On excision of the knee-joint / by G.M. Jones.

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THE KNEE-JOINT.

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Whether excision of the knee-joint be a justifiable operation or the reverse, is a point which has been discussed both at medical and surgical societies, and among practitioners at large. There can be no doubt that there exists an extensive prejudice against it, it being condemned by a large majority of British surgeons; but few of the later writers on practical surgery speak of it in a manner to encourage its performance; others are altogether silent on the subject; while in France, if thought of at all, it is so only in connexion with the memory of the Moreaus. This cannot fail to appear extraordinary to those who have given the history of this operation the least attention, for though it must be admitted that in several instances it has terminated fatally, still, as the following facts will prove, few attempts at curative surgery ever promised better at their commencement than this did.

The first well authenticated case in this country (for though Mr. Filkin's, which occurred in 1762, is said to have succeeded, it wants data to substantiate it) was performed in 1781, the cure in this instance being perfect; "the patient was afterwards able to perform all the duties of a seaman." The operation was performed in France in 1792, and certainly with success, for although the patient died three months after of "epidemic dysentery, which, as is well known, carried off the greater portion of those whom it attacked,"

the operator, whose word is above suspicion, states, "I looked upon my patient as cured, for I had no relapse to dread."

Again, in 1823, it was twice performed in Dublin. It is true that in the first case bony union did not take place, but then "disease had proceeded too far; in a word, the case was one to which the operation of excision was not applicable." The patient, however, lived more than three years, in all probability quite as long as she would have done had amputation been resorted to. The second case proved more fortunate; for three years after, the report says, "the patient is able without assistance to stand or walk the length of the day."

In Edinburgh, excision of the knee-joint was performed in 1829, the little patient recovered, so that Mr. Syme, referring afterwards to this case, expresses himself as "having no doubt that ultimately the excised limb will be nearly as useful to him as the other." Mr. Syme repeated the operation the following year, but unsuccessfully, the child dying within the fortnight.

I have brought forward these cases not only as being the *first* in England, France, Ireland, and Scotland, but also to show that an operation which its present advocates are sometimes blamed for performing, was not considered an unsurgical procedure in the hands of such distinguished men as Park, Crampton, Moreau, and Syme, each of whom doubly sanctioned it by its second performance. The result of these cases certainly bears out my previous assertion, that few if any attempts at curative surgery have ever promised better at their commencement; and I may also add that few have ever so soon been allowed to fall into disuse, as from the time of Mr. Filkin's operation until 1850, a period of eighty-eight years, but twelve cases are on record.

In the year above named (1850) this operation was renewed by Mr. Fergusson, of King's College Hospital, and no better proof can be offered of the estimation in which the views of this surgeon are held, together with the determination of many practitioners of the present day to advance conservative surgery to the utmost, than the fact, that in the

space of little more than three years no less than twenty-one operations of excision of the knee-joint are recorded. The subjoined table will show the result of all the cases I have been able to collect, several of which have not yet been published.

Excision of the Knee-Joint, from 1762 to 1854.

Date.	Surgeon.	Name of Patient, &c.	Result.
Aug. 23, 1762	Mr. Filkin	A man, name unknown	Case not well authenticated. It is stated, however (on the authority of Mr. F.'s son), that on Nov. 21 of the same year, "he was got so well, as to require no further attention."
July 2, 1781	Mr. Park	Hector M'Caghen, æt. 33, a sailor	Cured. "Afterwards performed the duties of an able seaman."
June 22, 1789	Mr. Park	Chas. Harrison, æt. 30, a wheelwright	Died, 115 days after the operation, of exhaustion.
Sept. 17, 1792	M. Moreau	M. Claude, æt. 20	Cured. For although the patient died 3½ months after the operation, the surgeon says, "I looked upon my patient as cured, for I had no relapse to dread." The bones had become consolidated.
————	M. Moreau	A man, no name given	Died shortly after the operation.
———, 1811	M. Moreau	A man, no name given	Cured.
Oct. 21, 1809	Mr. Mülder	A pregnant woman	Died of tetanus on the 110th day.
———, 1816	Professor Roux	A man, æt. 32	Died of phlebitis on the 18th day.
May 7, 1833	Sir P. Crampton	Susan Connally, æt. 25	Discharged from hospital on 27th June, 1824, "in very good health," but no bony union had taken place between the femur and tibia. Died of phthisis, three years and two months after the operation.
Aug. 4, 1823	Sir P. Crampton	Ann Lynch, æt. 22	Cured.

