

ART. XXII.—*Circular No. 2, War Department, S. G. O., Washington, January 2, 1869. A Report on Excisions of the Head of the Femur for Gunshot Injury.* By GEORGE A. OTIS, Assistant Surgeon and Brevet Lieut.-Colonel U. S. A. Quarto, pp. 143. Washington, 1869.

GUNSHOT injuries of the hip-joint have long been considered as amongst the most serious injuries, not immediately fatal, to which the soldiers of modern warfare are liable. Until within a comparatively few years there was no course of treatment presented to the surgeon except to abandon his patient to a most tedious and painful (and very problematical) convalescence, or to adopt what Hennen terms the "tremendous alternative" of hip-joint amputation, of which he declares "there is not one patient in a thousand that would not prefer instant death to the attempt," and from the very idea of which he exclaims, "the boldest mind naturally recoils." This operation, which Percival Pott called "horrid," and which, though he had seen it done, he was very sure he should never do himself, unless on a dead body, is now grown so familiar to us, at least in this country, that almost every surgeon has seen it done repeatedly, even if he have not himself had occasion to resort to it in practice. Indeed there is no way in which we can more forcibly realize the magnitude of the war through which we have so recently passed, than by opening one of these splendid Circulars of the Surgeon-General's Office, and noting the frequency with which the great operations of military surgery have been employed. Thus one-third of all the hip-joint amputations for gunshot injury which have been recorded up to the date of the volume now before us, are cases which occurred during the late war, while nearly three-fourths of all the hip-joint excisions for similar causes on record, occurred in our armies during the same period.

"Circular No. 2" is devoted to the subject of hip-joint excision, and we now purpose to give a brief analysis of its contents, for the benefit of those of our readers who may not have access to the volume itself. In his prefatory address to the surgeon-general, the reporter, Dr. Otis, takes occasion to reiterate his reasons for classifying the operations which he is about to report into the three categories of primary, intermediate, and secondary.

"This classification," he tells us, "has been criticized by students of the closet and by surgeons in civil life, but by no military surgeons of practical experience. . . . Critics may cavil at the scientific accuracy of such classification, but when the facts are at hand to demonstrate its utility, their strictures are of little value."

For our own part we are disposed to think such a classification eminently scientific, the only apparently valid argument against it being the difficulty in any individual case of fixing the exact period when one stage passes into another; we say *apparently* valid, for every logician will recognize this as a variety of the "falling heap" argument, universally acknowledged as a fallacy. While it may *seem* more precise to classify cases according to the number of hours or days which have elapsed between the time of injury and that of operation, there can be no question, we think, that the more rational division is that adopted by Dr. Otis, into the ante-inflammatory, the inflammatory, and the post-inflammatory stages.

"Although excision of the upper extremity of the femur for gunshot injury was first practised only forty years ago, the bibliography of the subject is inaccessible to many of the medical officers, and it is thought best to review concisely what has been written upon it."

Accordingly the first portion of Dr. Otis's volume is devoted to a Historical Review, which occupies eleven pages, and is generally correct and just. We have, however, found in this portion of the work two very grave errors, which, at the risk of provoking a renewed sneer as to the folly of "students of the closet and surgeons in civil life," presuming to criticize the productions of their military brethren, we will now venture to point out. One mistake is in classing Dr. Ross's case, which occurred in 1850, as an instance of excision of the head of the femur, instead of placing it where it belongs, among the cases of extraction of sequestra already separated by suppurative action. This mistake is the more apparent, because Dr. Hodges (himself favourably known both as a student of the closet and as a surgeon in civil life) had correctly designated the case in question in his monograph on excisions published in 1861. Our knowledge of the case, like that of Dr. Otis, is principally derived from Dr. Fock's paper in the first volume of Langenbeck's *Archiv für klinische Chirurgie*, and that our readers may decide for themselves as to the justness of our criticism, we shall quote the words of the German writer, and then give in parallel columns a literal translation, and the version found in Circular No. 2.

