

ART. II.—*Statistical Inquiry as to the Expediency of Excision of the Head of the Femur.* By CHARLES K. WINNE, M. D., of Buffalo, N. Y.

RESECTION of some of the larger joints dates from the most ancient times, having been proposed by Hippocrates¹ and advised by Celsus in compound luxations and fractures when reduction could not be effected, and also advocated in certain diseases of the bones by Paulus Ægineta² and Rhases; but the two latter writers, who alone mention the hip-joint, denounce all operative interference with it as involving too much danger to life.

The inception of excision of the head of the femur dates from a late period. The credit of suggesting it as an operation worthy of consideration has been awarded to Mr. Charles White,³ of Manchester, who proposed it, as follows: "I have likewise, in a dead subject, made an incision on the external side of the hip-joint, and continued it down below the great trochanter, when cutting through the bursal ligaments, and bringing the knee inwards, the upper head of the os femoris hath been forced out of its socket and easily sawn off; and I have no doubt but that this operation might be performed upon a living subject with every prospect of success." This is the first mention of an operation rendered formidable by the character of the disease or injury for which excision is deemed necessary, the magnitude of the parts implicated, and the results which often succeeded its performance.

In 1818 an appropriate case having presented itself to Mr. Anthony White,⁴ the first operation of the kind was done with the most gratifying result. It was subsequently performed in two other instances by Sir B. Brodie and Mr. Hewson, but these terminating unsuccessfully, the operation was regarded with disfavour by the profession until 1845, when it was revived by Mr. Fergusson.⁵ Since then it has been done in gunshot wounds and the latter stages of morbus coxarius, and by the labours of Fergusson, Jones, Stanley, and others, has assumed the status it deserved.

As the expediency of an operation of such intrinsic importance can only be satisfactorily ascertained by having recourse to statistics, I have endeavoured by the analytical collation of cases to deduce some data for the further elucidation of so interesting a question, and as cases for which the operation is applicable naturally separate into those dependent upon traumatic lesions, and those justified by the sequences of disease, I will pass in rapid and brief review the two classes of cases for which it is considered requisite.

¹ Hippocrates "On the Articulations," sec. 68, and note.

² Paulus Ægineta, book vi., sec. 77, and note, sec. 84.

³ White's Cases in Surgery.

⁴ Cooper's Surgical Dictionary, article "Bones."

⁵ Medico-Chirurgical Trans., vol. xxviii., or Medico-Chirurgical Review, April, 1846.

In military surgery the most eminent authorities from the time of Heister onwards, have coincided in the statement that the hazardous nature of wounds of the joints and the deplorable mortality arising from attempts to save them, have necessitated amputation in all severe cases of gunshot wounds communicating with them. This is more especially the case in gunshot wounds of the hip-joint, for Mr. Alcock's¹ experience in this form of injury was that "the result is generally fatal; three in four died; and in the fourth, when recovery took place, the joint itself, there is some reason to suspect, was but remotely affected." Dr. Thomson² also recommended immediate amputation at the hip-joint when "a musket-ball or grapeshot, or a small portion of shell has been observed to fracture the neck of the thigh-bone or to fracture the head of that bone, and pass through or lodge in the hip-joint. The proportion of cures which has been obtained from amputation at the hip-joint is, I believe, much greater than of cures from gunshot fractures of the head or neck of the thigh-bone. Indeed, of recoveries from these injuries I know of none which have been recorded. Those who for a time seem to do well, in the end sink under the hectic which supervenes." This is the opinion of all military surgeons, and Stromeyer, one of our recent authorities, says: "Left to themselves, all injuries of the femur close to the hip-joint must end fatally."

But the opinions of surgeons have gradually undergone modification since excision of other joints has been attended by success, both as regards a diminished ratio of mortality and a more or less complete use of the limb; and excision is now considered more applicable and as affording a better chance of success than amputation at the hip-joint, in those cases in which the fracture of the head and neck of the femur is unaccompanied by great laceration of the soft parts, injuries of the vessels, or extension of the fracture below the trochanter major; the presence of these lesions of course contraindicating it and affording no resort save disarticulation.