Date.	Surgeon.	Name of Patient, &c.	Result.
Dec. 7, 1829	Mr. Syme	John Arnot, æt. 8	Cured.
Dec. 28, 1830	Mr. Syme	Ann Mackintosh	Died, eleven days after operation.
July 20, 1850	Mr. Fergusson	A man, æt. 21	Died on the ninth day of acute necrosis of the femur.
Jan. 19, 1851	Mr. Jones	Sarah Hansford, æt. 25	Cured.
April 27, „	Mr. Jones	John Le Gros, æt. 10	Cured.
Sept. 4, „	Mr. Jones	Miss Le Maistre, æt. 30	Died of epidemic dysentery, fourteen days after the operation.
Jan. 25, 1852	Mr. Jones	Robert Quarm, æt. 7	Cured.
May 5, „	Mr. Mackenzie	John Johnston, æt. 28	Cured.
June 7, „	Mr. Page	Wm. Graham, æt. 16	Cured.
Sept. 19 „	Mr. Jones	Ab. Le Feuvre, æt. 19	Cured.
Oct. 30, „	Mr. Fergusson	Ann Goring, æt. 20	Cured.
February 5,1853	Mr. Mackenzie	Wm. Harrisson, æt. 42	Cured.
March 16, „	Mr. Pritchard	E. H., a man, æt. 20	Cured.
„ 28, „	Mr. E. Thomas	John Harrett, æt. 12	Cured.
April 2, „	Mr. Fergusson	Emma Saville, æt. 28	Died of phlebitis, on the sixteenth day.
——— „	Dr. Steward, Belfast	No name or sex given	Unable to obtain further information than "that the case was encouraging."
April 17, „	Mr. Jones	Wm. Livermore, æt. 12	Cured.
Oct. 31, „	Mr. Gore, Bath	A boy, æt. 14	Recovered.
——— „	Dr. Keith, Aberdeen	A boy, æt. 9	Recovered.
——— „	Mr. Butcher, Dublin	———	Progressing favorably.
Dec. 24, „	Mr. Mackenzie	Miles Christie, æt. 17	Died of exhaustion, the twenty-second day.
Jan. 8, 1854	Mr. E. Thomas	John Christie, æt. 16	Under treatment.
Feb. 15, „	Mr. Erichsen	Wm. Shaw, æt. 7	Under treatment

The above table shows that six of the cases are my own, and their being no longer under treatment, renders them, I apprehend, fit subjects whereby to test the value of the operation. Before proceeding further, however, I must anticipate the very reasonable remark, that my inferences are drawn more particularly from my own practice; the only excuse to be offered is, that previous to visiting the metropolis in November last, I had never witnessed the operation of excision, nor even seen a patient who had submitted to it; and, having been for nearly thirty years deprived of the opportunity of being present when such interesting cases appear, as draw forth the surgical talent of men from whose

practice and remarks so much valuable information is derived, I am forced in advocating excision of the knee-joint to fall back on those cases which have come under my own care, and thus to appear egotistical against my wish; at the same time I must confess my impression, that remarks from one who has been completely thrown on his own resources, are of more value in forwarding the cause on which so much interest has of late been excited, than those of men who are without *practical* experience.

The question may naturally be asked, why this operation has been more successful in my hands than in those of others? The reasons are obvious; consisting in the great advantages arising from the locality and consequent salubrity of the Jersey Hospital. It is not surrounded by high and crowded buildings and a dense population, but has a large piece of ground in front, and a garden at the back, both of which are open to the patients for exercise; and its left wing is scarcely two hundred yards from the sea. The wards are airy, and but rarely crowded; and I have hitherto made it an invariable rule to have a separate, well-ventilated room, as well as a special nurse or nurses, for each of the patients on whom excision or any other important operation is performed. These incalculable advantages are unattainable in metropolitan hospitals, and to them alone, with the stimulating treatment commenced *immediately* after the operation, and steadily persevered in for a considerable time, is my success to be attributed.