"Hinter dem grossen Trochanter befanden sich drei Fistelöffnungen vorne unter der Schenkelbuge zwei, welche auf ein bewegliches, rauhes Knochenstück führten. Dasselbe wurde am 10. Juni 1850, nachdem die Eiterhöhle, in welcher es hinter den grossen Gefässen eingebettet lag, durch einen genügenden Einschnitt eröffnet war, mittelst eines eingebohrten Tirefonds entfernt: es war der cariöse Schenkelkopf mit einem Theile des Halses." (*Archiv für klinische Chirurgie*, I. Band. I. Heft. s. 214.)

Literal Translation.

Behind the great trochanter were three fistulous openings; in front, under the arch of the thigh, two, which led to a movable, rough piece of bone. The latter was, on June 10th, 1850, after the suppurating cavity, in which it lay imbedded behind the large vessels had been opened through a sufficient incision, by means of a bored-in screw-elevator (tire-fond) removed; it was the carious thigh-head with a part of the neck.

Free Translation of Circular No. 2
(page 13).

"Behind the great trochanter there were three fistulous openings, and two sinuses in front, through which a probe detected rough surfaces of bone. On June 10, 1850, Dr. Ross made a free incision on the outside of the thigh over the trochanter major, and exposed a large suppurating cavity in which lay the carious head of the femur and a large portion of the neck. The diseased epiphysis was twisted off by strong forceps."

If the above citation is not sufficient, we would add that Dr. Fock, in another part of his paper (page 174) distinctly classes Ross's case with those of Schlichting, Vogel, Kirkland, Hofmann, Ohle, Sehmalz, Schubert, Klinger, Harris, Batchelder, Ried, and Brandish, as cases where "the already-separated thigh-head partly by art was removed, partly by itself through a fistula had come out."

The other mistake to which we have alluded is even more serious, as involving a charge of untruthfulness and professional dishonesty against no less eminent a surgeon than Dr. Stromeyer. In referring to Schwartz's case of intermediate excision, Dr. Otis says (p. 13, foot note): "It is re-

markable that Stromeyer appears to claim the operation for his own." So far is this accusation from being merited, that Stromeyer distinctly avers, in the fifth part of his *Handbook of Surgery* (*Statham's translation*, London, 1856, p. 27), that, in the case in question, "Dr. H. Schwartz performed resection under my direction;" and even the sentence which Dr. Otis quotes from Stromeyer's later work has a very different meaning from that which he attributes to it: "Ich liess vornehmen" signifies, not "I undertook," but "I caused to be undertaken."

With these two exceptions, Dr. Otis's Historical Review is, we believe, correct, and probably the best that has yet been published. He properly rejects the case which has been attributed to Ried (whose name Dr. Otis usually misspells Reid), and corrects an error of Dr. Hodges, who placed an operation by the elder Textor among excisions for disease (numbering it 96 in his table), an operation which Dr. Otis here restores to its proper place among excisions for gunshot injury.

The second portion of the Circular treats of "excisions at the hip in the war of the rebellion." No less than sixty-three cases are here detailed, and reference made to a few doubtful cases which are not available for statistical purposes. Thirty-two of these cases were primary operations, with two recoveries; twenty-two, likewise with two recoveries, were intermediate; and nine, with one recovery, were secondary. The operators in the successful cases were Drs. Dement, Leet, Read, Mursick, and D. P. Smith. The patients in four cases recovered with more or less useful limbs, while in the other, though the limb "was useless for purposes of locomotion," it was the cause of no annoyance, the patient earning his living as a shoemaker for some months previous to his death, which was caused by diphtheria a year and a half after the date of the operation. The histories of these sixty-three cases have been compiled with great care from an immense number of separate reports and documents, and the zeal and perseverance which have been shown by Dr. Otis in this portion of his work cannot be too highly commended. One point upon which we must differ from him is as to the importance to be attached to lesions of the acetabulum in considering the propriety of excision in any individual case. Dr. Otis apparently looks upon this complication as contraindicating the operation (pp. 31, 48), though on a later page (123) he makes this rule less absolute. When we consider, however, that thirty-seven cases of this nature treated without any operation all proved fatal; that five cases where the acetabulum was injured (the femur escaping), similarly treated, all died (see page 106); and that in the only case of the kind that is known to have been followed by recovery¹ (that of Lt. Col. Strong, p. 105), a large fragment of the acetabulum was immediately removed by the attending surgeon, thus making the case one of partial primary excision, as far as the pelvis was concerned, we cannot help thinking that statistics certainly do not bear against operative measures, but rather, if applicable at all, in their favour. It used to be said that any lesion of the acetabulum, in cases of coxalgia, should prohibit attempts at excision, and, indeed, Mr. Syme (who, as Dr. Otis justly observes, anticipated Mr. Guthrie in recommending excision of the hip in gunshot injuries) declared that on account of the frequency of acetabular involvement in cases of caries, "there can be no hesitation in regarding the operation as decidedly improper." Yet now,

