

Case of excision of the knee-joint / [William Keith].

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Keith, William, 1802 or 1803-1871.

Publication/Creation

[Place of publication not identified] : [publisher not identified], [1854]
(Aberdeen : G. Rennie.)

Persistent URL

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CASE OF EXCISION OF THE KNEE JOINT.

IN the present state of the question, How far excision of a diseased knee joint is a useful or a warrantable operation? no apology is deemed necessary for giving publicity to the annexed case.

The patient having been this day discharged cured, the duty next felt to be incumbent is to make known the whole particulars of the case to the profession, with a view to advance the progress of such practice if really an improvement in surgery—or share in the blame if in the end the attempt should turn out to be a failure—to plant this operation high in the list of those which constitute conservative surgery.

John Hay, aged 9, from Old Aberdeen, of small stature, and delicate look, but of a happy and cheerful disposition, was admitted on the 7th November, 1853, into the Royal Infirmary, Aberdeen, with scrofulous disease of the right knee joint, which has existed, better or worse, for twelve months. The leg is fixedly bent on the thigh at an acute angle, the heel almost touching the nates. The knee joint is much enlarged generally; the head of the tibia and condyles of the femur evidently expanded; the capsule of the joint is distended and feels pulpy. There is tenderness on pressure over every part of the joint, and actual pain on any attempt being made at movement or extension. The diseased limb, owing to wasting, looks, as a whole, diminutive beside its fellow. His general health is good, though he is reported to have had occasional attacks of diarrhoea within the past three months. His spirit is buoyant, and he earnestly desires to save his limb.

NOVEMBER 22.—It was agreed on consultation that excision of the joint should be practised in his case.

ON SATURDAY, 26TH NOVEMBER, 10.30 A.M.—Under chloroform. An incision was made from the inner to the outer condyle of the femur, in a semi-circular line, the point of the flap reaching to the head of the tibia, the ligamentum patellæ being there cut through. The flap, including the patella, was dissected from all its connections, to a line fairly above the condyles; the lateral and crucial ligaments were cut, when the utmost facility presented for sawing off the condyles of the femur. The articulating surface of the tibia was then sawn off from behind forwards, the line of section not reaching so low as the fibula, — two inches in whole being the exact measure of the two portions of bone removed at the operation. The face of the patella was implicated so far as to have become partially adherent to the trochlea of the femur, and was to some extent denuded of cartilage; it was therefore smoothed by the removal of a thin slice by the aid of a farrier's paring knife; the remaining portion of the patella being evidently healthy was allowed to rest in situ. Two small arteries only required ligature. Indeed the operation might be designated as bloodless, so little hemorrhage having occurred. The wound was closed by six stitches, dressed with ointment, compresses, and bandage, and the limb extended to the straight without any difficulty—laid and secured in a well-fitting Macintyre's metal fracture frame. The whole proceeding may have occupied five minutes. He was put to bed still under the influence of chloroform. To have eight drops of laudanum so soon as he awakes.

7 o'clock P.M.—Has slept quietly and with little interruption since the operation; says the limb is quite easy; not a drop of blood has oozed from the wound. Has taken soup in small quantities, but feels squeamish, probably from the effects of the chloroform.

SUNDAY, NOVEMBER 27 (first day), 7 o'clock, A.M.—Became uneasy and fretful at midnight, and had a second anodyne (eight drops) administered, since which has passed a quiet night, and is still sleeping soundly. To have an egg and tea to breakfast. 10 o'clock, A.M.—Feels easy; seems well; took his breakfast with relish. To have soup and chicken to dinner. 2 o'clock, P.M.—Is cheerful and easy; relished his dinner. 7 o'clock, P.M.—As at last report. Having sunk into the mattress he lies twisted, and is therefore relaid and squared up. Bowels have not moved since Friday; give three grains of rhubarb pill to-night,

KEITH, W.

MONDAY, NOVEMBER 28 (second day), 7 o'clock, A.M.—Slept the first half of the night ; towards morning felt the limb uneasy, and the bandage tight ; removed the whole dressings ; found the flap adherent all round, the knee in no degree tumid. Dressed it lightly with ointment, compress, and many-tailed bandage, the latter surrounding both metal case and limb. 8 o'clock, P.M.—Ate his dinner with relish ; seems well ; complains only of an occasional starting of the limb. Bowels have not moved ; give 5 gr. rhubarb pill.

TUESDAY, 29TH NOVEMBER (third day), 10 o'clock, A.M.—He required ten drops of laudanum at 11.30 P.M., after which had an excellent night's rest ; feels well, and is cheerful. The joint looks natural, and as shapely as if never touched. The wound seems quite united ; removed two of the stitches. Bowels not moved ; give a cup of senna with Rochelle salts 3i. Continue soup and roast chicken. 8 o'clock, P.M.—Bowels have moved freely three times. To have ten drops of laudanum if required for rest, meantime he is easy and disposed to sleep.