In confirmation of these views Mr. Guthrie³ says: "Picture to yourselves a man lying with a small hole, either before or behind, in the thigh; no bleeding, no pain; nothing but an inability to move the limb, to stand upon it, and think that he must inevitably die in a few weeks, worn out by the continued pain and suffering attendant on the repeated formation of matter burrowing in every direction, unless his thigh be amputated at the hip-joint, or he be relieved by the operation which, I insist upon it, ought first to be performed."

Sir George Ballingall⁴ remarks that the "experience which we have of excision of the head of the femur, in cases of caries, is now considerable, and appears to me to be encouraging; and since I have become familiar with the excision of other joints, I have frequently reflected upon the pos-

¹ Medico-Chirurgical Trans., vol. xxiii., or Medico-Chirurg. Review, April, 1841.

² Quoted in Sir G. Ballingall's *Outlines of Military Surgery*, p. 441.

³ *Commentaries on Surgery*, p. 77. ⁴ *Outlines of Military Surgery*, p. 397.

sibility of substituting the operation of excision for that of amputation at the hip-joint, in some of those cases of gunshot wounds where the latter has been recommended."

The most complete and valuable data heretofore obtained were acquired by the English during their campaign in the Crimea. Mr. Macleod,¹ in narrating the uniformly fatal termination at an early period of the cases in which amputation at the hip-joint was done, declares that "all those, on the other hand, on whom excision was practised, lived in comparative comfort, all without pain for a considerable time. Out of the six operated on one survived for more than a month, one died from causes unconnected with the operation, and one case recovered entirely. The chance of saving life is thus manifestly on the side of excision, and this is truly the most important aspect of the question."

An operation which has thus met with the approval of those best qualified to judge will probably eventually supersede amputation at the hip-joint, as its results are more favourable in those cases of injury of the head and cervix of the femur unattended by the complications before mentioned.

The cases in which this operation has been performed for gunshot wounds are as follows:—

CASE I. Seutin removed six inches of the femur, including the head and cervix, in a comminuted fracture of the cervix attended with but little laceration of the soft parts, followed by death on the ninth day from gangrene.²

CASE II. Oppenheim removed the femur close to the trochanter minor in a fracture of the head of the cervix and trochanter major, from a musket ball. Death took place on the eighteenth day.³

CASE III. Schwartz performed a secondary operation, removing the former "two inches below trochanter minor." Death on seventh day from pyæmia.⁴

CASE IV. Ross operated two years after injury, followed by death.⁵

CASE V. Macleod, in a case of fracture of the trochanter major and cervix received from a ball which had also fractured the ulna, removed the necrosed bone and the head of the femur eighteen days after injury. From the rapid improvement of the condition of the patient and the healthy appearance of the wound, a portion of which had healed, hopes were entertained of his recovery; but about a week after choleraic symptoms supervened with a fatal result. Crude tubercles were found on examination, and the intestines presented appearances of diseased action. The limb was shortened two inches, and the divided surface was unchanged. No symptoms of pyæmia were discovered.⁶

CASE VI. Bleukins operated primarily in a case of injury from shell, which produced extensive laceration of the soft parts, and a comminuted fracture of the neck and trochanters. The femur was divided "at the junction of the upper fifth with the rest of the shaft," and the injury of

¹ Notes on the Surgery of the Crimean War, p. 346.

² Chelius; System of Surgery.

³ Ibid.

⁴ Macleod; Surgery of Crimean War. ⁵ Surgery of Crimean War. ⁶ Ibid.

the capsular ligament necessitated removal of the head of the femur also. The end of the femur and acetabulum were granulating well, and the condition of the patient was favourable, but pyæmia occurred at the end of the third week, causing death at the expiration of a fortnight.¹

CASE VII. Crerar, a few hours after a comminuted fracture through the trochanter major had been made by a fragment of shell, the external wound being small, divided the femur below the seat of injury, removed fragments and then excised the head of the bone. The patient died of exhaustion on the fifteenth day after receipt of injury. "Cut surfaces of the femur perfectly smooth; bone easily divested of its periosteum; acetabulum smooth; muscles infiltrated with pus; nature had not made the slightest attempt to repair the loss."²