¹ The record in Dr. Schönborn's case (p. 60) merely says "it is quite probable that the acetabulum was fissured."

thanks to the labours of Hancock and others, we know that the whole floor of the acetabulum may be removed, and, indeed, the entire bony partition between the hip-joint and the interior of the pelvis taken away, without invading the true cavity of the latter. In fact, as we have shown elsewhere (*Penna. Hosp. Reports*, vol. ii. p. 151), the results of total, have been quite as favourable as those of partial excisions, while one of the latest writers on the subject (Dr. Eulenberg) considers the former less fatal than when the femur alone is involved in the operation.

Where there are not sufficient facts on which to found a positive opinion, it is always allowable to reason by analogy; and hence we must consider that in the present state of our knowledge of the subject, pelvic lesions limited to the acetabulum, so far from forbidding operative interference, must rather be considered as urgently calling for it, and should form an additional incentive to the surgeon to resort to either excision or amputation, according to the degree of injury to the femur and adjoining parts.

On page 23, the following sentence is quoted from a report by Prof. McGuire, without contradiction, and we must therefore suppose with approval:—

“It is chiefly to these causes: want of facilities for proper after-treatment, frequent necessity for the removal of patients, tendency to hospital gangrene, pyæmia, etc., and the frequently bad sanitary condition of soldiers in the field, that the greater success of excision of the coxo-femoral joint for disease, than when performed for gunshot injuries, is to be attributed.”

A still more important reason for this difference, is the different age at which the operation is usually performed in the two classes of cases. The average age in 45 of the cases recorded in Circular No. 2, in which this point is noted, is a little over 27 years, and as we have shown in the paper already referred to (*loc. cit.*, p. 149), excision of the hip-joint for disease, in persons as old as this, is by no means a very successful operation.

The third portion of the Circular gives details of 274 cases of injury of the hip-joint, treated during our war by temporization, that is, without either excision or amputation. Of these, 122 were “cases of alleged gunshot injury of the hip-joint with fracture of the head or neck of the femur,” and of these but eight are said to have recovered. Even in these cases, the record is somewhat doubtful, but giving the advocates of non-operative treatment the benefit of the doubt, there remains the frightful mortality of over 93 per cent. If we include 37 cases where the acetabulum was also involved (and it is fair to do so, for similar cases were subjected to excision), the death-rate is raised to nearly 96 per cent.

A few additional cases of coxo-femoral amputation for gunshot injury have been collected since the issue of Circular No. 7, S. G. O., 1867, and the number available for statistical purposes is thus increased from 161 to 183. With Dr. Otis's criticism upon our own case of hip-joint amputation (p. 111), it is probably scarcely necessary for us to say that we entirely disagree. We have given above our reasons for believing that lesions limited to the acetabulum by no means contraindicate resection, and, as justly observed by Mr. Holmes, and as every surgeon who has performed both operations on the living subject must acknowledge, it is much easier to deal with the cotyloid cavity between the flaps of a stump than through the narrow and deep wound of an excision.

We may now follow our author in summing up the statistical results of all that has gone before, and in endeavouring to show what course should

be adopted in the future by those who may have occasion to treat this most serious class of injuries.