The objections raised against the operation are twofold. Its severity, the shock to the system, danger from hæmorrhage, erysipelas, burrowing sinuses, wasting suppuration, &c., forming the first class; and from these it is argued that amputation is much less hazardous. Then, supposing the patient to have overcome or escaped these dangers, we are told that want of union in many cases renders the limb useless; and if the subject be a child, the absence of growth in the excised member is brought forward to prove that a wooden leg, in all instances, is of much greater utility than

the one on which excision has been practised. These once formidable objections can now be combated by existing proofs of their want of weight—the operation having been frequently performed without endangering life further than would have been the case in amputation; and we can from experience affirm that no mechanical contrivance yet known can approach in utility to the limb which has been subjected to this much condemned operation. My own experience enables me fearlessly to assert, that in five of my cases no greater constitutional derangement followed than I have witnessed after the most favorable cases of amputation; in none has the hæmorrhage been sufficient to require either ligature or torsion; nor has the slight appearance of erysipelas, in one or two cases, justified even a moment's uneasiness. It must be admitted that suppuration is greater after excision than it is even in stumps which heal by granulation, in consequence of its longer continuance; but it is, as far as I have been able to judge, less weakening to the system, being much more gradual, and consequently not so exhausting. The first class of objections thus do not appear to be borne out by those cases which have fallen under my observation, and I cannot help believing that the two which were seen last November, by many of the most eminent surgeons in London, must prove satisfactorily that excision in those cases claims a marked superiority over amputation. As regards the remaining objections, I strongly suspect that the case brought forward by Mr. Syme in support of his opinion, will prove the *exception* rather than the *rule*.

Three of my patients were children, under ten when operated on, and in neither of these has growth been stunted, as is apparent from the fact, that the boxes in which the excised limbs were confined immediately after the operation, are now much too short to contain them. The following forcible statement, forming part of the history of Mr. Page's case, with which that gentleman kindly favoured me some time back, goes very far to prove the correctness of my views on each point of the subject.

"I saw the patient this day (January 25th, 1854); he is quite well, the limb is firmly anchylosed and perfectly straight. He has now for some time been employed at the steam looms of a cotton factory, where he works as long as the other hands—and he has to walk or stand the greater part of the day. He walks well without inconvenience or fatigue; in proof of which, he informed me that on Sundays he not unfrequently takes a walk of seven or eight miles. I may mention the important fact, that the boy has grown several inches since the operation, and that both legs happen to have grown equally in length, there being now, as at first, about three inches of difference between them."

The same plan of operation has been followed in all my cases, with the exception of the last: a lateral incision along each side of the joint, and a transverse one immediately over the centre of the patella; the flaps then dissected upwards and downwards, and the patella removed, the joint ends exposed, and so much of the femur and tibia excised as was found in a disorganised state; the bones being then placed in juxtaposition, and secured in a suitable box, similar in some respects to Sir Astley Cooper's fracture-box. This method, as far as I have been able to learn, is the one usually pursued. It had, however, some time before occurred to me that this plan might be improved upon, and having found such to be the case, I can now recommend the latter plan as one possessing the greatest advantages.

It is somewhat remarkable that similar views should, at the same time have been entertained by my friend, Mr. R. J. Mackenzie, Surgeon to the Royal Infirmary, Edinburgh, though I had not then the pleasure of his acquaintance, even as a correspondent. He arrived in Jersey a few days after my last operation had been performed, and on stating to him the method adopted, I found that he had for some time been impressed with its practicability, and probable advantages, and had, moreover, decided to follow it out substantially on the first opportunity, which he did shortly after his return, there being this difference between our

practice—Mr. Mackenzie preserved the patella, but divided its ligament. The subjoined case will show in what respects our operations differ, and also the superiority of this new method over the old one, and will, I trust, induce the greatest contemners of this operation to admit, that at all events in one case, excision of the knee-joint has obtained a triumph in its results which amputation could not possibly have achieved.