CASE VIII. O'Leary excised the head of the femur in a case of fracture of the trochanter major that appeared to involve the joint, which was incorrect, however, the head of the bone being uninjured; five inches of bone were removed; the man recovered, and the report several months after was that "the limb is two inches shorter than the corresponding one, and also considerably smaller; extension can be carried on partially, but he cannot flex the limb upon the thigh without placing his hand on the glutei muscles of the diseased side. Rotation, inwards and outwards, can be performed only to a limited extent. The wound over the joint is quite healed. The man's general health is good, but he cannot walk without the assistance of crutches."³

CASE IX. Hyde operated primarily for a comminuted fracture of the cervix. The patient died on the fifth day.⁴

CASE X. Combe operated, not primarily, however, for a fracture of the cervix, the head of the bone being sound. The man died at the expiration of a fortnight of exhaustion.⁵

Though but one case of excision recovered out of ten subjected to it, yet, on comparing the result of this operation with the alternative of amputation at the hip-joint, we find that out of 126 cases⁶ on whom amputation at the hip-joint was done, 76 died; or, restricting our inquiries entirely to amputation at the hip-joint for gunshot wounds, out of 62 cases⁷ operated on, but 5 recovered, being a mortality of 91.9 per cent.

I have found but one case recorded where the operation has been done as suggested by Jaeger, for abscess consecutive to fracture of the neck of the femur;⁸ in this case the head and neck of the femur and two inches of the great trochanter were removed, by Textor, from a child of seven and a half years, followed by a fatal result on the twenty-third day. After death, the pelvis was found to have been fractured.

In estimating the value of the operation in morbus coxarius, we find that

¹ Surgery of Crimean War.

² Guthrie's Commentaries on Surgery.

³ Surgery of the Crimean War.

⁴ Surgery of the Crimean War.

⁵ Ibid.

⁶ Erichsen's Science and Art of Surgery, 2d edition, p. 43.

⁷ Notes on the Surgery of the Crimean War.

⁸ Chelius' System of Surgery, vol. iii.

even now so little unanimity exists in the profession concerning it, that in but very few formal treatises on surgery is it recognized, or its claims advanced other than hesitatingly, in giving a hope of prolonged life, where, except in rare instances, ankylosis has formed, death has followed, either from the patient sinking exhausted, or from the disease extending to the interior of the pelvis through a perforated acetabulum.

No parallel can be drawn between the result of excision in gunshot wounds and the termination of the same operation in disease, as in one an injury in an adult, of parts unaltered by long continuance of inflammatory action, compels its execution as the least of two evils, while in the other, a disease in the great majority of cases of constitutional origin, and one peculiarly an affection of childhood and early youth, demands, all other treatment having been ineffectual in arresting its progress, a resort to this extreme measure, hoping with the removal of the diseased portions which react upon the general health continuing and increasing the irritation, that a healthy inflammation will be substituted for an unhealthy one, the wound will cicatrize, and the patient be restored to health, or at least to a condition of comfort.

I am necessarily debarred from making any remarks upon the pathology of hip disease, as the object intended in this paper is more to describe the various results succeeding the operation, than to enter upon any elaborate statement in regard to the actual correctness of the views which instituted its practice. The cases most benefited by the operation, in the judgment of those most warmly in favour of it, are those which, in Mr. Erichsen's classification, constitute the femoral variety of the disease.

In these cases the head of the femur alone, or the cervix also, being carious; dislocation existing; the presence of sinuses through which necrosed bone is detected; abscesses exhausting by their continual formation and discharge; the intense suffering produced by the slightest motion; the health affected and manifested by hectic fever, night-sweats, and a depravation of all the secretions—all indicate the propriety of interference when the acetabulum is either healthy or but moderately affected, or when the condition of the patient is not so far reduced as to forbid the additional hazard of an operation.

I may incidentally mention that in the arthritic form, much may be done by the application of a properly adjusted apparatus, keeping the limb extended and motionless, toward promoting more or less complete ankylosis. Cases reported by Mr. Erichsen,¹ Mr. South,² and others, show that this mode of treatment is not confined to the earlier stages of the malady, but that it can sometimes be used with great advantage when dislocation upon the dorsum of the ilium has occurred before the formation of abscesses.