Eighty-five¹ cases of hip-joint excision (including ten which have either occurred or been reported since the close of the war) show the following results :—

	Cases.	Died.	Recovered	Death-rate.
Primary	39	36	3	92.3
Intermediate	33	30	3	90.9
Secondary	13	11	2	84.6
Aggregate	85	77	8	90.6

One hundred and eighty-three hip-joint amputations resulted as follows :—

	Cases.	Died.	Recovered	Doubtful.	Death-rate.
Primary	79	75	1	3	98.68
Intermediate	76	70	6	..	92.10
Secondary	20	13	7	..	65.
Reamputations	8	4	4	..	50.
Aggregate	183	162	18	3	90. ²

The mortality in cases treated without operation is, as we have already seen, 93 per cent., or, if cases where the acetabulum was involved are included, nearly 96 per cent.

What course then should be adopted in a case of recent gunshot injury supposed to involve the hip-joint? Obviously the surgeon should at once cut down upon the part and extract any loose fragments that might be found; then, if the joint were really involved, proceed at once to perform a primary excision, or, if other circumstances should require it, an amputation. Primary excision is therefore *the* mode of treatment (*par excellence*) to be recommended in cases of gunshot injury of the hip-joint.

By the time that the intermediate or inflammatory stage has been reached, a considerable number of cases will have been eliminated by death; but, should the surgeon not have an opportunity of seeing his patient before this stage has come on, excision still offers a better chance than either amputation or non-operative treatment. Of the comparatively few cases that survive to reach the secondary or post-inflammatory stage of their injuries, the proper treatment is somewhat more doubtful. As a mere numerical question, the chances are better after an amputation; but it is a well-established maxim of surgery that to save a limb, almost any risk is justifiable. Hence in such a case, if the constitutional state of the patient

¹ The omission of Ross's case, which was fatal (*see above*), would reduce the number to 84, and thus slightly diminish the death-rate.

² Doubtful cases omitted in computing percentages.

and other circumstances were favourable, it would, we think, be right to give conservative surgery the benefit of the doubt, and excise rather than disarticulate. There are, however, as justly remarked by Holmes, certain patients who are so exhausted and worn down by profuse suppuration, bed-sores, diarrhœa, and what not, that they could not possibly survive the necessarily long invalidity which would be entailed by an excision, and yet to whom a skilfully performed amputation would give a chance of life which the surgeon would be wrong to deny them. Such a case was that in which we ourselves felt it our duty to operate (*see* No. of this Journal for Jan., 1869, p. 94), and such cases will unquestionably occur from time to time to every surgeon engaged in the general practice of surgery. These are cases in which, as Hennen phrases it, we must "coolly form our calculations in human blood," and strike a balance between certain death and the "tremendous alternative" of hip-joint amputation.

We have thus terminated our examination of Dr. Otis's handsome volume, which, we think our readers will agree with us, is of very great interest and importance. We could wish that the tone of the writer was a little less positive, and a little more tolerant of those who have the misfortune to differ from him in opinion. We have thought it our duty to point out one or two inaccuracies in Dr. Otis's own work, and yet we should be very sorry to apply to him the judgment with which he judges Professor Pirogoff and Dr. Gross (p. 64), and say, "Thus a proper estimate may be placed upon the value of the evidence which it is not practicable to examine in detail, adduced by [this author] these authors." Disputed points of surgical science are not to be settled in General Orders, and we cannot but think that Dr. Otis's facts and deductions would come with even more conclusive effect than they now do, upon the general professional mind, were they couched in a form, perhaps less military, but at least more considerate of the feelings or even prejudices of others.

In conclusion, we would beg to express our gratification at, and high appreciation of the very great and wise liberality with which these invaluable publications of the Surgeon-General's Office are distributed. Not only are they sent to editors of medical journals, and deposited in public libraries, but they form marked and highly-prized ornaments on the humble book-shelf of many a hard-worked private practitioner, who has no claim to them beyond his common interest in our free, popular government, and the share which every medical man who reads anything, must possess in the republic of letters and universal science.

The present Circular, like its predecessors, is adorned with several beautiful lithographic plates, and many well-executed wood-cuts. J. A., JR.