	12 per cent.
Amputation,	14, „	4·2 „
Anchylosis,	23, „	6·9 „
Mobility,	256, „	76·87 „

In truth, the operation very seldom indeed terminates fatally, and when it does so, it is from pyemia or other causes, which are common to all operative procedures. The only instances which have fallen under my observation, and which terminated fatally, were two. One in which there was acute inflammatory disease in the joint at the time of the operation, and the other was one in which the operation was performed—I may add, not in this country, to our credit be it said—for no disease, but for a congenital malformation of the elbow, which impeded, to a certain extent, the natural motions of the joint. In this latter case the patient died of pyemia on the eighth day after the operation.

The particulars also of the case of C. Waddick, whose left elbow-joint I excised, and the account of which I published in the *Dublin Quarterly Journal* for May, 1865, fully bear out the truth of the statement made above in regard to not only the possibility but probability of obtaining subsequently perfect mobility in the new joint. The patient now enjoys every motion in the elbow that the healthy joint possesses, perfect power of flexion, extension, pronation, and supination. The osseous reformation also is very remarkable. Encouraged by the success attained in this case, and which I have seen in many cases equally well attained by other surgeons, I determined to give the patient, whose case I am about briefly to record, the chance of obtaining, by similar means, the possession of a useful arm, and, as far as the case has gone, though in many respects an unfavourable one, owing to the large amount of disease which was found external to the joint, it promises to fulfil these not too sanguine expectations.

Catherine Ryan, aged eight, a child of very delicate strumous temperament, was admitted under my care into the Meath Hospital, on the 24th of last June. The right elbow, which was evidently the seat of very extensive scrofulous disease, had been affected for upwards of nine months, and had commenced, according to the accounts her parents gave, apparently without any local exciting cause. The joint was enormously enlarged, the result apparently not so much of any extensive effusion as of great thickening and hypertrophy of the synovial and other soft structures. Though, in truth, in all such cases, when the disease is extensive, it is difficult, if not impossible, to define accurately what parts are chiefly affected. The integuments, especially on the posterior aspect of the joint, were much disorganized, and in three or four places had ulcerated,

and, through the sinuous openings in these situations, oozed continually a thin, sanious, unhealthy-looking, purulent discharge. Through only one of these sinuses was I able to satisfy myself of the existence of diseased bone, namely, through the one situated over the head of the ulna. The patient did not suffer much pain in the joint except when it was moved. All power of flexion and extension was completely and entirely lost, and, in truth, at first sight, it was quite obvious that in the treatment of the case, looking at the large amount of disease that was present, the question to determine should be whether it was one for which the operation of amputation or excision should be performed. The latter I determined on, as being beyond question the preferable alternative, having stated, however, previous to the operation, that should I find the amount of disease too great to justify resection, I should then have recourse to amputation of the arm. The operation, which was performed on the 25th of last June, was done in the manner I have frequently advocated, namely, by the vertical incision of Park, taking especial care in detaching the soft parts from the bones, to remove along with them, by some of the various ingeniously constructed instruments for the purpose, the fibrous envelope or periosteum. The advantages which I have pointed out as accruing from the adoption of the vertical incision are, first, that the suppurating surfaces are necessarily less in extent than when the ordinary H incision is made, and that consequently the chances of rapidity of healing will be increased if the opportunity for suppuration be diminished. Secondly, that the numerous muscles in the neighbourhood of the elbow joint are not divided transversely, and that, consequently, there can be no transverse cicatrix in their tissues, which would, in all probability, impede their action subsequently; and lastly, we avoid, by the vertical incision, the formation, of a transverse cicatrix, which, when it exists, impedes certainly the extension and flexion motions of the joint. In preserving the periosteum we have a two-fold purpose. First, to obtain a more natural appearance in the shape of the joint; and, secondly, which is far more important, to obtain a genuine re-formation of bone. The periosteal ablation I accomplished in this case by a periosteal raspatorium, devised, I believe, by Professor Langenbeck, and which was kindly given to me by Dr. O'Grady. As I have found it a most useful instrument in this and other cases where I have had to detach this membrane, I affix here (Fig. 1) a wood-cut of Langenbeck's periosteal raspatorium,

and also of one (Fig. 2) devised by M. Ollier of Lyons, in order to give my readers a clear idea of their shape and construction.

