

## THE AFTER-HISTORY OF 41 CASES TREATED BY OPERATION FOR DESTRUCTIVE HIP-JOINT DISEASE.

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IN a very able and candid paper read at the Clinical Society of London on Dec. 12th, 1879,<sup>1</sup> Mr. John Croft gave his experiences up to that date of excision of the hip for tuberculous disease. The cases then analysed amounted to 45 and appear to be the first published series of any magnitude of consecutive cases of excision of the hip occurring in the practice of one surgeon from which it was possible to estimate the intrinsic dangers of the procedure and the prospects of ultimate benefit. In the course of his very careful and honest analysis Mr. Croft showed that "six of the total number of deaths were attributable directly or indirectly to the operation," or nearly 13.5 per cent. Nine other cases died in the course of time but under conditions certainly not attributable to operation and one more succumbed which I gather ought not to have been operated on in his opinion. At all events, 13½ per cent. died as the result of the operation and within about four years 10 others. This gross mortality of 35.5 per cent. within about four years showed a very marked improvement on former statistics of the operation due in a great measure to the introduction of the Listerian methods of wound treatment. Probably such results had never before been achieved. In a later report Mr. Croft showed that his mortality had fallen to 12.6 per cent.<sup>2</sup> In the course of his remarks on his series Mr. Croft pointed out that with greater care as to the selection of cases and a clearer understanding of the nature of the destructive process, together with improvement of technique, a still further improvement would take place. That this forecast has been justified will, I think, be clear from an analysis which I now venture to make of all the hospital cases which have occurred in my own practice since the date of Mr. Croft's communication. The number (41) is nearly the same as in Mr. Croft's series and the analysis has been made almost precisely on the same lines. In the first place, with, perhaps, two exceptions of adults, aged 32 years and 20 years respectively, suffering from what may have been chronic pyæmic infection of the hip-joint, all were operated on for chronic tuberculous disease.

For the purposes of contrast with the experiences of 20 years ago I will further analyse this series in the way in which Mr. Croft has so ably done. In the first place, as in his work, "before operation was resorted to in any case every known reliable treatment suitable to the condition had been tried to arrest the progress of the disease." In my series this included as a rule the fixation of the limb on a double Thomas's splint, tonics and cod-liver oil, fresh air, and the best food procurable, and this treatment was carried out for months and often for years. In no case was an operation undertaken until there was evidence of *extensive formation of matter in the joint* and in all grave changes were found in one or both bones, from wide-reaching caries to the formation of sequestra in both the head of the femur and the acetabulum. I have never operated for that early disease, which has, rightly or wrongly, been the guide for some surgeons, especially abroad, in dealing with tuberculous disease of this joint. The cases have been dealt with at an obviously earlier stage than was formerly the case when this disease from its fearful mortality was regarded almost as *noti me tangere*, but never until an abscess had formed in the joint, and frequently a very large abscess extending for many inches into the thigh. At the same time my constant aim has been to operate before open sinuses had formed and the cavity had become infected with septic organisms. Nevertheless, eight had open sinuses at the time of operation and eight more are noted as having abscesses about to burst and several of them as "hot" and "pointing." These are the conditions which have appeared more than

anything to influence unfavourably the immediate and remote results of such operations.

The next point for contrast between the two eras is that of the mortality directly traceable to the operation. In Mr. Croft's series this was shown to be either 13.5 or 15.5 if one case which he mentions apart (no doubt for good reasons) be included. As to my own series *none* have died before leaving hospital. But one died from marasmus some 18 months after. Whether this case should be debited to the operation or not is open to doubt; but if it is it is the only one. The history is briefly as follows. The patient was a boy aged six years. He had worn a double Thomas's splint for 12 months for tuberculous hip. There was a large abscess in front of the joint. An anterior incision was made. The head of the femur and the acetabulum were carious; the remains of the head were sawn off *in situ*; the acetabulum was gouged and flushed. Iodoform emulsion (*vide infra*). Drain used for 24 hours, then removed. On the tenth day there was union per primam. The last dressing was saturated accidentally with urine and the stitches became infected. He had to be sent to the Children's Hospital, as University College Hospital was closing for alterations. There the wound broke down and became putrid. Seven weeks later the patient was re-admitted at University College Hospital with a sinus which discharged for 17 months. This was dilated and the acetabulum was found to be perforated by a large abscess which drained into the rectum. The other left hip was now found to contain a large tuberculous abscess. Not long after (about 18 months from operation) the child died from marasmus.

Among the remaining cases which I have followed up as carefully as I think was possible only two are known to have died up to the present. The first succumbed five years after the operation from recrudescence of the disease and the formation of sinuses with apparently tuberculous meningitis. The wound of the operation had healed by first intention, and after six months on a splint the patient walked about for four years without any sinus. She then developed a sinus which was scraped and led down to an abscess, and she finally died with severe vomiting and a strabismus suggesting tuberculous meningitis.

The only other patient whose death from any cause I can trace up to the present (May, 1900) has the following history. The patient was a male, aged 20 years. He had had a kick from a horse in the groin 15 months before the operation (December, 1889). A week after the accident pain set in in the joint and lasted up to admission (Jan. 8th, 1891). An abscess formed in the joint a month before operation with starting in the limb. There was much solid œdema and two very large abscesses which had been twice aspirated previously on the upper and inner aspect of the thigh at the moment of operation (Jan. 8th, 1891). Extensive disease of the femur and acetabulum, probably *non-tuberculous*, was found. The diseased femur and acetabulum were dealt with through an anterior incision and the abscesses through two other incisions. Flushing and iodoform emulsion (*vide infra*). All the incisions were closed without drainage. Subsequently the wound had to be drained. He went home on April 3rd, 1891, "nearly well." This patient died on Feb. 20th, 1892, one year after operation, at home. From the friends' account the cause was probably pyæmia.

These three cases are the only ones, as I have said, whose deaths from any cause I have been able to trace during the 22 years over which the series extends. I have spared no pains year after year to find out what has become of them. They tabulate themselves as follows: cases *not* traced after leaving hospital, 11. Of these sound union on leaving is noted in 2. Unhealed, doubtful note, or "nearly healed," 9. Died 17 months after operation, 1; died five years after operation, 1; and died one year after operation, 1. Cases *traced* after leaving hospital: for over 12 years, 1; over 9 years, 3; over 8 years, 2; over 7 years, 1; over 5 years, 3; over 4 years, 1; over 3 years, 4; over 1 year, 2; long after, 9; total, 26. Several of these were seen at a much longer period after operation, but unfortunately no note was taken. Of those traced for years after leaving hospital there had been no recurrence after operation up to the time they were lost sight of in 14. Some recurrence was noted in 10 cases after some years, 2 after many months. But all of these 26 were in good health and walking about when last seen.

As to the functions of the limbs operated on, as seen (in all cases but two) years after, they were excellent. The

<sup>1</sup> THE LANCET, Dec. 27th, 1879, p. 943.

<sup>2</sup> THE LANCET, Feb. 8th, 1890, p. 281.