WEDNESDAY, 30TH NOVEMBER (fourth day), 11 o'clock, A.M.—Slept soundly ; feels refreshed. Wound looking firm ; one ligature has come away.

THURSDAY, 1ST DECEMBER (5th day), at 10 o'clock, A.M.—Slept soundly after getting six drops of laudanum ; relished his breakfast ; removed other two stitches. The wound united throughout. 9 o'clock, P.M.—Cheerful and easy ; bowels slow ; to have a small cup of senna infusion in the morning.

FRIDAY, 2D DECEMBER (6th day), 10 o'clock, A.M.—Passed a good night ; bowels well emptied two hours after having got the senna. Dressed the wound, and removed the fifth stitch. 8 o'clock, P.M.—Has occasional starting when asleep, which pains the limb at the time. The dressing renewed in consequence of being moistened by a serous exudation, which escapes at a small channel formed by the presence of the one remaining arterial ligature, at the outer angle of the wound. The knee looks well and quiet ; bowels rather loose. To have ten drops of laudanum.

SATURDAY, 3D DECEMBER (7th day).—Slept well ; feels comfortable. Dressed the wound ; very little discharge ; removed the remaining stitch ; union complete. 8 P.M.—Complains of his heel ; supported it by a small pad of wadding, placed under the Tendo-Achilles. 8 drops of laudanum to be given.

SUNDAY, 4TH DECEMBER (8th day), 10 o'clock, A.M.—Slept well ; feels well. The one remaining ligature came away. Meat diet, and two oz. of port wine daily. 7 o'clock, P.M.—Bowels have moved naturally ; relished his wine. Lifted the limb out of the metal frame ; renewed the whole paddings and dressings, and replaced the limb as formerly, with little complaint on the part of the patient.

MONDAY, 5TH DECEMBER (9th day), 10 o'clock, A.M.—Slept well ; feels easy. The discharge from the orifice, formerly mentioned, is very trifling, but indicates by its odour the separation of a portion of bone.

TUESDAY, 6TH DECEMBER (10th day).—Had a good night. Can feel with the probe a portion of bare bone at the outer angle of the wound, as yet firmly adherent to the shaft of the femur. Increase the wine to three oz. daily.

WEDNESDAY, 7TH DECEMBER (11th day).—As at last report ; bowels opened naturally.

THURSDAY, 8TH DECEMBER (12th day).—The femur projects somewhat to the right ; its bare point presents itself at the small orifice at the external angle of the wound, occasioning by its pressure tension of the skin and pain. Enlarged the opening, and clipped off a full half inch from the shaft of that bone, which was the extent detected by the finger, to be denuded of periosteum. The patient being under chloroform at the time, the opportunity was taken to remove Macintyre's frame ; and after having fairly straightened and fully re-adjusted the limb and dressings, it was secured in that position by Desault's long straight splint.

FRIDAY, 9TH DECEMBER (13th day).—Required an opiate at midnight. Appetite is impaired to-day ; bowels open.

SATURDAY, 10TH DECEMBER (14th day), 10 o'clock, A.M.—Appetite returned ; feels well, and is cheerful. At his urgent request, the limb was replaced on Macintyre's frame. The object in view, when applying the long splint, has been attained, viz., straightening both thighs on the pelvis ; and now he promises to keep himself straight. 8 o'clock, P.M.—Experiences much comfort from the change of splint. Bowels have moved naturally.

SUNDAY, 11TH DECEMBER (15th day), 10 o'clock, A.M.—The best night he has passed since the operation. The knee looks well ; the pus, small in quantity, is thick

and creamy. The wound recently made is filled to overflowing by four drops of turpentine liniment, which is now the sole dressing. Three oz. of wine daily, and good diet.

MONDAY, 12TH DECEMBER (16th day).—Going on well. He is sitting up in bed. Bowels regular.

THURSDAY, 15TH DECEMBER (19th day).—Well, as at last report.

TUESDAY, 20TH DECEMBER (24th day).—Can move his limb with little assistance, and now without any pain. He moves about in bed freely.

1854. SATURDAY, 14TH JANUARY (49th day).—Has gone on improving. A mere drop of matter oozes from a point at each end of the cicatrix. A superficial abscess offers to form on the upper and outer aspect of the flap, from no very apparent cause. He moves the limb about with great confidence, as if the bony union were firm and complete.

WEDNESDAY, 18TH JANUARY (53d day).—Fluctuation felt at the point above indicated; an opening was made, and nearly half an ounce of ripe pus evacuated.