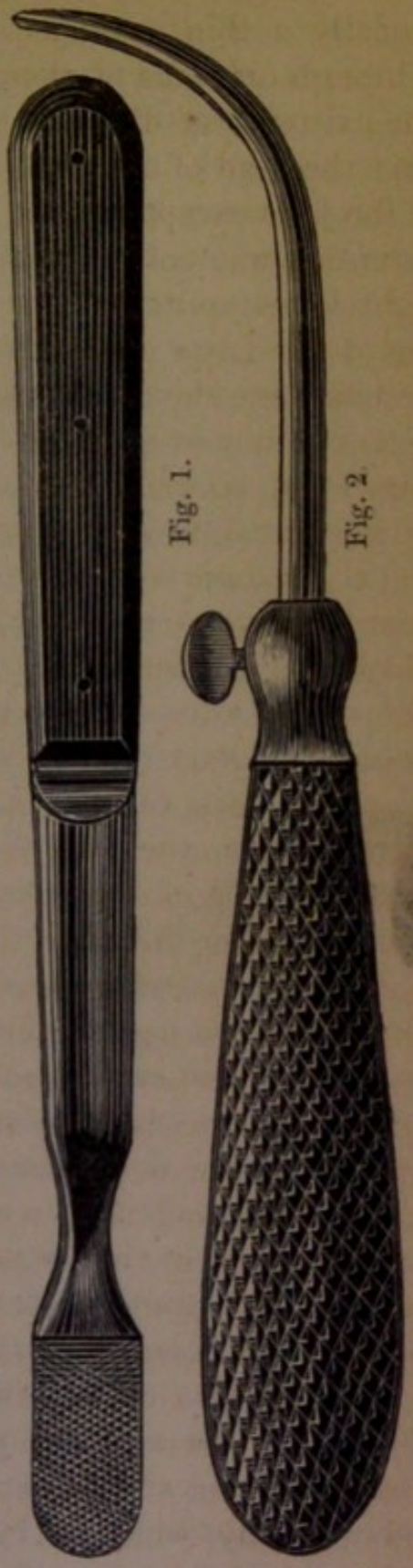


Fig. 1. Fig. 2.

And here I would certainly join issue with MM. Sédillot, Sarazin, Marmy, and other of M. Sédillot's followers, who have asserted with more energy than reason the vast superiority of the method of *évidement* or "scooping" over sub-periosteal resection, practised in the manner I have described. M. Sédillot's theory is based on the belief that for the successful regeneration of bone the preservation of the fibrous envelope of the bone is of less importance than its external dense compact tissue. It is impossible, according to him, to remove the membrane from the diseased bone without seriously injuring or destroying its osteo-genetic properties. He believes that the success of osseous regenerations depends on "two prinsipal causes. First, the integrity of the periosteum; second, the regularity and immobility of the surfaces, sheaths, or moulds, in which the osseous matter is formed.

"Thus is explained the rapidity or slowness of the generation of bone, by the diverse degrees of alteration or destruction of the periosteum (by wound, inflammation, ulceration, sup puration, gangrene) and the immobility and regularity of the surfaces where the osseous cellules are deposited and agglomerated, serve to explain the superiority of the method of scooping (évidement) over that of subperiosteal resection, because in the former the mould is regular, immovable, and invariable, and the periosteum intact, while in the

latter, this membrane is always more altered, sometimes destroyed, and the mould incomplete, mobile, and irregular."[a]