41 CASES OF OPERATION FOR DESTRUCTIVE HIP JOINT DISEASE.						
No.	Sex, age, right or left hip, date of operation and reference.	Duration of subjective symptoms.	Duration of objective symptoms ; present state.	Operation ; state of parts found ; mode of dressing.	Immediate result of operation.	Ultimate result.
1	Male, aged 16 years. August 8th, 1877.	Nine months.	Laterally an abscess formed and was opened shortly before excision ; very extensive disease.	Posterior curved incision. Washed with carbolic lotion.	Recovered slowly and left hospital March, 1878, looking ruddy and well.	Cannot be traced.
2	Left hip. August 17th, 1881.	Detailed notes missing.	—	Posterior curved incision. Washed with carbolic lotion.	Recovered and left hospital.	Cannot be traced.
3	Female, aged 11 yrs. Right hip. Aug. 15th, 1883. Hosp. Rep., vol. lxxiv., p. 191.	Seven years after a fall ; lame ever since.	Sinus formed two months before followed by great swelling and pain. Flexion nearly right angle with adduction.	Posterior curved incision. Great trochanter and epiphysis removed. Disease extensive. Carbolic oil dressing with drainage.	Fomentations after first few days. Healing very tedious. Pus inclined to bag ; had to be let out from time to time. Temperature usually raised.	Left University College Hospital Jan. 28th, 1884.
4	Male, aged six and a half years. Right hip. August 15th, 1883. Vol. lxxii., p. 204.	Duration not stated in notes.	Duration not stated in notes. Much swelling on admission. Sinus in front of joint.	Posterior curved incision. Extensive tuberculous destructive change of whole joint. Carbolic oil on lint with drainage.	Immediate result fairly good ; went home with sinus. Returned much worse. Question of amputation at hip-joint. Operation refused by parents. Child taken home.	Left University College Hospital Oct. 15th, 1883. Some years later the patient came to me at my house with all sinuses closed and walking well. Alive and well June, 1892. Last sinus closed nine months ago. Leg five inches short, but very useful.
5	Female, aged four years. August 30th, 1883. Vol. lxxii., p. 542.	Four years limping with pain. No injury. Thomas's splint.	Duration of objective symptom not given in notes. On admission intense pain. Distinct clicking in joint under chloroform.	Posterior curved incision. Extensive disease of acetabulum and head, with sequestrum. Cartilage raised by granulation tissue. Chloride of zinc lotion for washing ; carbolic oil dressing ; Hamilton's splint.	Immediate result favourable. Temperature usually 99° F.	Left University College Hospital Oct. 11th, 1883. Last note in book says : "Healing nicely."
6	Male, aged six years. Right hip. Feb. 11th, 1883. Vol. lxxv., p. 694.	One year ago pain in knee and limping. Double Thomas's splint worn ever since at Eastbourne until March, 1883.	Duration of objective symptoms not stated. PS.—Abscess pointing in front of joint. Aspirated ; only one drachm of thick fluid obtained.	Posterior curved incision. Femur sawn across close to trochanter. Acetabulum was scraped out. Two drain-tubes ; carbolic gauze dressings.	Immediate result good. Temperature for a few days from 100° to 103.2° F., then nearly normal. Double Thomas's splint.	Went home with wound nearly healed Jan. 18th, 1884.
7	Male, aged six years. Right hip. Feb. 11th, 1885. Vol. lxxxiii., p. 159.	Pain and fixation began 19 months ago and increased steadily in spite of rest on double Thomas's splint for 12 months.	Abscess over front of joint for one month. Skin red ; veins dilated ; joint fixed.	Anterior incision, Gowat's osteotomy. Abscess large. Head of femur removed, acetabulum scraped clean. Chloride of zinc to deep part of wound. Powdered iodoform in wound. Lister gauze dressing. Drain-tube.	Immediate result generally good. Some bagging of pus on inner aspect of thigh ; had to be opened. Tubes left out at end of second month.	Left University College Hospital May 6th, 1885, with an open sinus. The latter soon healed and the patient walked about for some years quite well. Came back in 1889 with a sinus leading to the acetabulum and an abscess pointing above the ramus of pubis. This healed under prolonged treatment in University College Hospital. Limb flexed and adducted. Sinuses scraped by Mr. B. Pollard, 1894.
8	Male, aged four and a half years. Left hip. June 17th, 1885. Vol. lxxxiii., p. 157.	Injury 13 months ago ; pain and limping ever since.	In December last flexion was nearly to right angles with abduction and eversion. PS.—Fulness in front and over the trochanter. No shortening.	Anterior incision. Neck of femur cut with Adams's saw. Acetabulum scraped. Carbolic spray. Zinc chloride in wound. Drain-tubes. Lister's gauze. Head of bone found to be quite broken down by tuberculous caries.	Immediate result on the whole good. By July 30th wound nearly healed. Sent to convalescent home July 31st on double Thomas's splint.	Seen April, 1888. One inch shortening ; no rotation, adduction, or abduction. Can flex at will to right angle and bring heel to buttock. Wound soundly healed ; walks well. Seen December, 1890. Walks well ; two inches shortening ; very little flexion ; no adduction or eversion. Health very good. Wound perfectly sound. Seen quite recently quite well. Walks admirably.
9	Male, aged five years. Left hip. Sept. 22nd, 1886. Vol. lxxxvii., p. 418.	Pain and limping for six months. On Thomas's splint for six weeks before operation.	Duration of objective symptoms not stated. PS.—Swelling, pain, redness, and fluctuation in front of joint. Very little shortening. Head only partially dislocated ; grating felt on movement.	Anterior incision. Head trimmed with Gowat's osteotome. Acetabulum scraped. Zinc chloride. Drain-tube. Sal. wool dressing. Head of femur and acetabulum extensively carious.	Immediate result good. Left University College Hospital on Oct. 30th, 1886, on double Thomas's splint with wound nearly healed.	Sinus formed October, 1888, and was scraped. Seen October, 1889. Wound soundly healed.
10	Female, aged eight yrs. Right hip. April 27th, 1887. Vol. ci., p. 111.	Injury four years ago with much pain. Treated at King's College Hospital. Abscess opened. Second abscess opened later at Alexandra Hospital. Left "cured."	A month before admission a lump formed over the hip which soon discharged. PS.—Pain, swelling, eversion, and one inch shortening. Temperature from 103° to 104° F.	Anterior incision. Much pus in joint. Head of femur destroyed. Acetabulum fairly healthy. Two drain-tubes. Chloride of zinc wash. Sal. wool dressing.	Immediate result good. Left University College Hospital on June 31st, 1887. Returned on Dec. 22nd for removal of tuberculous glands in the groin.	Seen at my house many months later. Wounds quite healed. Very little deformity.

12	Male, aged 29 years. Right hip. April 11th, 1887. Vol. xcvii., p. 76.	Injury 12 months before operation. Pain increased after. Treated at University College Hospital, rest and extension; much relieved. Forced movement by Hutton, "bone-setter," April, 1887, followed by abscess.	Re-admitted July, 1887. Large fetid abscess discharging badly by one sinus. Skin cedematous; general condition bad.	Anterior incision. Head of femur sawn off. Acetabulum scraped, joint washed clean. Drain-tubes in wound and sinus. Head partially destroyed, cartilage quite gone.	Wound healed rapidly except drain opening. Rapid improvement; left University College Hospital Oct. 20th, 1887, with small sinus draining a little sweet pus.	Left tube out in March, 1888. Many months later the sinus re-opened a little but soon closed firmly. Is still weak on limb, but it is quite straight. Has grown very stout. Small sinus scraped October, 1895. Seen recently quite well.
13	Male, aged four years. Oct. 18th, 1887. Vol. lxi., p. 345.	Injury 12 months ago. Six weeks later began to limp and complain of pain in hip. Double Thomas's splint November, 1886. Pain severe June, 1887. Abscess soon formed in front.	PS.—Abscess over the front of the joint; the skin was red and tender.	Anterior incision. Head sawn off. Joint well scraped and washed. Drain-tube and antiseptic dressing.	Immediate result good; retarded by measles. Left University College Hospital Nov. 17th, 1887, on double Thomas's splint.	Seen months later quite well; wound quite sound. Seen April 20th, 1891, quite well. Only half an inch shortening. Very slight flexion and adduction. Walks well. Seen May 27th, 1891. Walks very well. Hip quite sound, no trace of recurrence. Seen June, 1892, quite well; walks firmly; no trace of recurrence.
14	Male, aged five years. Right hip. July 1st, 1888.	12 months. Splint worn 10 months before operation. First case treated by hot-water flushing and closure of wound without any drain.	Some months during which a large abscess formed in front of joint. No appreciable shortening.	Anterior incision. Head of femur removed, acetabulum gouged and flushed. No drain-tube. Iodoform emulsions. Head of femur nearly quite destroyed; acetabulum extensively eroded. Sal. wool dressing.	Healed per primam. Sutures removed on the thirteenth day. The patient was sent home on double Thomas's splint.	Splint removed eight weeks after operation by mother without my consent and patient was allowed to walk. 12 months later the patient was running about without pain. There was considerable mobility of the joint; also slight flexion; the scar was soundly healed. During the summer of 1890 after scarlet fever a small soft nodule was observed under the scar; this was removed and healed per primam. The boy was shown at the Royal Medical and Chirurgical Society on Oct. 28th, 1890, quite well, all sound. Quite well 1892 (nurse's account). Seen quite well June 14th, 1892. Ran about well, no mischief about hip, but had cold abscess of the size of an apple in the right buttock. Seen quite well July 18th, 1893. Walked well without pain. Very slight flexion and a trace of adduction. Had occasional pain in the hip. Was quite sound. Seen March, 1894, quite well. Had some aching behind the joint lately. At University College Hospital July, 1896. There had been lately a nodule of tubercle in scar now nearly healed. Otherwise quite well.
15	Male, aged six years. Right hip. July, 1888.					Seven weeks later was re-admitted to University College Hospital with sinus. About 17 months later this was dilated and acetabulum was found perforated by large abscess which drained into the rectum. The other hip at this time also contained large tuberculous abscess. Not long after the child died from marasmus.
						Boy got fat and strong, but still had a small sinus with a trace of discharge when he left for the country. Cannot be traced since.
						Wound remained soundly healed. Wore splint for six months, then began to walk about. 10 months after operation was in excellent health, hip soundly healed. The limb was shortened about three-quarters of an inch and foot was slightly everted; the limb was perfectly straight and there was considerable mobility of hip. Cannot be traced. Seen July, 1893. Walks very well. Has a small open sore on outer side of thigh low down. No trouble in hip. Re-admitted July, 1893. Died February, 1894, apparently from bursting tuberculous abscess into the abdomen, perhaps from tuberculous meningitis.



