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ON

AMPUTATION AT THE HIP-JOINT.

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The remarks which I have to offer to the readers of the JOURNAL are based upon a case which occurred at the U.S. A. Hospital at Beverly, N. J., last winter. By the courtesy of Dr. Clinton Wagner, U. S. A., the surgeon in charge, under whose orders I was acting as Consulting Surgeon to the Hospital, the manual procedure was entrustedto me; but, as Dr. W. justly remarks in his (unpublished) Report of Surgical Operations, the successful result was mainly due to the surgical skill and the kind and unremitting attention of Dr. J. C. Morton, Executive Officer of the Hospital.

The patient was a private in the 11th Reg't Maine Volunteers, aged 19, and was brought to Beverly, August 22d, 1864, by steamer, having been wounded at Deep Bottom, Va., on the 16th. The ball had passed through the head of the tibia from before backward.

Sept. 12th, secondary hemorrhage having occurred, chloroform was given, and after a careful examination it was thought

proper to amputate, which operation was performed through the lower third of the thigh, by the circular method. No untoward symptom was observed until October 17th, when bleeding was again set up, and the femoral artery was cut down upon and tied in Scarpa's space. The ligature came away in ten days.

November 5th, the end of the femur protruding through the retracted soft parts, about four inches of the bone were removed by means of the chain-saw. Shortly after this, the stump became enormously swollen and painful, and abscesses formed here and there in it.

January 19th, 1865, the bone was exposed, and found to be greatly enlarged, and in a state of necrosis, as high up as the trochanters. The patient being already under chloroform, the femoral artery was at once exposed and tied in the groin, and the disarticulation of the hip performed by antero-posterior flaps. Some slight difficulty was experienced in controlling the artery accompanying the sciatic nerve, but the quantity of blood lost in the operation was not large. Extreme depression was exhibited, the patient being of necessity kept on the amputating table for two or three days, lest the effort at removal should prove fatal. Large quantities of stimulants and concentrated food were administered, and the surface temperature artificially maintained.

January 27th, bleeding again occurred, and the external iliac artery was tied. The ligature came away in twenty-one days.

February 19th, two days afterwards, the lower end of the divided artery poured fourth blood furiously, and was only controlled with great difficulty by direct pressure, which was kept up for about two weeks.

After this, recovery progressed steadily, and by the end of March the man was well. In May, on the breaking up of the Beverly Hospital, he was transferred to that at Whitehall, and in June he was sent to his home in Maine.

Probably most of the readers of the JOURNAL are acquainted with the case lately published by Dr. Van Buren, of New York, in his valuable "Contributions to Practical Surgery." Here the patient's condition was much more favorable. The first

operation was done for disease of the femur, of twenty years' standing; the second for return of the disease, about two years after. No untoward accident in the shape of hemorrhage occurred. Death took place five years later, from renewal of the disease in the pelvic bones.

Dr. Van Buren refers to three other cases in which amputation at the hip was successfully done after previous removal of the same limb above the knee: one by Sir A. Cooper in 1824, one by Mr. Mayo in 1841, and one by Mr. Sands Cox in 1844.

Another, making six, has been published by Fayrer, of Calcutta. I met with the account in a recent number of the British Medical Journal; the exact reference has escaped me. It is so interesting that an apology is hardly necessary for reproducing it here. "The operation was performed when the patient was very low, suffering from clear indications of blood contamination, the result of a diseased condition of the medulla, which is unfortunately frequent in India after section of the long bones, and the cause of many unsuccessful amputations. The operation was performed and the recovery occurred at a very hot season of the year, the thermometer ranging from 86° to 104°. Cholera and other diseases were very prevalent at the time.

"On April 10th, 1864, a native boy, 16 years old, was thrown from a horse; at the inner side of his knee the soft parts were severely injured, but the joint was, apparently, unhurt; on the 12th it was found that the joint was opened. The limb was then removed at the lower part of the thigh. After the amputation, fever and extensive necrosis of the bone followed, so that, as a chance of saving life, the limb was removed at the hip-joint. The knife was entered a little above and in front of the great trochanter, and emerged at the root of the scrotum. The flap being raised, the femoral artery was tied before the posterior flap was cut. On dividing the bone at the great trochanter drops of pus oozed out of its cancellated tissue; Dr. Fayrer thereupon seized it with the lion-forceps and dissected it out without loss of time. The acetabulum was healthy. All bleeding points, venous and arterial, were tied. The loss of blood was very small—less than eight ounces. His pulse, which was over 150 when the operation was commenced, was

very little weaker after it was over. Stimulants were given and hot bottles applied. After the operation the patient immediately improved, and eventually recovered. The last report of him is as follows: 'He goes to work regularly as a tailor, and is in robust health. He uses crutches and gets over the ground rapidly; is getting fat, and is much grown in height as well as circumference since his accident. He was admitted on April 10th, 1864; thigh amputated on April 12th; hip amputated on April 24th; perfectly cured on July 13th, 1864—just one hundred days from the operation.'"