Without entering minutely into the various objections, theoretical as well as practical, that might with good reason be urged against this theory, I may observe that the "évidement" to be performed in the manner indicated by M. Sédillot, presupposes, of necessity, a case in which the disease is localized, to a greater or less extent, in the central cancellated tissue of the bone; and, though it cannot be denied that this tissue is frequently, though not always, the primary seat of strumous disease, I would ask, is it not of extreme rarity that the surgeon has an opportunity of examining, after operation, a case of strumous disease of any of the joints in which it was localized in this situation? and were the surgeon enabled to diagnose such a case with accuracy, would he then be justified in recommending resection, when the disease was necessarily so limited in extent? In regard to the statement made by M. Sédillot, concerning the injury that is inflicted on the periosteum, which, in his opinion, has the effect of impairing, if not of destroying, its osteo-genetic properties, the best answer that can be given is, that the facts of a large number of recorded cases, as well as the results of extensive physiological experiments, are entirely at variance with this purely theoretical objection.

To return, however, to the case which has suggested the above remarks. On opening into the joint I was at once struck with the limited extent of disease in the osseous tissues. It was, in fact, limited to the head of the ulna, but in this situation the cartilages were pulpy and thickened, and the bone soft and degenerated. Although the disease was so limited in the osseous structures of the joints, I had no hesitation in removing the ends of all the bones entering into its formation, as the results of partial excisions have been found to be so unsatisfactory. For example, the difficulty of getting proper union is very great in such cases, and when it is obtained it is usually by bony anchylosis instead of by fibrous tissue. The excision being performed, the edges of the wound were brought together by five or six points of silver suture, and a piece of oiled lint being introduced into the wound to serve as a vent for the purulent discharge, the limb was put in a semi-flexed position in a gypsum bandage. The arm was first enveloped with a flannel roller from the wrist to the shoulder, a large padding of

[a] Gas. Hebdomadaire, January 27, 1865. Translated in Syd. Soc. Surgical Report for 1865-66.

French cotton having been placed over the wound, it was next covered with a coarse muslin bandage, into which I had previously rubbed some dry plaster of Paris powder. This bandage before being applied over the flannel one was moistened with tepid water. A layer of semi-fluid plaster was then laid over the muslin bandage, and this, when nearly dry, was covered with a second muslin roller, and the bandage was completed by laying on a second application of gypsum.

The following day I cut an oval window in the bandage over the wound, and having painted over the bandage with an etherized solution of Dammar resin to prevent the action of the water softening the gypsum, I placed the limb in the continual bath. In this the arm was kept for twenty-two days. It was then taken out and put up in a felt splint, and the ulcerations, which existed previous to the operation, I commenced dressing with a solution of iodine and glycerine. After some weeks of this treatment the ulceration healed. I shall not detail the daily progress of this case. In the early part of last October the patient, though her present health was in a very delicate state, left the hospital, the wound and sinuses having completely healed.

III. *Resection of the Knee-joint.*—Notwithstanding the energetic and able advocacy for resection of the knee-joint in the Dublin school, the operation is one which all reflecting surgeons must admit to be still *sub judice*. We cannot shut our eyes to the fact that in many of the leading Continental schools of surgery the operation is in disfavour. In Berlin, for example, we see it entirely abandoned by the deservedly eminent Prussian surgeon, Professor Langenbeck, and in the Vienna and Paris schools it is also held in disrepute. From Dr. Eben. Watson, formerly surgeon to the Royal Infirmary of Glasgow, we learn that of the eleven operations for excision of the knee-joint that have been performed there up to 1860, only four were successful, of the seven failures, "four died from the effects of the operation, three were submitted to amputation through the thigh, and one of them survived, so that of the eleven patients operated upon six died.[a] In a recent number also of the *Medical Press and Circular* we were informed by Mr. Holmes Coote, that of the six cases of excision of the knee-joint, which were performed at St. Bartholomew's Hospital last year, three died, and in all cases it was performed at an age

[a] Glasgow Medical Journal, October, 1859.