The following table comprises all the cases operated on for morbus coxarins which I have been able to collect :—

¹ Medical News, June, 1857, or Lancet, March 28, 1857.

² Lancet, Feb. 1858.

Excision in Morbus Coxarius.

1	Velpeau's Surgery, edited by Mott, vol. ii.	Schmalz.	M.	..	Head of femur already separated by disease.	..	..	..	Recovered.	Three years; false joint formed by trochanter major.
2	Cooper's Surgical Dictionary, "Bones."	White.	M.	14	Dislocation on dorsum ili; acetabulum entirely absorbed.	Femur divided below trochanter minor.	..	..	Recovered.	Motion perfect save rotation of thigh outward.
3	Medico-Chirurgical Review, April, 1846.	Brodie.	..	Adult.	Head of femur in acetabulum.	..	..	..	Died.	In a few days; effect of the operation.
4	Medico-Chirurg. Rev., April, 1846; Chelius's Surgery, vol. iii.	Hewson.	..	Adult.	Acetabulum diseased.	Femur divided above trochanter minor.	..	..	Died (3 months).	Acetabulum perforated; pelvic abscess.
5	Velpeau's Surgery, edited by Mott, vol. ii.	Schlichting.	F.	14	Head of femur separated by disease; fistula.	Excision through enlarged opening of abscess.	..	..	Recovered.	Walking in six weeks.
6	Velpeau's Surgery, edited by Mott, vol. ii.	Vogel.	F.	..	Head of femur separated by disease; fistula.	..	..	..	Recovered.	..
7	Velpeau's Surgery, edited by Mott, vol. ii.	Kluge.	..	..	Caries of great trochanter and cervix; acetabulum healthy.	Head of femur removed.	..	..	Died (2 dys.).	..
8	Chelius's Surgery, vol. iii.; Lancet, vol. i, 1848.	Textor.	M.	54	Caries of head of femur.	Six inches of bone removed.	..	..	" (53 dys.).	Sloughs on sacrum; wound nearly healed; commencement of false joint; hectic fever.
9	Chelius's Surgery, vol. iii.	Textor.	M.	18	Caries of head of femur.	Removed all above trochanter minor.	..	..	" (4th day).	Gangrene.
10	Lancet, vol. i, 1848.	Textor.	..	..	Dislocated on dorsum ili; acetabulum filled with fibro-gelatinous growth; fistula.	Longitudinal section; 4½ inches of bone removed.	..	..	Recovered.	Motion of limb as good as the other; though not as strong; nearly six inches shorter.
11	Braithwaite's Retrospect, 1846; System of Surgery, London, 1857.	Fergusson.	M.	14	Dislocated on dorsum ili; acetabulum filled with fibro-gelatinous growth; fistula.	Margin of acetabulum removed; trochanter major left.	..	..	Improved.	Great relief; wound never entirely closed; died two years after disease of liver; necrosed bone in cotyloid cavity.
12	System of Surgery, by Fergusson, London, 1857.	Fergusson.	..	..	Sinus and abscess.	..	..	..	Died (7th day).	Abscess in glutei muscles; secondary hemorrhage.
13	Lancet, vol. i, 1848.	Roux.	M.	..	Dislocation; acetabulum much diseased; ramus pubes also affected.	Femur below the section inflamed with pus.	..	..	Recovered.	..
14	Lancet, vol. i, 1848.	Simon.	M.	Child.	Dislocated; sinuses; margin of acetabulum diseased.	Head of femur; portion of acetabulum removed.	..	..	Died (4th day).	..
15	Lancet, vol. i, 1848.	French.	F.	10	Dislocated dorsum ili; sinuses; acetabulum healthy.	Head and trochanter removed.	..	..	Recovered.	..
16	System of Surgery, Fergusson, London, 1857.	Trench.	F.	..	..	..	..	..	Recovered.	..
17	Lancet, April 7, 1849.	Fergusson.	F.	10	Dislocated on dorsum ili; acetabulum filled up with healthy growth of bone.	Femur divided below trochanter major.	..	..	Recovered.	Motion very good; support weight in a short time.
18	Braithwaite's Retrospect, No. 19, 1849.	Smith.	M.	33	Centre and portion of margin of acetabulum removed; dislocated.	Femur removed below trochanter major.	..	..	Improved.	Died in a few months of Bright's disease and lumbar abscess.
19	Lancet, vol. i, 1848.	Walton.	M.	16	Dislocated; sinus; acetabulum not much diseased.	Femur divided below trochanter major; centre and margin of acetabulum removed.	..	..	Convalesced.	At date of report wound nearly closed; great general improvement.