Dr. Gross, in speaking of this subject, says: "Of seven cases of this kind, in the hands of Astley Cooper, Textor, Mayo, Cox, Syme, Bradbury and Van Buren, all were successful. In an instance in the practice of Mr. Guthrie, where the operation was performed on account of gangrene and hemorrhage, after amputation of the thigh for a gun-shot wound, the result was fatal." *

Four of these cases, those, namely, of Textor, Syme, Bradbury, and Guthrie, I know of through this quotation only; but they bring the whole number of cases up to *ten*, with only one fatal issue. From them it seems to me that some valuable hints may be gained. In two of them, my own and Fayrer's, the circumstances were most unpromising; in the former, the great natural courage of the patient, and the untiring assiduity with which he was watched over by Dr. Morton, carried him through the fearful experience which has been detailed. I know of no parallel case on record.† Disarticulation of the

* System of Surgery, vol. ii., p. 1046. (3d edition.)

† I am tempted to quote here a curious passage, which I met with a few days since in a lecture delivered by Mr. (afterwards Sir) Charles Bell, at the school in Great Windmill street, London, in 1824. He says:

"The mania for amputation at the hip-joint, which has of late years prevailed, I have seen finely exhibited in an individual, who, when the subject was mentioned, actually tore his hair, and exhibited the appearance of the deepest distress; one might have supposed that some of his dearest friends had fallen sacrifices to this operation; but no, the feeling was excited by his recollections being awakened, by the sight of a carious thigh bone, of an opportunity of operating which he had lost."

In a foot-note Mr. Bell adds:

"A friend, on reading this, reminded me that he had been present at this ingular exhibition of professional zeal, and states, what I had forgotten, that

hip is, both to the patient and to the operator, one of the most formidable procedures in surgery, whether we look upon it in its immediate surroundings or in the light of its statistics. The reason does not, however, clearly appear why so many of these cases should turn out badly. Sédillot says: "Its dangers are due to the proximity to the trunk, the extent of the wound, the mass of flesh divided, the difficulty of obtaining union, and the nervous shock arising from the loss of a member representing nearly one-fourth of the entire mass of the body; which shock is so great that the patients often fall into a complete collapse, and die without any assignable cause." *

On the other hand, Erichsen says: "In amputation at the hip-joint the great danger to be apprehended is excessive hemorrhage, the incisions being made so high up that no tourniquet can be applied, nor pressure of the groin trusted to." †

Dr. Gross says that the great risk which attends this operation "is due to the loss of blood, suppuration, erysipelas, and pyæmia." ‡

It would take up too much space to adduce other opinions; those quoted embrace the views of leading writers of the present day in this country, England and France. Some of the sources of danger mentioned may be set aside, as not especially belonging to amputation at the hip.

Pyæmia, erysipelas and excessive suppuration may ensue upon much slighter operations. Hemorrhage may be altogether prevented by compressing the abdominal aorta, either by means of a large clamp tourniquet or by the fingers of assistants.

Ovariotomy, herniotomy, the Cæsarean section, all these show a larger proportion of successful results, and yet they

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the enthusiast, in alluding to the particular instance in which he might have performed the operation, told us 'that as the child had previously lost the greater part of the limb by amputation for disease of the lower part of thigh-bone, there would have been little danger from the shock of separating such a mass as the quarter of the body; I should have only,' said he, 'had to pick out part of the bone from the socket; and thus I should probably not only have been the first of the few whose patients have survived this operation, but have been even the first to have performed it.'"

* Traité de Médecine Opératoire, etc., tome i., p. 157. (Paris, 1853.)

† Science and Art of Surgery, p. 48. (London, 1861.)

‡ Op. cit., p. 1043.

would at first sight seem to involve even graver risk than the disarticulation of the hip. Against the exposure of the large wound-surface in the latter, we have to set off the opening of the peritoneal cavity, so often necessary even to a wide extent in the other operations mentioned.

Probably the true cause of the mortality in coxo-femoral amputation is to be found in the great mass of living tissue removed, and the shock thereby involved; an idea which is supported not only by the fact that the statistics of amputation of the thigh in its upper third are nearly as unfavorable, but also by the far better results attending the operation when the previous removal of the thigh has done away with the circumstance alluded to.