most favourable for convalescence and recovery—namely, between infancy and early adult life." In gunshot wounds involving the knee-joint the results of excision have been still more unfortunate. Of the seven cases recorded prior to the recent American war, only two terminated successfully, and of the eleven cases in which complete excision of the knee-joint was performed during the late protracted war, as recorded in Circular No. 6, a report of the surgical experiences acquired there, and recently published by the American Government, only two were successful, and in one of these the author of the report, Surgeon-General Dr. Barnes, states that the success was "so extraordinary as to suggest some doubts as to its authenticity." We should not forget, however how very difficult it must be during active military service to obtain the requisite hygienic and surgical resources necessary for the after treatment of such cases.

Notwithstanding these unfavourable statistics, the operating surgeon can always derive encouragement from the records of the cases, collected from various sources by Mr. Butcher, for he will find that of the ninety-nine cases in these tables only twenty-five deaths are recorded, and of the remainder, twenty-four were "under treatment," and said to be recovering, and forty-two were "cured." In truth, one chief cause for the ill-success which now so often attends this operation is, I think, that surgeons have too often looked upon the procedure as an alternative for amputation, and very rarely, indeed, as one of expediency. In other words, it is too often deferred until even the propriety of amputation might properly be questioned.

The particulars connected with this case I am about very briefly to record, have suggested these preliminary remarks; for I cannot but think it more than probable, that had the operation been performed at an earlier period, when the vital powers of the patient were not brought to so low an ebb, the chances of bringing the case to a successful termination would have been largely increased.

Susan Hillas, aged twenty-three, was admitted into the Meath Hospital in last February, having been recommended to me by my friend and colleague in the Carmichael School, Dr. R. Shaw. Her condition on admission into hospital was truly pitiable. There was great emaciation, an expression of long-continued suffering, and much prostration from a continuance of sleepless nights, produced by the often repeated and violent starting pains, so characteristic of

the disease, which were present both by day, on making the slightest movement, and also by night, when they occurred with a violence and frequency which caused her often to scream, so painfully acute were they. The knee, which had been affected in this way for upwards of eighteen months, was not much swollen, being free from effusion, but over the inner side of the joint there was the peculiar elastic, indian-rubber sort of sensation, which is so often present in articulations affected with much synovial thickening. The joint was strongly flexed, and any attempts to alter its position were wholly unavailing, owing to the extreme pain that they produced. There was no physical sign or symptom of any organic disease elsewhere to be found. Shortly after the patient's admission into hospital, I put her under the influence of chloroform, and extended the leg, and kept it in that position by an apparatus, which I made for the purpose, of Spark's prepared leather. In addition to this, I kept continually applied to the joint the belladonna liniment of the Pharmacopœia, and internally administered opium and cicuta in large doses, during both day and night.

Under this treatment the patient appeared for some time to derive benefit, but it was not permanent, and after trying rest and the other treatment I have already alluded to, for more than two months, and not finding any improvement in the patient's general condition, I determined, should she accede, to have recourse to some operative interference. The patient promptly and positively refused to have an amputation performed, although I expressed my opinion that, owing to her very debilitated condition, I thought the chances of subsequent convalescence would be greater if she selected amputation, in preference to excision, of the knee-joint. To the latter procedure, however, she would only accede. Nor, I confess, was I at all despondent about bringing the case to a successful termination, for there were some features connected with it which, I thought, made the resection of the knee-joint a perfectly fitting and justifiable operation to have recourse to. Among others, her freedom from disease elsewhere, and above all, her youth. Resection, therefore, being agreed upon, the next important question for me to determine was, what line of incision I should adopt. As I was very anxious to preserve the patella, should that bone and its cartilage be found healthy, I anxiously considered the propriety of performing the operation by the single longitudinal incision, one great advantage of which is, that the ligament of the patella and