My patient, a boy, æt. 12, had for some time suffered under strumous affection of the right knee-joint, which had in no way yielded to the treatment ordinarily pursued in such cases, consequently the operation of excision was performed on the 17th of April last, and in the following manner:—A longitudinal incision, full four inches in extent, was made each side of the knee-joint, midway between the vasti and flexors of the leg; these two cuts were down to the bones, they were connected by a transverse one just over the prominence of the tubercle of the tibia, *care being taken to avoid cutting by this incision the ligamentum patellæ;* the flap thus defined was reflected upwards, the patella and its ligamentum were then freed, and drawn over the internal condyle, and kept there by means of a broad, flat, and turned-up spatula; the joint was thus exposed, and after the synovial capsule had been cut through as far as it could be seen, the leg was forcibly flexed, the crucial ligaments almost breaking in the act, only required a slight touch of the knife to divide them completely; the articular surfaces of the bones were now completely brought to view, and the diseased portions removed by means of suitable saws, the soft parts being kept aside by assistants. In this case the external condyle of the femur was found hollowed out by a large abscess, so that it was necessary to saw off (obliquely) another portion of the carious bone, and to gouge out the remainder, until healthy cancellous tissue was reached, the articular surface of the patella had also to be gouged until sound bone was attained; the bones were now brought in apposition, and the patella and its ligament replaced as

nearly as possible in their natural position, the remaining parts of the operation, together with the after-treatment, were conducted in the same manner as in my other cases.

I shall not enter into details respecting the progress of the case, it is sufficient to say that before the expiration of seven weeks, the little patient was able to turn the limb from side to side easily and quickly, and to raise the leg from the hip upwards without assistance or appliance of any kind; the patella then adhered firmly to the femur and tibia, and its ligament preserved its integrity: unfortunately, however, for some weeks before this gratifying termination occurred, symptoms, which had never before manifested themselves even in the slightest degree, supervened, excruciating pain was felt in the opposite hip, which most energetic measures for a time were unable to mitigate; after many weeks' suffering, the pain by degrees lessened, while the limb became gradually shorter. A spontaneous luxation had taken place, so that at present my little patient when walking, which he does with the assistance of only one stick, presents the following anomalous appearance: on the *right* foot he wears a *thin* shoe, and on the *left* a boot, the heel of which is *upwards of two inches thick;* the existing lameness is only perceptible on the *left* side, and is not apparent on the *right,* and the leg which, under ordinary circumstances, ought to have had at first almost all, and throughout life the proportionably greater part of, the onus, would now be almost the useless member described by the opponents to this operation, without the powerful and almost entire support of the *one on which excision has been performed.*

May not the question now be asked, if in this case amputation had been resorted to, could any patient with a wooden leg on the right side, and a dislocated and diseased hip on the left, be able to walk with no other assistance than one small stick? The answer is too obvious to be dwelt on for a moment.

It is only by comparing cases that we arrive at a right conclusion respecting the superiority of one mode of operating over another; the preservation of the patella and of its ligament is, I feel satisfied, a plan which ought to supersede the other, and be followed out in those cases in which it is practicable; the operation thus performed is rendered more tedious and difficult, but these are secondary considerations when it results in obtaining a more favorable issue.

The rectus acts as a splint, and not only assists materially in keeping the bone in apposition, but also counteracts the natural tendency of the limb to become bent; and I cannot help believing that, should union of the femur and tibia not take place, the preservation of the patella and its ligament must render the limb more useful than it would otherwise be. The following quotation from a paper written nearly fifty years ago, by Dr. James Jeffrey, of Glasgow, is so conclusive on the point that I cannot resist giving it. In speaking of Mr. Parke's and Moreau's operation, this gentleman says—

"It may be said that, though it be an object of importance to preserve the attachment of the extensor muscles in elbow cases, where the joints remain moveable, the surgeon may consult his own convenience at the knee, because that joint, after the operation, is stiff. But it should be considered that, though the crureus and the vasti be extensors of the legs, their auxiliary, the rectus femoris is a flexor of the hip-joint also, and of course a bringer forward of the thigh; and to lose the use of that muscle, in walking, &c., must always be a serious inconvenience, whether the knee-joint be stiff or not; because it acquires power by contraction, the length of the lever with which it acts increasing as the muscle becomes shorter: whereas, most of the other flexors of that joint lose power, their lever decreasing in proportion to the decurtation they suffer in acting. Except, therefore, it be supposed that the ends of the common tendon of the extensor muscles, when cut above the patella, or the ends of the ligament that con-

nects the patella to the tibia, unite after the operation, it is obvious that, by the transverse incision, the power of bringing forward the limb must be impaired."