41 CASES OF OPERATION FOR DESTRUCTIVE HIP JOINT DISEASE.

	Operation : state of parts found ; mode of dressing.	Immediate result of operation.	Ultimate result.
4 Male, aged six and a half years. Right hip. August 15th, 1883. Vol. lxxii., p. 204.	Washed	Recovered slowly and left hospital March, 1878, looking ruddy and well.	Cannot be traced.
5 Female, aged four years. August 30th, 1883. Vol. lxxii., p. 542.	Left hospital.	Temperature usually good.	Cannot be traced.
6 Male, aged six years. Right hip. Feb. 11th, 1883. Vol. lxxv., p. 694.	Anterior incision. Abscess large. Head of femur removed. Acetabulum clean. Chloride of zinc part of wound. Powdered gauze. Drain-tube.	Temperature usually good. Re-union fairly good.	Left University College Hospital Oct. 15th, 1883. Some years later the patient came to me at my house with all sinuses closed and walking well. Alive and well June, 1892. Last sinus closed nine months ago. Leg five inches short, but very useful.
7 Male, aged six years. Right hip. Feb. 11th, 1883. Vol. lxxiii., p. 159.	Anterior incision. Abscess large. Head of femur removed. Acetabulum clean. Chloride of zinc part of wound. Powdered gauze. Drain-tube.	Temperature usually good. Re-union fairly good.	Left University College Hospital Oct. 11th, 1883. Last sinus closed nine months ago. Leg five inches short, but very useful.
8 Male, aged four and a half years. Left hip. June 11th, 1883. Vol. lxxiii., p. 157.	Anterior incision. Abscess large. Head of femur removed. Acetabulum clean. Chloride of zinc part of wound. Powdered gauze. Drain-tube.	Temperature usually good. Re-union fairly good.	Left University College Hospital Oct. 11th, 1883. Last sinus closed nine months ago. Leg five inches short, but very useful.
9 Male, aged five years. Right hip. Feb. 11th, 1883. Vol. lxxiii., p. 418.	Anterior incision. Abscess large. Head of femur removed. Acetabulum clean. Chloride of zinc part of wound. Powdered gauze. Drain-tube.	Temperature usually good. Re-union fairly good.	Left University College Hospital Oct. 11th, 1883. Last sinus closed nine months ago. Leg five inches short, but very useful.
10 Female, aged four years. Right hip. Feb. 11th, 1883. Vol. lxxiii., p. 418.	Anterior incision. Abscess large. Head of femur removed. Acetabulum clean. Chloride of zinc part of wound. Powdered gauze. Drain-tube.	Temperature usually good. Re-union fairly good.	Left University College Hospital Oct. 11th, 1883. Last sinus closed nine months ago. Leg five inches short, but very useful.

11	Male, aged 10 years. June 24th, 1887. Vol. xciii.	Injury seven years ago, since which the patient has always complained of hip. In a hip hospital for eight months and as an out-patient for two and a half years.	Five months before admission the patient received another blow on the hip after which a lump formed. PS.—Flexion to right angle; whole joint swollen, red, and tender. Two sinuses in front and externally.	Anterior incision. Cavity opened. Head of bone sawn off. Cavity scraped. Two drain-tubes. Iodoform and salicylic wool dressing. Sent to Eastbourne on August 14th with wound nearly healed.	Immediate result good. Temperature raised for a few days.	Not traced.
12	Male, aged 29 years. Right hip. April 11th, 1887. Vol. xcvi., p. 76.	Injury 12 months before operation. Pain increased after. Treated at University College Hospital, rest and extension; much relieved. Forced movement by Hutton, "bone-setter," April, 1887, followed by abscess.	Re-admitted July, 1887. Large fetid abscess discharging badly by one sinus. Skin cedematous; general condition bad.	Anterior incision. Head of femur sawn off. Acetabulum scraped, joint washed clean. Drain-tubes in wound and sinus. Head partially destroyed, cartilage quite gone.	Wound healed rapidly except drain opening. Rapid improvement; left University College Hospital Oct. 20th, 1887, with small sinus draining a little sweet pus.	Left tube out in March, 1888; everything soon healed. Many months later the sinus re-opened a little but soon closed firmly. Is still weak on limb, but it is quite straight. Has grown very stout. Small sinus scraped October, 1895. Seen recently quite well.
13	Male, aged four years. Oct. 18th, 1887. Vol. lxxii., p. 345.	Injury 12 months ago. Six weeks later began to limp and complain of pain in hip. Double Thomas's splint November, 1886. Pain severe June, 1887. Abscess soon formed in front.	PS.—Abscess over the front of the joint; the skin was red and tender.	Anterior incision. Head sawn off. Joint well scraped and washed. Drain-tube and antiseptic dressing.	Immediate result good; untarried by measles. Left University College Hospital Nov. 17th, 1887, on double Thomas's splint.	Seen months later quite well; wound quite sound. Seen April 20th, 1891, quite well. Only half an inch shortening. Very slight flexion and adduction. Walks well. Seen May 27th, 1891. Walks very well. Hip quite sound, no trace of recurrence. Seen June, 1892, quite well; walks firmly; no trace of recurrence.
14	Male, aged five years. Right hip. July 1st, 1888.	12 months. Splint worn 10 months before operation. First case treated by hot-water flushing and closure of wound without any drain.	Some months during which a large abscess formed in front of joint. No appreciable shortening.	Anterior incision. Head of femur removed, acetabulum gouged and flushed. No drain-tube. Iodoform emulsions. Head of femur nearly quite destroyed; acetabulum extensively eroded. Sal. wool dressing.	Healed per primam. Sutures removed on the thirteenth day. The patient was sent home on double Thomas's splint.	Splint removed eight weeks after operation by mother without my consent and patient was allowed to walk. 12 months later the patient was running about without pain. There was considerable mobility of the joint; also slight flexion; the scar was soundly healed. During the summer of 1890 after scarlet fever a small soft nodule was observed under the scar; this was removed and healed per primam. The boy was shown at the Royal Medical and Chirurgical Society on Oct. 28th, 1890, quite well, all sound. Quite well 1892 (nurse's account). Seen quite well June 14th, 1892. Ran about well, no mischief about hip, but had cold abscess of the size of an apple in the right buttock. Seen quite well July 18th, 1893. Walked well without pain. Very slight flexion and a trace of eversion and adduction. Had occasional pain in the hip. Latter was quite sound. Seen March, 1894, quite well. Had had some aching behind the joint lately. At University College Hospital July, 1896. There had been lately a nodule of tubercle in scar now nearly healed. Otherwise quite well.
15	Male, aged six years. Right hip. July, 1888. Died from marasmus, 1888.	12 months. Double Thomas's splint worn for 12 months.	Duration of objective symptoms not known. Large abscess in front of the joint. No appreciable shortening.	Anterior incision. Head of femur sawn off; extensively eroded. Carious focus on saw-cut gouged. Acetabulum bare. Drain-tube for 24 hours. Iodoform emulsion. Sal. wool dressing. Gouging and flushing.	Healed completely on tenth day, when the stitches were removed and the patient was transferred to the Children's Hospital. The last dressing, however, had been allowed to become soaked with urine and to become putrid in this way; the stitches were inoculated with septic matter and broke down later in the Children's Hospital.	Seven weeks later was re-admitted to University College Hospital with sinus. About 17 months later this was dilated and acetabulum was found perforated by large abscess which drained into the rectum. The other hip at this time also contained large tuberculous abscess. Not long after the child died from marasmus.
16	Male, aged seven years. Right hip. November, 1888.	12 months. Splint worn only for 12 days before operation.	12 months, during which a large abscess formed in front of the joint. Skin very much thinned and discoloured.	Anterior incision. Head of femur eroded extensively, leaving very little to be removed by saw. Acetabulum deepened by erosion and osteophytes round margin. Gouged and flushed. No drain-tube; Iodoform emulsion. Sal. wool dressing.	Healed at first, but scar gradually gave way again, the skin being so thin. An opening also formed at old aspirator puncture.	Boy got fat and strong, but still had a small sinus with a trace of discharge when he left for the country. Cannot be traced since.
17	Female, aged nine years. Left hip. Jan. 8th, 1889.	Six months. Double Thomas's splint worn four months before operation.	Four months during which abscess formed over front of joint. The head of femur had slipped out of socket partially and could be pushed in with a click.	Anterior incision. Head removed and acetabulum gouged clean and flushed. Abscess extended down thigh under femoral vessels to the inside; it was well scraped and flushed. No drain-tube. Iodoform emulsion. Sal. wool dressing.	Healed per primam. Sutures removed on the fourteenth day. Left University College Hospital on the sixteenth day with double Thomas's splint.	Wound remained soundly healed. Wore splint for six months, then began to walk about. 10 months after operation was in excellent health, hip soundly healed. The limb was shortened about three-quarters of an inch and foot was slightly everted; the limb was perfectly straight and there was considerable mobility of hip. Cannot be traced. Seen July, 1893. Walks very well. Has a small open sore on outer side of thigh low down. No trouble in hip. Re-admitted July, 1893. Died February, 1894, apparently from bursting tuberculous abscess into the abdomen, perhaps from tuberculous meningitis.