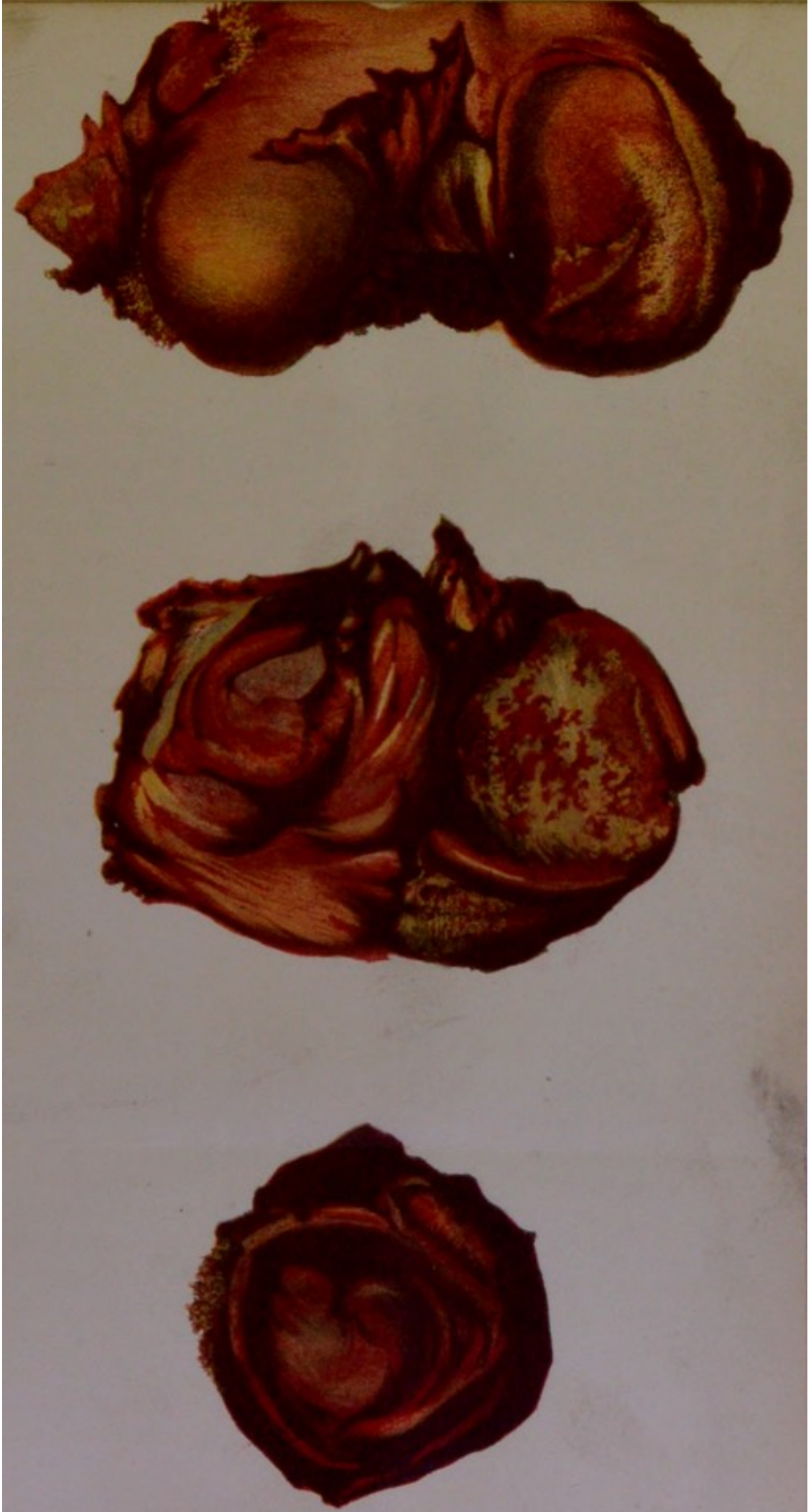
its attachment to the tibia can be preserved intact. This line of incision was formerly strongly advocated by Langenbeck and his pupils, and having frequently practised it on the dead subject, I can endorse all that has been said as regards the facility with which the operation can be performed by adopting this method.