Excision in Morbus Coxarius—Continued.

20	Braithwaite's Retrospect, No. 22.	Skey.	F.	13	Dislocated on dorsum illi; acetabulum enlarged upwards and backwards; head of femur absorbed.	Removed below trochanter major.	..	Result not stated.
21	Braithwaite's Retrospect, No. 23.	Stanley.	M.	8	Dislocated; abscess and fistulæ.	Head of femur removed.	Recovered.	Health improved; part of wound discharging for over a year; some motion.
22	Braithwaite's Retrospect, No. 29, Medical News, Dec. 1854.	Erichsen.	M.	14	Dislocated on dorsum illi; abscess; acetabulum filled with "plastic matter," save at one point, which was carious.	Head of femur removed; spot in acetabulum gouged.	Died.	Improved at first; suppuration profuse.
23	Lancet, vol. 1, 1851.	Morris.	M.	..	Dislocated.	.. .. .	Recovered.	Motion perfect, 3½ inches shortening.
24	Buffalo Medical Journal, Feb. 1855, paper by Dr. Sayre.	Sayre.	..	..	.. .. .	Head of femur removed.	.. .. .	Progress unfavourable; abscess.
25	Buffalo Medical Journal, Feb. 1855, paper by Dr. Sayre.	Hawkins.	F.	10	Margin of acetabulum diseased.	Divided below trochanter; edge of acetabulum removed.	Died (34 day).	Acetabulum perforated.
26	Buffalo Medical Journal, Feb. 1855, paper by Dr. Sayre.	Bigelow.	M.	10	Dislocated.	.. .. .	Died (12th day).	.. .. .
27	Buffalo Medical Journal, Feb. 1855, paper by Dr. Sayre.	Sayre.	F.	9	Large abscess; dislocated on dorsum illi, surrounded by new bone; upper margin of acetabulum absorbed.	Removed through cervix margin; acetabulum, anterior spinous process, and crest ilium gouged.	Recovered.	Very slight shortening; motion very good.
28	Braithwaite's Retrospect, No. 23.	Cotton.	F.	..	.. .. .	.. .. .	Died.	Several months after; death not influenced by operation.
29	Medical News, August, 1854, <i>et</i> Fergusson's <i>sequenter</i> .	Fergusson.	F.	12	Dislocation.	Head and both trochanters removed.	Convalesc'g.	Doing well several months after.
30	Medical News, Oct., Dec. 1854.	Erichsen.	M.	8	Hectic; acetabulum also diseased.	Head and cervix removed; acetabulum gouged.	Recovered.	.. .. .
31	Medical News, Oct. 1855.	Shaw.	M.	18	Dislocated on dorsum illi; carilage absorbed from cotyloid cavity; no active disease.	Head and neck removed.	Improved.	Discharge continued.
32	Med. Times and Gazette, Feb. 7 and April 4, 1857.	Hancock.	M.	14	Acetabulum perforated; pelvic abscess.	Head and trochanter major; floor of acetabulum removed; abscess opened.	Recovered.	Walking in six weeks.
33	Med. Times and Gazette, Feb. 7, 1857.	De Morgan.	M.	17	Dislocated; acetabulum almost healthy.	Head and neck removed.	Recovered.	.. .. .
34	Med. Times and Gazette, Mar. 28, 1857.	Jones.	F.	23	Hectic; bedsores.	Head of femur in socket; cotyloid cavity perforated; large abscess; sinus along ilium.	Recovered.	Three inches shortening.
35	Med. Times and Gazette, June 13, 1857.	Stanley.	M.	14	.. .. .	Head of femur removed with pliers.	Convalesc'g.	.. .. .
36	Med. Times and Gazette, June 13 and Oct. 24, 1857.	Bowman.	M.	11	Abscess; sinus, head in cotyloid cavity.	Femur divided at trochanter minor; acetabulum gouged.	Recovered.	.. .. .