41 CASES OF OPERATION FOR DESTRUCTIVE HIP-JOINT DISEASE—(Continued).

No.	Sex, age, right or left hip, date of operation, and reference.	Duration of subjective symptoms.	Duration of objective symptoms ; present state.	Operation ; state of parts found ; mode of dressing.	Immediate result of operation.	Ultimate result.
18	Male, aged five years. Left hip. June 8th, 1889. Left for home September, 1889.	Six months.	Over three months. Large abscess on the outer side of the thigh. One inch shortening.	Not much fluid in the swelling, but chiefly pulpy matter. Most of bone disease in neck of the femur. Acetabulum carious ; gouged and flushed clean. Head of femur sawn off. Double Thomas's splint.	Sutures removed fourteenth day ; wound was healed by first intention. Left hospital in three months wearing double Thomas's splint.	Some months after leaving hospital caught erysipelas on abrasion in the perineum. This passed off without any ill effect to joint which was soundly healed. Six months after operation all was well about joint ; still wore splint as before. In March, 1891, was found to have a caseous mass under the skin on the outer side of the joint. Removed by Dr. Whittle ; primary union. Walked well. Caseous mass found under skin outside hip, March, 1891. Boy walking as usual. Mass removed by Dr. Whittle, who wrote on May 31st to say that primary union followed and that all was now sound and the boy looked very well indeed. Re-admitted Nov. 11th with second scar breaking down and pulpy swelling round the hip. April, 1892, excellent health ; all quiet about joint ; one and three-quarter inches shortening. On Feb. 26th, 1893, the scar of my operation was perfectly sound. Dr. Whittle wrote that his scar on the outside of the joint where he opened an abscess had partially broken down. The tissues round the upper part of the thigh were sound otherwise and showed no abnormality. Wore splint for six months after operation and grew fat and strong. Then began to walk about. Blow on hip December, 1890 ; walked about as usual until end of January, 1891, when an abscess was found outside joint about to burst. Opened and flushed by Dr. Whittle, who writes May 31st, 1891, to say all is soundly healed and child is in excellent health. April, 1892, excellent health ; all quiet about the joint ; less than one inch shortening. Seen by Dr. Whittle in January, 1893, walking with a stick or crutch, in the best of health. Boy rapidly improved and grew fat. About a month after operation there was some simple thrombosis of a deep vein of the leg ; soon well. Was walking about now quite well. Seen June 14th, 1892 ; quite well ; walked firmly ; no trace of recurrence ; one and a half inches shortening. The patient was kept on double Thomas's splint several months and then allowed to walk. Seen at University College Hospital April 21st, 1893. Limb one and a quarter inches short ; leg three quarters of an inch. Femur slipped up. There were slight flexion and eversion and very slight adduction. She walked well. The hip had been sound ever since. Wore double Thomas's splint for some months, then only at night. Beginning of 1891 began to walk. Seen April, 1891 ; was in the best of health ; sound hip ; beginning to walk alone with high boot. Limb perfectly straight ; free flexion in hip. Re-admitted Dec. 14th, 1891, with a fluctuating swelling under the scar ; opened, washed out, and closed. March 23rd, 1892, slight superficial sore. Walked well. September, 1892, quite well—"splendid." Re-admitted Jan. 14th, 1893. Since last seen had been out of splint, running about and going to school. Limb shortened and smaller than fellow : right foot six and a half inches, left foot five and three quarter inches. Total shortening one and a half inches = one and a quarter to femur, quarter to tibia. Good movement ; no flexion ; a little adducted, not everted. Flexion to 60° ; rotation to 45°. Abscess under healed scar, which was thin. Abscess of the size of a Tangerine orange. General condition very satisfactory. Jan. 15th, 1893, abscess opened by excising old scar. Reached to upper border of acetabulum ; carious bone scraped away. Flushed iodoform emulsion. Closure without drain. First dressing removed on the eighth day. Healed
19	Female, aged five years. June 8th, 1889. Right hip.	Nine months.	Six months. Fulness about the joint. No shortening. Deep-seated fluctuation. March 6th, 1894, child the picture of health. Runs about ; one and a half inches shortening. Leg is sound and muscular. Scars sound. Dr. G. W. Whittle of Brighton.	Large deep abscess opened. Head and neck of femur were carious. Acetabulum was carious with a perforation of the size of the forefinger into an intra-pelvic abscess of the size of half a large egg. Head of femur sawn off, acetabulum and abscess gouged and flushed. Double Thomas's splint.	Sutures removed on seventh day. Wound perfectly united per primam. Left hospital in four months quite well, wearing double Thomas's splint.	
20	Male, aged eleven years. Sept. 3rd, 1889. Left hip.	Eleven months. Double Thomas's splint worn for six months before operation.	Five months before operation an abscess began to form in front of the joint. Half an inch shortening. Cutaneous veins dilated and skin reddened over the abscess.	A large abscess opened over the joint extending under the tensor vaginæ femoris and over the origin of the rectus. Head of femur much eroded and acetabulum extensively carious. Gouged and flushed with hot water. Iodoform emulsion. Anterior incision. Abscess flushed hot water. Diseased head removed. Acetabulum gouged clean. Iodoform emulsion.	Healed per primam and remained sound ever since. Stitches removed on the twelfth day. Left hospital on double Thomas's splint on seventeenth day quite well ; limb perfectly straight.	
21	Female, aged nine years. May 23rd, 1890. Left hip.	14 months. Splint worn eight months before operation.	Eight months before operation an abscess began to form round the joint.		No complications. First dressing on the twelfth day. Perfect union per primam. Stitches removed.	
22	Female, aged four years. Left hip. July 4th, 1890. Left for home on August 2nd, 1890.	12 months. Splint worn for four months before operation.	Some months before operation an abscess began to form in front of the joint.	Abscess opened and flushed with hot water. Diseased head removed with loose sequestrum. Acetabulum carious ; gouged and flushed. Iodoform emulsion.	First dressing eleventh day ; primary union. Stitches removed.	

It was perfectly plain that in the first two operations the large abscess had been left with sufficient tuberculous matter in the cavity. But from the first the child had been healthy, and the last flushing was effective. However, was effectually cleared by the first operation and remained sound. It was only the abscess cavity which showed re-infection. In February, 1892, everything was sound about all wounds; the child was well and walking about. May, 1892, quite well; all quiet about joint, one and three-quarter inches shortening. No trace of recurrence. Beginning to walk firmly. Seen November, 1892, walked well; no trace of recurrence, only a trace of flexion and a little eversion. Firm fibrous union. Jan. 20th, 1893, she was quite well and ran about; no sign of recurrence. Seen recently all sound.

Union per primam. Stitches removed on the twelfth day.