It is performed in the following manner:—The limb should be extended, and an incision, commencing a little above the internal condyle, should be brought down on a line with the anterior edge of the internal lateral ligament, as far as the insertion of the sartorius. The knife should be carried down to the bone, the capsule of the joint divided on the inner side of the femur, and the patella then dislocated completely outwards. In this way a complete view of the internal structures of the joint is obtained.

The crucial ligaments should then be divided, and the joint forcibly flexed, and the external lateral ligament divided. The remaining steps of the operation can be performed in the ordinary manner.

This method, however, has not been attended with as favourable results as the old H-shaped incision, and accordingly I determined to adopt this. It would have been quite useless (as I found on opening the joint) to attempt preserving the patella, for the bone, as well as the cartilage on its posterior surface, was extensively diseased.

During the operation, which, ably assisted by my colleagues Messrs. Porter, Collis, and Wharton, I performed on the first of last May, three vessels, two of considerable size, had to be secured, which I accomplished by acupressure, adopting the methods of quarter and half rotation, or first and second varieties of the fifth or Aberdeen method. The hemorrhage was perfectly arrested by this. There was considerably more disease in the joint than I had anticipated. The synovial structures were pulpy, thickened and gelatinous, and there was extensive ulceration of cartilage. The case was, in truth, a typical example of ulcerative action in articular structures. This was especially well-marked over the inner condyle, the cartilage of which was much eroded, as was also the bone. The same condition was observed on the corresponding facet on the head of the tibia; and, as was before mentioned, the cartilage on the posterior aspect of the patella was extensively engaged. There was intense vascularity of all the structures of the joint. In the accompanying chromolithograph, from a drawing by Mr. Burnside, their appearances are faithfully delineated.



Mr Stokes on Excision of the Knee Joint

After the operation was concluded, the limb was put up in the ordinary manner in Butcher's box, and a powerful anodyne administered at once.

3 P.M.—Found patient in a state of great excitement and hysteria. Heart's action fluttering, and very excited. Impossible to estimate accurately the rate of pulse. Complains of great starting in limb. Ordered an anodyne, with forty drops of Battley's sedative.

10.30 P.M.—Quieter; excitement abated; has had a little sleep; feels drowsy; does not complain of startings or pain.

May 2nd, 10 A.M.—Pulse 140; great gastric irritability; vomits everything; ordered iced soda-water, hydrocyanic acid and champagne.

9 P.M.—Has had another very severe fit of vomiting; nothing remains on stomach; pulse 150, weak and compressible; appears to be sinking; ordered a draught containing sol. mur. morphiæ, gtt. xxxv.; acid hydrocyanici, dil. gtt. vi.; brandy, ʒi., in two tablespoonfuls of iced soda-water; and also a small blister to the pit of stomach.

3rd.—Great change for the better; had some hours sleep; countenance cheerful; retching and vomiting ceased; pulse 112; to continue the iced beef-tea and champagne in small quantities at a time.

4th.—Dressed the wound for the first time; edge of anterior portion of flap united; all going on well.

6th.—No return of gastric irritability; pulse 120; tongue moist; appetite good; copious suppuration from the wound; removed two of the points of suture; transverse wound united completely.

It would be tedious to continue the daily report further. For upwards of a fortnight after the last report, notwithstanding the extremely hysterical and irritable temperament of the patient, everything appeared to promise well. The suppuration in the wound continued to diminish sensibly; the appetite also improved, and the patient had better nights; at this time I was most sanguine in believing that the case would be brought to a successful termination; my colleagues were also of this opinion. At this stage, however, grave pulmonary symptoms manifested themselves—the pulse rose, and night perspirations, and other evidence of a hectical condition were developed.