Excision in Morbus Coxarius—Continued.

37	Med. Times and Gazette, Oct. 17, 1857.	Woit.	M.	7	Sinuses; false ankylosis.	Head and neck with portion of acetabulum removed. Removed through trochanters, also margin of acetabulum. Acetabulum gouged.	.. ..	.. ..	Curious bone removed several months after; great discharge.
38	Med. News, June, 1857.	Ericksen.	M.	7	Hætic; dislocated; fistula.	.. ..	Improved.	.. ..	.. ..
39	Med. News, Oct. 24, 1857.	Bowman.	F.	5	Head of femur partially absorbed; acetabulum diseased; ramus pubes bare.	.. ..	Recovered.	.. ..	.. ..
40	Medical News, Nov. 1858.	Fergusson.	M.	Child.	Head of femur partially absorbed; acetabulum filled up.	Wound united by silver sutures.	Convalesc'g.	.. ..	.. ..
41	Lancet, Feb. 1858.	Price.	M.	8	Advance of dislocation; bone included in capsular ligament.	Acetabulum healthy save one or two points.	Recovered.	.. ..	Walking on crutches in nine weeks.
42	Lancet, Feb. 1858.	Hancock.	M.	10	Dislocated; sinuses; phthisis.	Femur divided below trochanter; upper margin of acetabulum diseased.	Improved.	.. ..	Died ten weeks after of phthisis.
43	Lancet, Feb. 1858.	Simon.	M.	Child.	Advanced phthisis; sinus and abscess.	Head of femur removed through enlarged abscess.	Died.	.. ..	Fatal result not hastened by the operation.
44	Lancet, Feb. 1858.	Stanley.	M.	13	Dislocated on pubes; cotyloid cavity filled with soft substance.	Head of femur removed with the saw.	Died.	.. ..	Phthisis; discharge profuse.
45	Lancet, Feb. 1858.	Coote.	M.	16	Dislocated on sciotic notch; acetabulum probably filled up.	Head of femur removed.	Convalesc'g.	.. ..	Doing well in every respect several weeks after.
46	Lancet, Feb. 1858.	Ure.	M.	8	Dislocated on dorsum illi; sinuses; abscess; acetabulum softened.	Femur divided through cervix; acetabulum gouged.	Recovered.	.. ..	Shortening not greater than before; healed, six weeks after; could flex and abduct thigh.
47	Wagner on Resections.	.. ..	M.	..	Abscess; head and neck separated by disease.	Removed through incision.	Improved.	.. ..	Died of Bright's disease one year after; motion limited.
48	Wagner on Resections; Medical-Chirurgical Review, Oct. 1857.	Heyfelder.	M.	20	Partial dislocation; acetabulum also diseased.	Head of cervix, part of trochanters, and acetabulum removed; actual cavity.	Unsuccessful.	.. ..	Amputation at hip-joint three years after; death in 2 hours; pelvis diseased.
49	Wagner on Resections.	Buchanan.	M.	41	.. ..	Head, neck, and margin of acetabulum removed.	Died (3 months).	.. ..	Dysentery; acetabulum filling up deposit cartilage on femur.

An abstract of the above table of 49 cases operated on for caries affords the following results:—

20	cases recovered.
5	“ convalescing or doing well.
6	“ were improved.
15	“ died.
3	“ the result was not stated.

Total 49

Though great relief was experienced from the operation, yet other diseases eventually caused a fatal termination in four of the cases noted as improved; one dying after a few weeks and the others lingering for some months, the wound in one never entirely closing owing to the presence of necrosed bone. Suppuration still continued in the two others when reported, and necrosed bone was removed from one several months after.