Extensive disease of the head and acetabulum. Three incisions were made, two into the abscess and one in the usual position into joint. Head of femur removed; acetabulum and abscess flushed with hot water; filled with iodoform emulsion. Complete closure of wound.

Abscess above and below Poupert's ligament for a month; fluctuation from one to the other. General condition good.

On admission inversion, adduction, and flexion with much pain and three-eighths of an inch shortening.

Female, aged three and a half years. Right hip. Feb. 12th, 1891.

Returned June 22nd, 1891. Scar slightly tuberculous and anterior abscess slightly refilled. Scar of excision dissected out; small track found leading to joint, flushed, packed, filled with iodoform emulsion, and closed. Abscess of the size of a bantam's egg treated in the same way. May, 1892, seen lately by Mr. Marshall. The child was quite well; all quiet about joint. Jan. 23rd, 1893, seen by house surgeon at University College Hospital. Everything sound about the wound.

Wounds still discharging some weeks later when last heard of. He died on Feb. 20th, 1892, from pyæmia, according to friends' account, one year after operation.

Seen for operation on April 25th. Skin wound almost healed, but double Thomas's splint. Reported "result excellent" by Mr. S. H. Burton of Norwich, June 23rd, 1891. Report by patient's mother, November, 1892: "Boy very well, never limps, his hip; goes about without crutches."

Severe pain set in in his hip. Children, Great street: weight and height 10 weeks. The splint and high site limb 14 months ago. Quite well. National Hospital. The five months bed.

Good health four months. June 19th, 1891. Left for home July 18th, 1891.

Male, aged four years. Left hip. March 21st, 1891.

Seen for operation on April 25th. Skin wound almost healed, but double Thomas's splint. Reported "result excellent" by Mr. S. H. Burton of Norwich, June 23rd, 1891. Report by patient's mother, November, 1892: "Boy very well, never limps, his hip; goes about without crutches."

Seen for operation on April 25th. Skin wound almost healed, but double Thomas's splint. Reported "result excellent" by Mr. S. H. Burton of Norwich, June 23rd, 1891. Report by patient's mother, November, 1892: "Boy very well, never limps, his hip; goes about without crutches."

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OPERATION FOR DESTRUCTIVE HIP-JOINT DISEASE—(Continued).

	State of parts found; Dressing.	Immediate result of operation.	Ultimate result.
Female, aged five years. June 8th, 1889. Right hip.		Sutures removed fourteenth day; wound was healed by first inten- sion. Left hospital in three days, wearing double Thomas's	Some months after leaving hospital caught erysipelas on abrasion in the perineum. This passed off without any ill effect to joint which was soundly healed. Six months after operation all was well about joint; still wore splint as before. In March, 1891, was found to have a caseous mass under the skin on the outer side of the joint. Removed by Dr. Whittle; primary union. Walked well. Caseous mass found under skin outside hip, March, 1891. Boy walking as usual. Mass removed by Dr. Whittle, who wrote on May 31st to say that primary union followed and that all was now sound and the boy looked very well indeed. Re-admitted Nov. 11th with second scar breaking down and pulpy swelling round the hip. April, 1892, excellent health; all quiet about joint; one and three- quarter inches shortening. On Feb. 26th, 1893, the scar of my operation was perfectly sound. Dr. Whittle wrote that his scar on the outside of the joint where he opened an abscess had partially broken down. The tissues round the upper part of the thigh were sound otherwise and showed no abnormality.
Male, aged eleven years. Sept. 3rd, 1889. Left hip.	Eleven months before opera- tion abscess began to form in the joint. Half an inch enlarging. Cutaneous veins enlarged and skin reddened over abscess.	Seventeenth day. Sutures removed and wound healed by first intention. Left hospital four days, wearing double Thomas's	Wore splint for six months after operation and grew fat and strong. Then began to walk about. Blow on hip December, 1890; walked about as usual until end of January, 1891, when an abscess was found outside joint about to burst. Opened and flushed by Dr. Whittle, who writes May 31st, 1891, to say all is soundly healed and child is in excellent health. April, 1892, excellent health; all quiet about the joint; less than one inch shortening. Written by Dr. Whittle in January, 1893, walking with a stick or crutch, in the best of health.
Female, aged nine years. May 25th, 1890. Left hip.	Fourteen months before operation abscess began to form in the joint. Half an inch enlarging. Cutaneous veins enlarged and skin reddened over abscess.	Seventeenth day. Sutures removed and wound healed by first intention. Left hospital four days, wearing double Thomas's	Wore splint for six months after operation and grew fat and strong. Then began to walk about. Blow on hip December, 1890; walked about as usual until end of January, 1891, when an abscess was found outside joint about to burst. Opened and flushed by Dr. Whittle, who writes May 31st, 1891, to say all is soundly healed and child is in excellent health. April, 1892, excellent health; all quiet about the joint; less than one inch shortening. Written by Dr. Whittle in January, 1893, walking with a stick or crutch, in the best of health.
Female, aged four years. Left hip. July 4th, 1890. Left for home on August 2nd, 1890.	Twelve months before opera- tion abscess began to form in the joint. Half an inch enlarging. Cutaneous veins enlarged and skin reddened over abscess.	Seventeenth day; sutures removed.	Wore double Thomas's splint for some months, then only at night. Beginning of 1891 began to walk. Seen April, 1891; was in the best of health; sound hip; beginning to walk; alone with high boot. Limb perfectly straight; free flexion in hip. Re-admitted Dec. 14th, 1891, with a fluctuating swelling under the scar; opened, washed out, and closed. March 23rd, 1892, slight abscess at scar. Walked well. September, 1892, quiet. Seen at school. Re-admitted Jan. 14th, 1893. Since last seen at school limb out of splint, running about and going to school. Limb shortened and smaller than fellow; right foot six and a half inches, left foot five and three quarter inches. Total shortening one and a half inches = one and a quarter to femur, quarter to tibia. Good movement no flexion; a little adducted, not everted. Flexion 60°; rotation to 45°. Abscess under healed scar, orange- y, was this abscess of the size of a Thengur's orange. Abscess opened by excising six weeks. Resulted to upper limb.