If now we look into the subject of the ordinary operation of amputation at the hip-joint, we shall find in the first place that the greater proportion of successful cases have been those of disease; and that the patient's chances of benefit are increased in traumatic cases by delaying the operative interference as long as possible.*

To quote the experience of American surgeons only, I have been able to collect eight cases of successful amputation at the hip-joint, but one of which was for injury. This one was done by Dr. Edward Shippen, of this city, while in the army; it was performed for a gun-shot wound of the femur, received six hours previously. The patient was subjected, a month afterwards, to the horrors of a Richmond prison; and yet his recovery was perfect.

Mott operated for disease following a badly united fracture; Duffee for coxalgia; Gross for deformity after a burn; Pancoast once for osteo-sarcoma, and once for some other disease to me unknown; Warren for osteo-sarcoma; May for caries of the upper part of the femur.†

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* Gross, op. cit., p. 1046. Legouest, quoted in "Longmore on Gun-shot Wounds," p. 115. (The principle as laid down by Legouest was confirmed by a Committee of the *Société de Chirurgie* of Paris, in 1860.)

Baudens puts this very forcibly: "Let us remember that, while the disarticulation of the knee should be done at once, that of the hip seems not to succeed (paraît ne pouvoir réussir) unless delayed some time after the receipt of the wound." La Guerre de Crimée, p. 132.

† I have been told, but am inclined to doubt the story, that amputation at

Contrasting this list with those so much more familiar, (for instance, Legouest's, of thirty primary operations, all ending fatally,) we can not but regard the prognosis in cases of disease as far more favorable than in cases of injury. The opposite opinion prevailed until set aside by experience. Dr. Pancoast, in his "Operative Surgery," published in 1844, says: "It may be important, however, to observe that nearly all the successful cases have been those in which the operation was practiced for traumatic injuries, and almost immediately after their infliction; while the greater number of fatal results have been consequent to the operation on subjects previously exhausted to more or less extent by disease." I have no doubt that this eminent surgeon would alter this statement were he to write at present on the subject, and mention his view, as expressed, in order to show by how high authority it was indorsed.

If, then, we consider the cases in which the surgeon may be called upon to undertake the coxo-femoral disarticulation, we find them divisible into four classes, according to the degree of probability of success.

(1.) Those in which the same thigh has been previously amputated for injury or disease.

(2.) Those of chronic disease. It would scarcely be fair to place cases of hip-joint disease in this class, although the first successful case in this city (Philadelphia) was of this character. It so often happens that the acetabulum is seriously involved, that in many cases no operation could be of benefit.

(3.) Those in which an attempt has been made to save the limb after injury, and this operation becomes the only hope of the patient.

(4.) Those in which the desperate character of an injury recently inflicted renders death inevitable, unless this slender chance is afforded.

Even in the most favorable cases of the first of the above mentioned classes, amputation at the hip-joint is not to be lightly undertaken. I do not even consider it, as asserted by some writers, one of the easier amputations to perform. The necessity should be stringent, the weighing of the chances careful, the

the hip-joint was twice performed with success by rebel surgeons, during the late war, for gun-shot injuries.

decision conscientiously arrived at. But it does seem to me that the degree of success attained in the recorded cases is such as to make it the imperative duty of the surgeon to perform the operation under the circumstances indicated. In other words, it is not a matter of choice for him whether he will seek to exhibit his prowess with the knife or avoid the risk of failure. He is not only justifiable in operating, but he would be unjustifiable in not doing so.

Should the result be unfavorable, he may, it is true, have painful doubts as to the propriety of the course he was led according to his best judgment to adopt. Probably all honest and conscientious surgeons have known what it is to be so troubled—some, from their mental peculiarities, more than others. And such doubts would be more likely to arise when operative interference had been resorted to than when it had been decided against. Still, this is one of the elements of the responsibility assumed by the surgeon, and can not be evaded.

Before concluding these remarks, it may be proper to observe that, in regard to all operations, a larger proportion of the successes are apt to be placed on record than of the failures. And such may be the case with the amputations at the hip after previous removal of the same thigh at a lower point. But when we consider the very extensive discussion of the general subject of coxo-femoral disarticulation, and the fact that an operation of such magnitude is not apt to be confined to the knowledge of a few persons only, we may fairly suppose that the known cases of the kind just spoken of afford at least as correct a basis for the estimate of a patient's chances as we have for our guidance in regard to any other surgical procedure.

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