FRIDAY, 27TH JANUARY (62d day).—The wound has healed up. The boy stands firmly on both feet; the right limb, straight as an arrow, wants only one inch under the heel to make the bearing on both limbs equal. Allowed to rise and dress daily.

FRIDAY, 10TH FEBRUARY (76th day).—The wound firmly cicatrized. He is up daily and going about on crutches. The joint has much the shape of its fellow; is solid to the feel, from the mass of callus present, and is entirely stiffened by ankylosis. The thigh on the right side is more plump than on the left, no doubt, in consequence of the shortening of the shaft, causing the muscles to belly out from relaxation. The joint bears handling freely.

THURSDAY, 16TH FEBRUARY (82d day).—He is daily going about, up and down stairs. By bending his other knee a little, he can walk with both heels on the ground. Is requiring no more surgical treatment, and might be dismissed cured.

FRIDAY, 10TH MARCH (104th day).—He has been kept under observation, and permitted to run about the hospital until to-day, when he is allowed to return home. The right limb is just one inch shorter than its fellow, and is now the thicker of the two, both leg and thigh.

REMARKS.—The mode of operating was that recommended and practised by Mr. Richard J. Mackenzie of Edinburgh—the simplest and most efficient that can well be conceived. A semilunar incision extending from condyle to condyle and bisecting the ligamentum patellæ, gives, on dissecting the flap upwards, complete access to the whole joint, and admits of the easiest possible disarticulation, and removal of the diseased portions of bone. No portion of integument was dispensed with, and it is clear never should be. The cicatrix now shows a mere line. The ligament of the patella is united where it was cut as firmly as if never divided. The patella was pared in its seat, and adds by its presence not only to the symmetry of the limb, but also to the solidity of the joint, and to the firmness of those attachments between the thigh and the leg so necessary in progression, and at the same time, so needful to preserve the limb straight under the weight which it will, in walking, have to carry. The patella is seldom if ever primarily or extensively diseased, so that all that can usually be required is to pare a thin slice from its articulating surface, and this is very easily accomplished by the curved paring knife.

In the operation, as a whole, the cut surface exposed was less by one-third than in a flap amputation of the thigh. Bleeding there was none, and shock there was none. Less of either than was ever witnessed by the operator at any amputation he had ever seen. The period on the table is brief as compared with what is occupied in taking up the numerous arteries after amputation for chronic disease of a knee joint. Two minutes might suffice for completing excision of the knee joint and clos-

ing the wound permanently, but it were hopeless to make any such attempt with amputation ; and it is important, on the patient's account, to keep him as short a time as possible on an operation table.

The after condition of John Hay proved the entire absence of shock to the system ; no fever followed ; his appetite was unimpaired, and any suppuration that occurred was trifling in the extreme.

As to the nature and period of his confinement after the operation, he was able on the sixteenth day to sit up in bed ; on the sixty-second day he was allowed to dress and go about on crutches ; bearing part of his weight on the right foot ; on the eighty-second day he was so firm on his feet, and so sound about the joint, as to be considered no longer under surgical care—a period which any surgeon would gladly accept as a favourable average, if obtainable after amputation of the thigh in a scrofulous subject.

The important question has been asked,—Should the bones be united by ankylosis after excision of the knee joint, or should any attempt be made to form a moveable or artificial joint ?

In confirmed scrofulous disease of the knee joint, ankylosis, if accomplished with the limb nearly straight, is very justly considered a favourable termination to the case—the very fixing of the joint affording a security against the recurrence of like disease in the same joint. Considering, then, the kind of constitution that is so likely to exist in the subject requiring excision of the knee, the risk would be great indeed that diseased action would immediately commence were the denuded head of the tibia required to form a socket in which the end of the shaft of the femur was to roll and rotate, and that also while it had to support the superincumbent weight of the whole body in locomotion.

There cannot be a doubt, therefore, that ankylosis must be secured in every instance to ensure safety to the limb, and *solid* comfort to the patient. The femur and tibia being both sawn across, callus readily unites them, and the patella, intentionally denuded of cartilage, occupies a most important, as well as favourable position, for forming a strong connecting link or band between them, whether the union of the three be by perfect osseous intermixture, or partially by fibrous tissue, the limb straight and strong from being stiff, will safely encounter the fatigues of travel, not more, but now less, subject to disease than the opposite limb. In the case just recorded, the bony union is complete, proving that such is practicable—it is comfortable to the patient and useful. It needs no prophet to foretell, that as sure as it is the rule of practice to insure mobility in the elbow after excision of that joint, so sure will the rule be to secure immobility after excision of the knee joint.

MAY 22D.—John Hay presented himself at the Hospital, walking with the aid of a support in one hand—the knee stiff, and the limb useful.