23	Female, aged six years. Left hip. Jan. 21st, 1891. Left for home May 2nd, 1891.	Began to limp about one year before operation. Wore double Thomas's splint seven months. Mother died from phthisis.	An abscess began to form a month before operation and reached soon down the front of the thigh for five inches. Adduction and shortening.	Two incisions one into front of abscess; the other in usual position into front of joint. Head of femur, much diseased, trimmed off with saw. Sequestrum in acetabulum, which was caseous. Free gouging and flushing with hot water. Iodoform emulsion. Complete closure.	Primary union of both wounds. Soon after both scars were evidently inoculated from within with tubercle. Both were excised and the cavity was refilled. The lower scar, evidently re-infected from below, was again included in two curved incisions and removed. The cavity, which was lined with tuberculous matter, was flushed and scraped and closed without drainage. Union was perfect and permanent.	Union per primam. Stitches removed on the twelfth day.	Returned June 22nd, 1891. Scar slightly tuberculous and anterior abscess slightly refilled. Scar of excision dissected out; small track found leading to joint, flushed, scraped, filled with iodoform emulsion, and closed. Abscess of the size of a bantam's egg treated in the same way. May, 1892, seen lately by Mr. Marshall. The child was quite well; all quiet about joint. Jan. 23rd, 1893, seen by house surgeon at University College Hospital. Everything sound about the wound.	Wounds still discharging some weeks later when last heard of. He died on Feb. 20th, 1892, from pyæmia, according to friends' account, one year after operation.	Sent home on April 25th. Skin wound almost healed, wearing double Thomas's splint. Reported "result excellent" by Mr. S. H. Burton of Norwich, June 23rd, 1891. Report by patient's mother, November, 1892: "Boy very well, never complains of his hip; goes about without crutches; is lame, of course."	Temperature rose to 100·6° F. the day after operation, then fell and kept below 100° always. When the boy left for home on May 20th he looked very well and the wound was soundly healed everywhere. Examined July 6th, 1891. The wound had soundly healed in every way. He was still on splint. Seen at University College Hospital March, 1892: all sound; position good; walked well; to wear splint at night. Seen October, 1893: quite well; walked about.	Temperature rose to 103° F. on the day of operation, then fell to under 100° for the rest of the week. Rose once again for unassignable cause.
24	Female, aged three and a half years. Right hip. Feb. 12th, 1891.	On admission inversion, adduction, and flexion with much pain and three-eighths of an inch shortening.	Abscess above and below Poupert's ligament for a month; fluctuation from one to the other. General condition good.	Extensive disease of the head and acetabulum. Three incisions were made, two into the abscess and one in the usual position into joint. Head of femur removed; acetabulum and abscess flushed with hot water; filled with iodoform emulsion. Complete closure of wound.	Returned June 22nd, 1891. Scar slightly tuberculous and anterior abscess slightly refilled. Scar of excision dissected out; small track found leading to joint, flushed, scraped, filled with iodoform emulsion, and closed. Abscess of the size of a bantam's egg treated in the same way. May, 1892, seen lately by Mr. Marshall. The child was quite well; all quiet about joint. Jan. 23rd, 1893, seen by house surgeon at University College Hospital. Everything sound about the wound.	Wounds still discharging some weeks later when last heard of. He died on Feb. 20th, 1892, from pyæmia, according to friends' account, one year after operation.	Sent home on April 25th. Skin wound almost healed, wearing double Thomas's splint. Reported "result excellent" by Mr. S. H. Burton of Norwich, June 23rd, 1891. Report by patient's mother, November, 1892: "Boy very well, never complains of his hip; goes about without crutches; is lame, of course."	Temperature rose to 100·6° F. the day after operation, then fell and kept below 100° always. When the boy left for home on May 20th he looked very well and the wound was soundly healed everywhere. Examined July 6th, 1891. The wound had soundly healed in every way. He was still on splint. Seen at University College Hospital March, 1892: all sound; position good; walked well; to wear splint at night. Seen October, 1893: quite well; walked about.	Temperature rose to 103° F. on the day of operation, then fell to under 100° for the rest of the week. Rose once again for unassignable cause.		
25	Male, aged 20 years. Left hip. Feb. 25th, 1891. Died Feb. 20th, 1892.	Kick of a horse 15 months before operation in groin. A week later pain set in in joint and had lasted ever since. Thomas's splint since May, 1890.	Abscess formed in January, 1891, with starting of limb. Aspirated twice before operation. Two large abscesses in the upper and inner part of the thigh with solid œdema and discoloration of skin.	No deformity; no shortening. Extensive disease of the femur and acetabulum, probably non-tuberculous. Two large abscesses were opened and the head of the femur was excised by a third anterior incision. Acetabulum was gouged and flushed with hot water. Iodoform emulsion. Suture of all incisions without drainage.	Temperature rose to 103·6° F. on the third day. Abscess distended. A few stitches were removed. 12 ounces of turbid fluid escaped. Drain-tubes were put in in all incisions. After this the temperature fell and the cavities shrank up well. The wounds were almost well on April 3rd, when he went home.	Sent home on April 25th. Skin wound almost healed, wearing double Thomas's splint. Reported "result excellent" by Mr. S. H. Burton of Norwich, June 23rd, 1891. Report by patient's mother, November, 1892: "Boy very well, never complains of his hip; goes about without crutches; is lame, of course."	Temperature rose to 100·6° F. the day after operation, then fell and kept below 100° always. When the boy left for home on May 20th he looked very well and the wound was soundly healed everywhere. Examined July 6th, 1891. The wound had soundly healed in every way. He was still on splint. Seen at University College Hospital March, 1892: all sound; position good; walked well; to wear splint at night. Seen October, 1893: quite well; walked about.	Temperature rose to 103° F. on the day of operation, then fell to under 100° for the rest of the week. Rose once again for unassignable cause.			
26	Male, aged five years. Left hip. March 21st, 1891.	Three months' symptoms.	Seen for first time 10 days before operation. Treated with extension and weight. Fluctuation and three-quarter inch shortening.	Anterior incision; head of femur half destroyed with two small sequestra. Acetabulum carious; large abscess under adductors. Head sawn off, socket gouged and flushed with hot water; also abscesses. Extension by weight for 10 days after operation, then double Thomas's splint. Iodoform emulsion. No drain-tube.	Stitches removed on the tenth day. Healed everywhere except small superficial wound from pressure. The temperature rose the first 24 hours, then fell.	Temperature rose to 100·6° F. the day after operation, then fell and kept below 100° always. When the boy left for home on May 20th he looked very well and the wound was soundly healed everywhere. Examined July 6th, 1891. The wound had soundly healed in every way. He was still on splint. Seen at University College Hospital March, 1892: all sound; position good; walked well; to wear splint at night. Seen October, 1893: quite well; walked about.	Temperature rose to 103° F. on the day of operation, then fell to under 100° for the rest of the week. Rose once again for unassignable cause.				
27	Male, aged 12 years. Right hip. April 29th, 1891. Left for home May 21st, 1891.	Severe pain set in in hip three years ago. Hospital for Children, Great Ormond-street; weight and extension 10 weeks. Then Thomas's splint and high boot on opposite limb 14 days. Seemed quite well after this. Six months ago pain set in again. National Orthopaedic Hospital. Thomas's splint again five months. Latterly in bed.	Extreme adduction and eversion. Very little flexion; pelvis was much tilted, producing two and three-quarter inches apparent shortening, real three-eighths of an inch. Much induration about the joint. Abscess forming in front of the joint with clear fluctuation. Glands in the iliac fossa enlarged. Boy seemed in fairly good health.	Anterior incision. Abscess flushed out, remains of head of femur removed with saw, acetabulum gouged and flushed with hot water. Iodoform emulsion. Silk sutures; no drainage. Sal. wool dressing. Sequestra removed and a shaving of great trochanter where it touches the neck.	Weight and extension for want of good splint, which was being made. First dressing tenth day. Primary union; all the stitches were removed. There was a little chafing on the edges of the wound. Second dressing sixteenth day. Union was good; a small sore patch where the upper part of scar looked chafed.	Temperature rose to 103° F. on the day of operation, then fell to under 100° for the rest of the week. Rose once again for unassignable cause.					
28	Male, aged four years. June 19th, 1891. Left for home July 13th, 1891.	Good health up to seven months ago. Good family history. Thomas's splint three months. PS.—Flexion, abduction, great rotation outwards; ? shortening. Swelling and hardness half way down the front of the thigh and on the outside.	Great eversion, flexion, and abduction.	Anterior incision; large abscess extending down the thigh and over the brim of the pelvis to the back of the acetabulum, which was bare. Head was removed and the acetabulum scraped out. Abscess cleaned, scraped, and flushed with hot water, dried, filled with iodoform emulsion, dried out again and closely stitched up. Thomas's splint.	First dressing seventh day. Much serous oozing. Dressed as before. Second dressing fifteenth day. Stitches removed; wound looked well. Collodion. Third dressing collodion removed. Wound soundly healed and dry. Left for home on the thirty-eighth day looking well.						