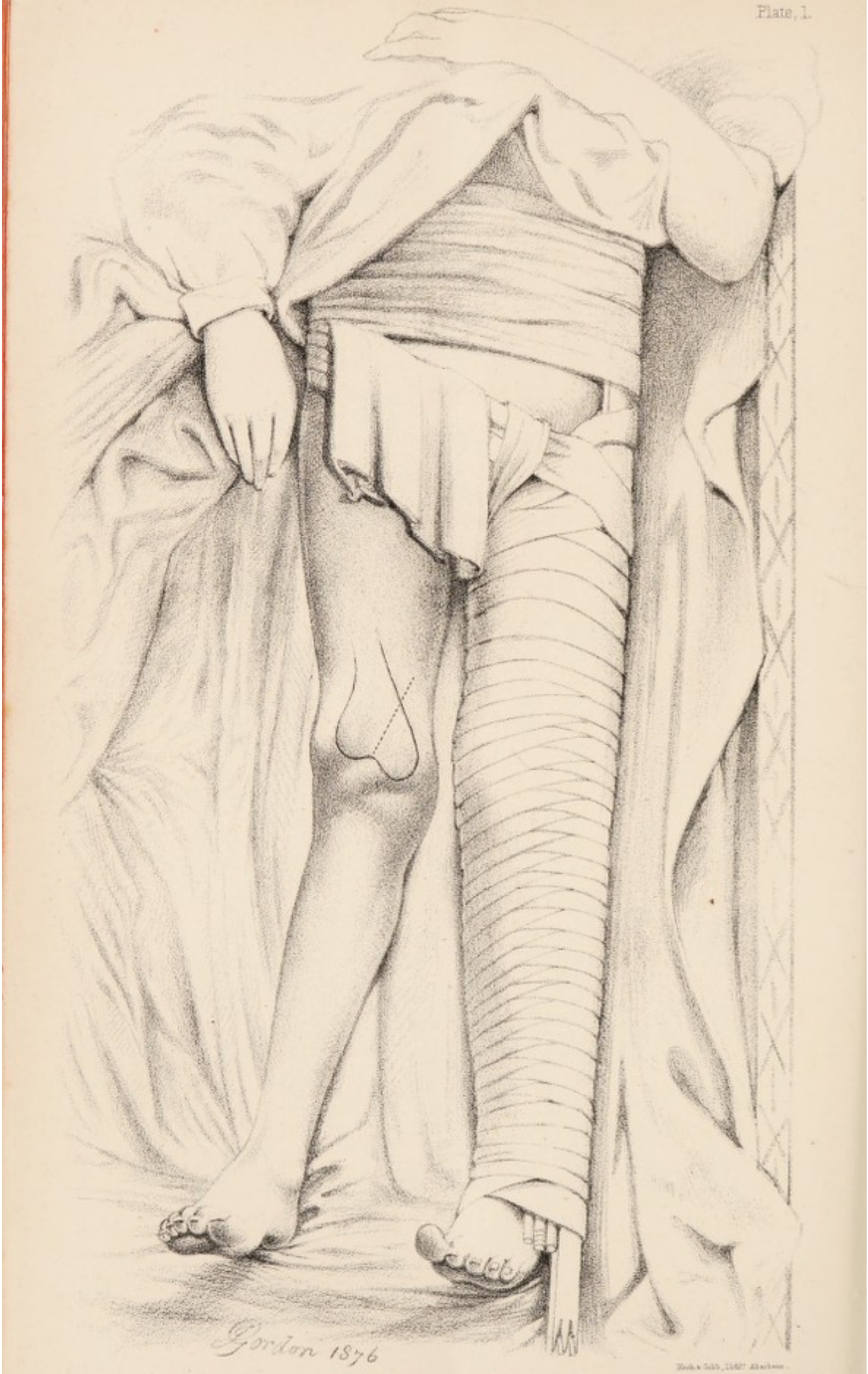
But, while earnestly recommending the operation of excision as a valuable substitute for amputation, I would not be understood to say, that it can be had recourse to in all cases. In those which are commonly called white swelling of the knee, among others, it may occasionally be quite inadmissible, but in this, as in all other respects, I feel persuaded that the adhering to one mode of treatment, whatever be the circumstances, must produce frequent disappointment; the general features of the case must decide the course to be adopted by the surgeon in this operation, as well as in any other that may come under his notice. As in cases which ultimately necessitate amputation, we are bound in the first place, to exhaust all those means which, if resorted to in an early stage, and judiciously persevered in, may not unfrequently effect a cure; still one important fact must not be lost sight of—the greater the debility of the system before excision, the smaller are our chances of success, while the larger amount of integrity in the soft parts will certainly facilitate the cure. There are some few cases which, though for a time regarded as hopeless, yet under constitutional and local treatment, come to a happy termination; still these cases, while they point out the necessity of due reflection before attempting an operation which may endanger life, must not be too much relied on, and when it is found that constitutional disturbance keeps pace with local symptoms, it appears to me to be consistent with sound surgical principles, that the means of avoiding amputation be no longer delayed; and as in all cases in which excision is decided on, we are, at the same time, prepared to amputate should our diagnosis have proved incorrect, ought we also to be prepared to abandon it altogether, if the admirable plan advocated, and in some instances so successfully followed, by Mr. Gay, that of making free incisions along the joint, offers us the hope that by these means a cure may be