The time of death in those cases resulting unfavourably is noted in the reports of 16 cases. 5 cases terminated fatally on or before the seventh day; 1 in a few days; 1 before the expiration of a fortnight; 4 before or during the third month; 2 after an interval of several months; and 3 at an advanced period, ranging from one to three years.

The causes of death including in this enumeration the diseases which carried off those marked as improving, are stated in the records of 15 cases. Viewing death as arising both from the operation and its consequences, and as depending upon the complications of other diseases which might arise under any circumstances, and which cannot *per se* be regarded for that reason as exercising any adverse influence upon the operation in other cases, we find that death ensued,

As the direct effect of the operation in	1 case.
From long continued and profuse suppuration	2 cases.
Gangrene	1 case.
Secondary hemorrhage and exhaustion	1 “
	<hr/> 5 cases.

Diseases causing Death.

Enlargement of the liver	1 case.
Bright's disease of kidney and lumbar abscess	1 “
“ “ “	1 “
Phthisis	3 cases.
Dysentery	1 case.
Death not attributable to operation	1 “
Hectic fever; bedsores; wound nearly closed, false joint forming	1 “
	<hr/> 9 cases.
Amputation at hip-joint for recurrence of caries	1 case.
	<hr/> Total 15 cases.

The age and sex of the patient, as might *a priori* be expected, influence in a great measure the frequency and result of the operation. The following tabular forms comprise the most important points connected with this part of the subject, excluding the three cases of whom the only information respecting their age is that they were children, and classing the two adults in the last table.

<p>No. 1.—10 years of age or younger. 13 cases, 8 males, 5 females. 8 recovered. 1 improved. 1 result not stated. 3 died.</p>	<p>No. 3.—Between 15 and 20 years. 6 cases, males. 1 recovered. 2 convalescing. 1 improved. 2 died.</p>
<p>No. 2.—Between 10 and 15 years. 10 cases, 7 males, 3 females. 5 recovered. 2 convalescing. 1 result not stated. 2 died.</p>	<p>No. 4.—Above the age of 20 years. 5 cases, 3 males, 1 female, 1 sex not given. 1 recovered. 1 improved. 3 died.</p>

One of the most serious objections urged against the operation by its opponents, of whom Mr. Syme¹ is the most prominent and unsparing, is that the acetabulum being almost always affected, the extension of the disease to the pelvis renders futile all attempts to prolong life by the excision of the diseased portions of the femur. The condition of the acetabulum is noted in the preceding table in 32 cases.

Acetabulum healthy; 1 recovered, 1 died	2
Acetabulum absorbed, altered in form or filled with new growth of plastic matter; 3 recovered; 2 convalescing; 1 result not stated; 1 died . . .	7
Not sufficiently diseased to require interference; 2 recovered; 1 improved	3
Small part of margin or centre of acetabulum removed; 1 recovered; 1 convalescing; 4 improved; 3 died; 1 result not given	10
Acetabulum extensively diseased; 4 recovered; 2 died	6
Perforation of acetabulum and pelvic abscesses; 2 recovered; 2 died . . .	4
Total cases	32

I have since found that the above table agrees substantially with the researches of Mr. Hancock upon this point; in those it is stated, that "in 19 of 27 operations performed, the acetabulum afforded more or less evidence of disease at the time of operation. In two there was scarcely a trace of acetabulum. In three the acetabulum was filled with a fibro-gelatinous mass. In six the gouge was employed for caries. In three it was perforated, and in the others it was more or less affected."²

¹ Treatise on the Excision of Diseased Joints, p. 124; Edinburgh, 1831.

² British and Foreign Medico-Chirurgical Review, October, 1857, p. 307.