41 CASES OF OPERATION FOR DESTRUCTIVE HIP-JOINT DISEASE—(Continued).

No.	Sex, age, right or left hip, date of operation, and reference.	Duration of subjective symptoms.	Duration of objective symptoms ; present state.	Operation ; state of parts found ; mode of dressing.	Immediate result of operation.	Ultimate result.
29	Male, aged six years. Oct. 2nd, 1891. Right hip.	Six months ago began with pain in the knee. Coughed up blood and sweated at night. Double Thomas's splint.	Wasting and quarter-inch shortening with slight adduction. Large abscess in front and behind.	Carious pits in front and large abscess. Gouged and scraped ; flushed. Head was not removed.	Healed by first intention. Sent out to all appearances quite sound.	Not traced.
30	Male, aged eight years. Left hip. Nov. 24th, 1891. Left for home, Jan. 2nd, 1892.	General health had been good. Measles three months ago. Chicken-pox when an infant. Was now strong. Father and mother were healthy. Admitted Nov. 4th for pain in left hip and knee. Weakness five months but no pain at the beginning, only last three months. Weight extension.	Apparent lengthening half an inch. Real shortening five-eighths of an inch. Abduction and eversion ; no permanent flexion. Enlarged inguinal and iliac glands. In front of joint and under tensor vagina femoris was an abscess. Pain on movement of the hip. No swelling behind the joint. Temperature 101.8° F.	Anterior incision two and a half inches. One ounce of brownish fluid was let out of abscess in the joint. Acetabulum and head of the femur were eroded and pitted and denuded of cartilage. Neck was sawn across. Calcareous sequestrum in acetabulum. Flushing and gouging of the whole joint with hot water ; much granulation tissue evacuated. Iodoform emulsion. Deep silk sutures. Sal. wool dressing. No drainage. Double Thomas's splint.	Head pitted with tuberculous ulceration. Tubercles under periosteum of the neck. First 17 days the temperature was under 101°, then rose for 11 days gradually to 106.7° on the twelfth day ; it remained between 105° and 101° for 16 days longer, then fell to normal and remained so until discharged for home. During all this time the wound was healing without any reaction and the boy had no other serious symptoms ; he got thinner. The stitches were removed on the tenth day. The wound had quite healed ; there was no swelling. The patient left University College Hospital on Jan. 2nd. Wound quite healed. Temperature was normal.	Re-admitted Feb. 9th, 1892, from convalescent home, with small tuberculous sore in the middle of scar of the size of a sixpence. There were no swelling and no tenderness. On Feb. 24th the scar and abscess were excised ; both were superficial. Flushing. Iodoform emulsion. Wound stitched without drainage. Wound healed almost by first intention. No rise of temperature. The patient went home on March 9th. He had a moist spot in the scar for some months. When last seen, October, 1892, the scar had quite healed. The boy was very well. He was only to wear a splint at night. Seen Nov. 22nd, 1892. He was quite well and strong. He walked with crutches ; had only recently left off splint. There was no trace of recurrence. Free movement above the hip. Re-admitted Nov. 1st, 1893, for chronic tuberculous abscess in left buttock. Scar of old wound sound. The boy walked without pain. Movement, flexion to right angle. Limb was usually flexed 10 degrees and slightly adducted. Shortening one and three-quarter inches = one and a half in femur, one quarter in tibia. Abscess was opened, flushed, and closed after iodoform emulsion Nov. 2nd. Second dressing fifteenth day. Union was perfect ; wound was dry. Left University College Hospital on the twenty-first day. Temperature rose to 102.8°, then fell to normal. On Jan. 21st, 1898, the old scar was excised and the wound was scraped and flushed. He went out healed in 25 days.
31	Female, aged nine years. Jan. 1st, 1892. Right hip.	Under treatment of Thomas's splint and for four years before the operation. Adduction.	Wasting, but no shortening. Large anterior abscess. Eczema and pustules in various parts. Abscess hot.	Much destruction of head and acetabulum. Gouged, scraped, and flushed through two anterior incisions.	Did not heal well. Scar was cut out with renewed flushing and scraping on Jan. 20th, 1892. Went out with sinuses.	Re-admitted June 8th, 1895, for sinuses.
32	Female, aged 14 years. Feb. 10th, 1892. Left for home, April 9th, 1892. Left hip.	Always strong except for present affection. Family history was not good. Fell downstairs four years ago. About a year later became lame, with pain in left hip. Rest on splint 11 weeks, then crutches. Then hospital for three weeks, without benefit. Crutches and splint ever since. Pain growing worse.	Large abscess now on outer anterior aspect of the joint from two inches below the trochanter to the middle of the thigh very deep among muscles. One and a quarter inches shortening. There was no deformity. There was great pain on movement. Large iliac gland. No abnormal temperature.	Operation as in last case. Large quantity of matter evacuated from joint, together with several sequestra. Head of femur was destroyed. Acetabulum partially destroyed ; cartilage flaking away during operation. Gouged, flushed with hot water ; iodoform emulsion ; sutured with silk ; sal. wool dressing. Double Thomas's splint.	Dressed third day with fresh wool. On twelfth day wound was perfectly healed. Stitches removed on the nineteenth day. Wound perfectly healed. March 23rd scar was excised on account of small nodule of tubercle in the centre. Small track under it going down to the acetabulum. The wound healed perfectly in a few days per primam.	Child went home on April 9th looking quite well and with everything quiet about the hip. After the first operation the temperature rose to 102.2° F., then came down to normal on Nov. 19th, 1892. I heard from Mr. T. P. Lowe of Bath that patient was well and nimble on her feet. Ran downstairs. Limb considerably shorter than the right. Absolutely no pain. There was a very small sinus in the centre of the scar. On Nov. 18th, 1892, Mr. Lowe wrote that the patient ran about nimbly. There was no pain. She was growing fat. There was a small sinus in the centre of the scar.
33	Male, aged nine years. May 25th, 1892. July 19th, 1892.	Well until six weeks ago. Family history was consumptive. Limping began more than two years ago. Thomas's splint. Then extension at home. Abscesses formed ; appetite fell off, with emaciation. Now looked thin and delicate.	No flexion but strong adduction and eversion. Shortening half an inch. Swelling of the trochanter. Small sinus on the outer part of trochanteric region ; two recent scars. Movement very painful. Temperature 101° F.	Sinus was enlarged, scraped, and flushed with hot water. Then usual anterior incision into the joint which was full of broken-down tubercle. Head of the femur was very carious. The neck was sawn through. Focus on cut surface gouged out. Acetabulum gouged out and whole wound flushed with hot water. Iodoform emulsion. Sinus dissected out with strip of damaged skin. Silk sutures. Sal. wool dressing. Drain-tube in outer wound.	The portion of head removed was riddled by tuberculous osteomyelitis. First dressing fifth day. Tube removed from outer wound, appeared to be healing. Parts swollen. Second dressing seventh day. A probe was passed into the wound and much matter let out. Drain-tube in anterior wound. The abscess was difficult to drain. The child's general health was good. June 29th, under gas and ether, incision was made on the inner aspect of the thigh into the abscess which would not drain. Scraped and flushed. Drain-tube. Boric dressing. Left for St. Mary's Hospital on closing of University College Hospital. Sinuses were still open.	Not seen since. The temperature was 103.3° after operation (101.3° before operation), then fell to under 101°, with occasional rises.

34	Male, aged two years, mother's and father's side; both phthisical. Disease began at seven months. No shortening. Movement restricted. Fullness of buttock. Flexion to right angle. Two sinuses.	Two sinuses discharging foul pus.	Skin containing sinuses excised. Carious head of the femur and acetabulum removed and scraped and flushed. Sequestra of the size of the tip of the little finger were removed with small pieces of cartilage. Emulsion. Wound stitched without drain. Sal. wool dressing.	Portions of the head and acetabulum with much pyogenic membrane removed. First dressing ninth day, all stitches breaking down. No union. Sloughing of skin. Hot fomentations. Healed up to small sinuses with few drops of pus by April 14th.	Temperature fluctuated between 105.4° F. and 99° until the end. The wound had almost healed when the patient left the hospital.
35	Male, aged five and a half years. Jan. 11th, 1894. Left hip.	Swelling in groin since onset. Great flexion. Slight shortening. Joint fixed.	Caries of the head and acetabulum with much broken-down tubercle. Remains of head removed. Cavity gouged and flushed; closed without drain.	Union per primam in spite of the dressings being wet with urine.	Examined December, 1895. Sound union ever since; no trace of fresh disease.
36	Male, aged 32 years. Jan. 17th, 1894. Right hip. Chronic pyæmia.	—	Capsule full of gelatinous stuff. Destruction of cartilage and caries of head, not of acetabulum. Gouged, flushed, and closed. Iodoform emulsion; no drain.	Did not heal per primam, but very little pus. Was healed in 56 days.	Seen later soundly healed and beginning to walk.
37	Female, aged nine years. March 7th, 1894.	Abscess has recently formed, but position is good.	Extensive caries of the head, neck, and acetabulum. Gouged, flushed, and closed without drain.	Union per primam.	Remains well up to date (1899). Goes about on a tricycle. Is quite sound. (Mr. W. Beresford of Egham.)
38	Male, aged 37 years. May 25th, 1894.	"Sciatica" in 1894. Treated from October to December, 1894, at University College Hospital. On splints up to date.	Very large abscess in Scarpa's triangle and behind the trochanter. Head very carious and cartilage destroyed. Acetabulum was much diseased. Sequestrum was loose, gouged, flushed, and closed without drain.	Notes not quite clear, but there was accumulation of serum which required evacuation. Went out on third day on double Thomas's splint.	Seen at University College Hospital January, 1896, with firmly healed scar. Walked well without the splint, which was then left off.
39	Male, aged 19 years. July 9th, 1896. Right hip.	Abscess formed 14 days before admission and burst a few days before. Discharging ever since.	Anterior incision; large abscess. Head and neck were carious; acetabulum also. Flushing; iodoform emulsion. Wound closed without drain.	Wound healed per primam but opened later and discharged for a long time. The wound was reopened by Mr. B. Pollard, Sept. 3rd, 1896, flushed, and scraped as before. After this it became septic and very severe suppuration lasted a long time.	Re-admitted Feb. 1st, 1898, for foul sinuses; scraped and drained. Last seen June 18th, 1898. Sinuses were still open. Seen at University College Hospital on Jan. 8th, 1900. All the sinuses had healed soundly. He walks well. The limb is straight. Probably now has tubercle of left kidney.
40	Male, aged 13 years. Feb. 24th, 1898. Left hip.	Great swelling of the upper part of the thigh. The skin was dusky and oedematous. There was fluctuation at one spot. There was one inch shortening. The limb was extended, everted, fixed, and painful on passive movement.	Anterior incision; much matter evacuated with sequestrum. Head and acetabulum were deeply carious. Remains of head removed; acetabulum gouged; flushing; iodoform emulsion; wound closed; no drain.	Wound did not heal perfectly. The patient left the hospital on the fifty-third day; the wound apparently healed. Splints.	Mr. F. Stokes of Basingstoke reports, April, 1900: "One sinus still discharging. Gets about without any trouble. No special flexion."
41	Male, aged 21 years. October, 1898.	Abscess recently formed on front of joint.	Large abscess. Head of bone and acetabulum carious. Head removed, gouged, scraped, flushed. Closed without drain.	Wound healed per primam. Cavity was filled with serum and required aspiration. He left University College Hospital in 1898 healed on splint which he wore until March, 1899. At Whitstable he felt tightness in the hip and soon after a swelling appeared. He was admitted in June, 1899, with skin red and thin at outer side of old scar. Skin around the scar was excised; the tracks were washed out, filled with iodoform emulsion, and stitched up.	Old scar and some skin were excised and an abscess was found underneath. Flushed, exposed, and closed without drain. Wound healed per primam. Seen May, 1900. Quite sound; looks in good health; is walking with stick.