effected? I would, therefore, recommend, as a general rule, free incisions, which can be so made as to constitute the *first* step in the operation of excision, and to allow a sufficient examination of the joint by means of the finger and probe. Should it thus be discovered that the whole joint is in an advanced state of caries, excision may at once be performed, provided the shaft of the femur be not implicated in the disease pervading the joint. The deductions to be drawn from the observations I have been able to make on this subject are: 1st. That excision of the knee-joint is not attended with more danger to life than is amputation. 2d. That while the patient, in the plurality of cases, is much longer under treatment after excision than after amputation, it must not be forgotten, that though a stump may heal much quicker, yet months must often elapse before the parts have attained sufficient firmness to admit of the use of a wooden leg. 3d. That no mechanical contrivance yet known can supersede, or prove as useful as, the limb on which excision has been successfully performed. 4th. That preserving the patella and its ligament, not only ensures greater success, but also gives rise to the question, whether, in those favorable cases where ligaments are not much disorganised, it may not be an object to *encourage* a false joint rather than not. Lastly, that amputation can at any time be performed after the first dangers from excision are passed, as easily and with quite as much hope of success, as after the failure of the remedies ordinarily employed.

Daily recurring facts lead one to believe that the prejudice entertained against excision of the knee-joint is passing away; even while writing this, I have received communications from different parts of the country, proving it to be one of those operations which, however slow its progress has hitherto been, is now evidently advancing. The surgeons of the present day are not satisfied with bare statements, or led away by preconceived opinions, they judge for themselves; and I would humbly hope that my cases may be of some small use in promoting the interests of an operation

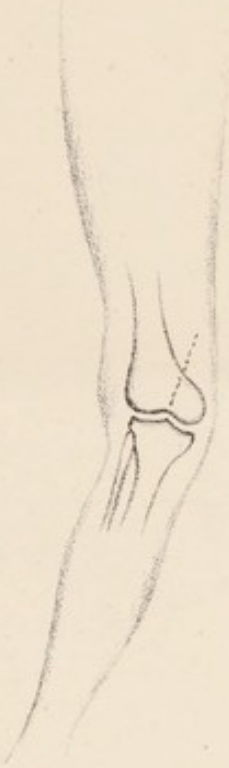
which, I consider, not only at present most valuable, but as capable of still further improvements.

I cannot better conclude these imperfect observations than by applying to this particular operation the words used by Moreau when speaking of excisions in general. "It is my wish to show, by the evidence of facts, that the excision of carious joints is, in many cases, a very practicable operation, and one that holds out advantages so unequivocal, that amputation ought to be proscribed in every case where excision may be performed."

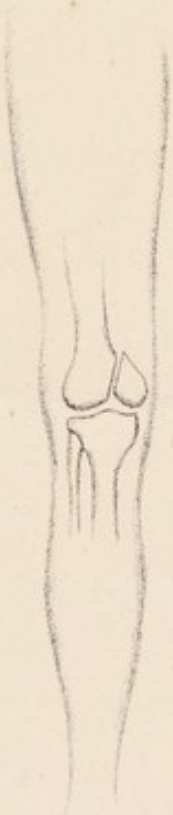


GENU VALGUM.

Left Knee operated and bandaged; Right Knee shows the line of subcutaneous division of the elongated Internal Condyle.



A.



B.

C.

GENU VALGUM.

A. Line of Subcutaneous Division. B. Position after operation. C. Copy of a Photograph of the patient when cured.