On the 6th week the pulmonary symptoms, which exhibited all the usual phenomena of acute tuberculosis, became much aggravated, and it became evident that the end of the patient was rapidly approaching. Notwithstanding, however, her critical condition, the wound continued to improve up to the last week of her life; but

on this week, the seventh after the operation, she gradually sank, and died on the 15th of June.

In considering the features of this case, I cannot avoid coming to the conclusion that had the operation been performed at an earlier period of the disease, before the patient's vital powers became undermined by long-continued suffering, the result would have been probably very different, and I regret—and think it right to record that regret—that I did not perform the operation when the patient first came under my care at the end of last February. We should not wait until resection becomes nothing more than an alternative for amputation. "Do not the very circumstances," observes Dr. Watson, of Glasgow, "which demand the amputation, diminish the likelihood of success from excision? Surely, then, the two operations ought not to be canvassed at the same time. If it is the time for amputation, then it is too late to attempt the salvation of the limb by excision; and if the latter course is at all a desirable one, then ought we to pursue it before the patient's case has become well-nigh desperate. I believe it has been by acting too rigidly on the opinion that excision was a mere substitute for amputation, that we have had such poor success with our cases in Glasgow, and if I am not very much misinformed, surgeons elsewhere have not so acted, but have chosen cases for excision that were by no means *ready* for amputation. I think that we should do so too—that we should select patients who have some health and strength to work upon, as the subjects of this operation, and not those who are already sinking into the grave."

In concluding this brief record, I should be failing in duty were I to omit expressing my warm thanks to Messrs. Cooke, Locke, and Crosslé, our clinical assistants in the surgical wards of the hospital, for their care, and untiring zeal and energy, not only during the progress of the case I have just recorded, but in all those they had under their care since they were appointed to the offices they recently so worthily occupied.

IV. *Resection of Metatarsal Bones.*—I shall conclude this clinical report on the resection of joints and bones, by briefly adverting to a case of very chronic strumous disease of the metatarsal bones, which was under my care last September, and for which the operation of resection was attended with the happiest results. The following are the leading particulars of this case:—Matthew Davis, aged sixteen, a boy of very strumous habit, was

admitted into the Meath Hospital on the 20th of last September. He stated that about two years previously he suffered from the formation of an abscess, which he could not ascribe to any cause, never having received any injury whatever to the foot. At the time of his admission he suffered greatly from pain. At points corresponding to about the centre of the third and fourth metatarsal bones were situated sinuses, through which oozed a thin, sanious, unhealthy-looking discharge, and on introducing a probe through them, softened, denuded bone could readily be felt. There was a good deal of general infiltration and swelling about the diseased structures. In consequence of this condition of the patient's foot, he was quite unable to follow any occupation. Various lines of treatment had been had recourse to previous to his admission into the Meath Hospital, but as yet all treatment had proved unavailing. My colleagues, Messrs. Porter and Collis, quite agreed with me in thinking that as the disease seemed so localized, an attempt to preserve the anterior portion of the foot, by performing a resection of those metatarsal bones in which the disease appeared, should be made. Accordingly on the 27th September I performed the resection in the following manner:—I commenced by making an incision about two inches and a-half in length on the situation of the fourth metatarsal bone, and at the centre of this I made another an inch and a-half in length, at right angles with the first passing inwards. The two triangular-shaped flaps thus made were dissected back, and soon we were enabled to see the diseased osseous structures. The periosteum was very much thickened, and consequently easily detached from the bones, which were, without much difficulty, removed by the aid of resection saws, gouges, both straight and rectangular, and sequestrum forceps, &c. The diseased bones being removed, the edges of the wound were brought into close apposition by means of silver points of interrupted sutures, dry lint dressings were applied, and the patient sent to bed. It is unnecessary to detail the daily account of the progress of this case. In the course of ten days the wound was so nearly entirely healed that all dressings were removed, and about a fortnight after this the wound and the sinuses being completely healed, the patient, free from pain, left the hospital, enabled to walk about without any distress or inconvenience whatever.