Owing to the limited number of cases which have been subjected to post-mortem examination, only an approximate idea can be formed concerning the ultimate changes taking place in the parts toward the formation of a false joint. Mr. Walton¹ speaks of a specimen in which the extremity of the femur was rounded off and connected by ligament with the acetabulum. In a specimen in the possession of Mr. Jones,² the end of the femur was connected with the ilium above the cotyloid cavity by an almost complete capsule of fibrous tissue; the acetabulum having been partially absorbed. In Wagner's work on Resections, the appearances of several cases are described. In one, two bony prominences formed from the remainder of the neck of the femur were connected, one above, and the other with the original acetabulum (Case 47), by fibrous tissue. In another who died before the reparative process was completed (Case 8), deposit of new bone had taken place on portions of the acetabulum, and on the femur, the extremity of which was rounded off, and a new irregularly shaped acetabulum was being formed on the ischium where the femur rested. In a third case (Case 2), the bones were united by fibrous tissue, a portion of which consisted of part of the original capsular ligament. Anchylosis had once been present in a case (No. 48) which terminated unsuccessfully, subsequent amputation having been necessary. In only one case (No. 49), where dysentery caused a fatal result in three months, is mention made of cartilage being formed upon the divided surface of the femur; in this case also the acetabulum was being filled up with granulations, save in one spot where a portion of necrosed bone was undergoing disintegration.

The only conclusions we can arrive at from such a paucity of cases, are, that in all probability the bone undergoes after excision the same changes which occur after amputation; that is, its medullary canal becomes occluded, its extremity rounded off and connected either near the acetabulum or with it by fibro-ligamentous tissue, forming the first variety of false joints, described by Rokitansky;³ or very rarely, perhaps, as in the case before mentioned, by the deposition of cartilage and the formation of a more or less perfect capsular ligament.

In the preparation of this succinct account of the principal points of interest connected with the history and practice of excision of the head of the femur, I have omitted all mention of the various modes of operating, and the manner of dressing the limb subsequently, believing that from other sources more information relating to these matters can be acquired than can be advantageously compressed into the brief notice I can give them.

Several cases which I have seen incidentally mentioned by various

¹ *Lancet*, June, 1850, p. 617.

² *Medical Times and Gazette*, Nov. 4, 1854, quoted in Braithwaite's *Retrospect*, Part 31.

³ *Pathological Anatomy*, vol. iii.

writers, I have omitted; for the reason, that I cannot refer to any very authentic histories of them.

I have also, as far as possible, avoided extended comments upon the different classes of cases, or from deducing conclusions from them other than those naturally flowing from them.

ART. III.—*Notes of Surgical Cases.* By B. A. CLEMENTS, M. D.,
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CASE 1. *Bayonet wound through the abdomen; recovery.*—The generally fatal nature of penetrating wounds of the abdomen renders more interesting and worthy of note those exceptional cases, in which the abdominal cavity has been penetrated by large and even sharp instruments and the wounds have been followed by “inconceivably” rapid recoveries. Cases of this exceptional character, of which the following is a rare example, have been related by Paré, Wiseman and others.

Musician E., 7th Regiment Infantry, age 32 years, a healthy temperate man, of spare figure, received on 17th June, '58, at the crossing of the “Big Blue” River, Kansas, a wound from a bayonet in the hands of a deserter which entered at the free extremity of the last false rib on the left side two inches above the crest of the ilium and about four inches from the spine, and emerged at the opposite side of the body, at the edge of the cartilages of the false ribs, two and a half inches to the right of the median line.

The wound was inflicted early in the morning while the patient was fasting, and at the moment he was in a stooping posture, which threw the left side higher than the right; the bayonet was run up to the hilt, and the patient grasped its point as it emerged through the right side.

There was very little hemorrhage from either wound; he walked a few steps, but then fainted. The wound was simply dressed with cold water, and he was left at a cabin near the roadside with a careful attendant. During the day he rejected all fluids taken into the stomach, and in the evening had great pain over the whole abdomen, and was unable to extend the left thigh and leg: he was taken with hiccough, which soon gave place to a severe convulsive movement attended with twitching of the face, and coldness of the body, but without insensibility; these attacks were each of some minutes' duration and recurred five times during the night.

The following day he had fever, high-coloured urine and frequent micturition, and his abdomen was painful, swollen, and hard. On the 19th, two days after the receipt of the wound, he suffered so much from these symptoms that the attendant gave him “a dose of calomel and rhubarb,” and, the pain increasing towards evening, he cupped him over the abdomen and immediately after applied a blister; at night he had two free evacuations from his bowels, which gave him great and speedy relief from the pain, after which he obtained some sleep.