patients walked well and without pain. There was, of course, shortening, but this is not escaped by those who have healed up without operation and even without any obvious abscess. How often have we seen patients treated on splints for years recover without abscess and yet with two or three inches of shortening. But that is hardly the question here. All the patients in my list suffered from softening and abscess in their hip-joints, and this matter had to be let out on all the ordinary rules of surgery, and at the same time any diseased bone present was removed by the most conservative methods known. The only question, it appears to me, worth considering is whether such matter and disintegrated bone should be allowed to make its way to the surface and limb or whether before it has done so it should be evacuated by operation. The latter has been the course pursued in all the above cases. And in 26 in which the wound was at once closed without drainage 14 remained soundly closed for more than one or several years. The 12 remaining required subsequent treatment of one kind or another for recurrent nodule or simple sinus. This consisted in merely scraping a sinus in open cases or perhaps applying an ointment and in cases showing a nodule of recurrence in excising the latter and closing the resulting wound without draining, primary union being usually the result. In only one of these cases treated by closure of the wound without drainage was any really serious recurrence known—namely, in the case alluded to where after four and a half years of sound healing recrudescence of tubercle in the joint took place which went on to a fatal issue.

The routine treatment since the year 1888 has been as follows. A two and a half inch anterior incision (Parker) into the abscess in the joint. Flushing out of the latter with hot sterile water. Remains of head and sequestra removed with flushing gouge, aided in a few cases by lock-saw. Acetabulum gouged clean even into pelvic abscesses in some cases. All the operation cavity scraped and flushed clean with sterile water and then dried. A small quantity of iodoform emulsion is then poured in and any excess squeezed out. Careful suture of superficial wound without drainage. By this method 26 cases were treated and two more with the addition of drain-tubes for a time. Of the latter one was the case fatal after 18 months from marasmus, the wound never having quite closed. The other left hospital with an open wound.

In the cases (eight) in which open sinuses existed at the moment of operation the track was as far as possible excised between two elliptical incisions, the rest of the operation being carried out as above, except that drain-tubes had to be used as a rule. When "hot" abscesses were present drainage was as a rule also necessary. Had it been possible to reach these two classes of cases before sinuses or hot abscesses had formed the results would have been very much better. In every case the aim of operation has been to remove all the diseased tissues with a minimum of interference with those structures of the joint which could be regarded as sound. That this has been accomplished without any undue strain upon the patient's resources is proved by the fact that no death has taken place within one year of the operation. Indeed, the procedure, aided by Mr. Parker's anterior incision and combined with hot-water flushing, has shown itself to be safe from serious shock. That it has been relatively effectual in removing the local disease is proved by many of these cases. That it should not have been so in all is probably rather due to the local complications of extensive disease and perhaps to a general vulnerability of particular patients rather than to intrinsic defects in the procedure. It is further interesting to note that in none of these cases was the operation followed by any of the "accidental wound infections" or by immediate acute tuberculosis as the result of disturbance of local foci. That patients once infected by tubercle in a joint remain vulnerable in and about that joint and also liable to the disease in other places for a long time is also clear from some of these cases.

If any of my medical friends practising throughout the country can give me more recent information in regard to any of these cases which may have come under their eye I shall feel very grateful.

Since this paper was written I have seen the case that is numbered 14. There was a cold abscess on the outer side of the thigh below the trochanter. The wound was quite sound and the patient walks well and looks in excellent health. I have also seen another old patient whose notes

were overlooked and who ought to have been included in this series, to follow Case 38, and bring the total of the series up to 42. The case is that of a boy, aged nine years, on whom I operated on May 25th, 1895. His history was that he had been healthy until one year ago. Then he began to have symptoms of hip disease and also of pulmonary phthisis. The family history was bad. He wore a Thomas's splint for four years to correct flexion, adduction, and inversion of the thigh, and the limb became fairly straight, but there was half an inch shortening. On a later occasion he came with an abscess in the joint, over which the skin was red and thin. An anterior incision was made and the head of the femur and the acetabulum were found carious. The diseased bone was removed with saw and flushing gouge. The abscess was scraped and flushed and iodoform emulsion was introduced. The incision was closed without a drain and union took place per primam. The patient was re-admitted in July, 1895, with a small abscess under the scar. The scar was incised and the abscess was scraped and flushed. He left the hospital on July 24th with a healing scar. I saw him this month at the hospital, when he was walking well and with the scar perfectly sound (May, 1900).

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## CONGENITAL WORD-BLINDNESS.<sup>1</sup>

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I HAVE already published in the columns of THE LANCET<sup>2</sup> four different papers dealing with distinct varieties of letter- and word-blindness, and the present paper, describing another variety, shows that the subject is not yet exhausted. Strangely enough the two cases which form the subject of this paper were brought under my notice within two months of one another. They did not come accidentally before me but were brought to me for consultation by the medical attendants in each case who suspected that the difficulty in learning to read might be due to some cerebral cause. I will, in the first place, record the clinical facts in two cases and thereafter will briefly discuss and comment upon them.

CASE 1.—A boy, aged 11 years, was at school for four and a half years, but was finally sent away because he could not be taught to read. His father informed me that he was a considerable time at school before the defect was noted, as he had such an excellent memory that he learned his lessons by heart; in fact, his first little reading-book he knew by heart, so that whenever it came to his turn he could from memory repeat his lesson, although he could not read the words. His father also informed me that in every respect, unless in his inability to learn to read, the boy seemed quite as intelligent as any of his brothers and sisters. His auditory memory was excellent and better than that of any of the other members of the family. When a passage was repeated to him aloud he could commit it to memory very rapidly. When I first saw the boy and his father at the Glasgow Eye Infirmary I asked them to call on me at my house, and I wrote down the address on an envelope. A few days thereafter the father could not find the envelope, but the boy at once repeated the address correctly, having remembered it from hearing me state it once. I examined the boy first on March 4th, 1900, when he seemed a smart and intelligent lad for his years. He knew the alphabet by heart, repeating it rapidly and correctly. He could recognise by sight, however, only a very few letters and those not with any degree of certainty. He could spell correctly most simple words of one syllable such as "cat," "dog," "man," "boy," &c., but he could not recognise by sight the simplest and commonest words, such as "the," "of," "in," &c. He had no difficulty in recognising all other visual objects, such as faces, places, and pictures. On each page of the little primer in which I

<sup>1</sup> A paper read before the Glasgow Southern Medical Society, May 3rd, 1900.

<sup>2</sup> THE LANCET, Dec. 21st, 1895, p. 1564; Nov. 21st, 1896, p. 1451; Feb. 12th, 1898, p. 422; and Jan. 14th, 1899, p. 83.