

stirrup arrangement, the knee being carefully propped and supported in the flexed position by hard cushions or in a sling. If much flexion is present, a tracing of the leg should be taken on paper, and wooden side-splints with a corresponding angle and perhaps hollowed at the knee, can be prepared by the carpenter. This dressing^{*} has worked well and given prompt relief in a number of cases, but it occurred to me last summer, that the ordinary plaster-of-Paris splint reaching from above the ankle to near the crotch, might be utilized for the same purpose and prove more convenient in an ambulatory case. I have used such an arrangement with satisfaction in a number of cases, of which one was a bad old case of osteitis of the knee, with nearly ninety degrees of flexion, for whom I was preparing and have since applied, a more perfect steel splint. The plasters were applied to the limb as before, bandaged in place, and the knee covered with cotton; over this was placed a light plaster-of-Paris splint with strong edges, over which small pieces of cardboard were bent where the webbing was reflected. Buckles attached to bits of webbing were bandaged into the plaster on the outer and inner side of the limb at each end, and to these the plaster webbing was fastened (Fig. 3).

If the patient is small a stiff tin or zinc posterior splint could be bent to correspond to the angle of flexion, and turned up at the sides for lateral support and to receive the buckles near the ends. Whatever the form of apparatus we use for fixation and as a fixed point for our counter-traction, we must be careful, let me repeat, that no leverage, especially no prying or twisting force is exerted upon the joint. If the counter-traction acts in the lines of the deformity, we should in most cases speedily get relief from pain, diminution of tenderness, heat and swelling, relaxation of the flexor muscles and an improved general condition of the patient. As the mechanical conditions are favorable, the amount of traction need not be great, not nearly so great as is required at the hip, but it should be constant, definite and in the proper direction. Even in our steel splints ratchet-traction is not required, as merely drawing the straps into the buckles by the hand, gives a sufficient pull. After a few days or weeks motion will be freer; as the muscles relax the splint is straightened, and counter-extension in the improved position continued. The later stages toward recovery may present indications for different management, and the ultimate result will depend upon an exact apprehension of the physiological requirements of the joint at each stage, and precision in meeting their demands.

A CASE OF COMPOUND DISLOCATION OF THE HIP, WITH RECOVERY.

BY JOHN W. PERKINS, M.D.

I SAW the following case while interne at the Children's Hospital, Boston, during the service of Drs. Langmaid and Cabot, by whose permission it is published. The notes were taken by me, daily, at the time.

Ella S., aged eight years, admitted April 17, 1885, under Dr. Langmaid. Her physical development was excellent, her mind unusually bright. Although suffering somewhat from shock, she related very clearly the

manner of the accident. An hour and a half previously, while she was sitting on the edge of the sidewalk, a heavy brewery wagon drew in suddenly, close to the curbstone. In her hurry to get out of the way, she fell on her stomach, so that her body rested obliquely on the edge of the curb, her knees in the gutter. One wheel of the wagon passed between her legs and across the back of her left thigh (from within outward) as shown by an ecchymosed band, nearly coinciding with the gluteal fold. She was brought on a stretcher to the hospital at once, without having undergone any manipulation which would have altered the relation of the parts.

When placed on her back upon the table, her left thigh was flexed, abducted and rotated outwards, so as to lie perfectly flat along its outer aspect, upon the table. A widely gaping wound some eight inches in length extended diagonally across Poupart's ligament, from a point an inch above and inside the anterior superior spine, to the inner and posterior aspect of the thigh. The muscles directly under the wound were severed, the adductor longus completely, the pectineus, psoas and gracilis, partially. The adductors, contracting, formed a well-marked swelling about midway down the thigh. The head of the femur with the whole of the round ligament presented near the middle of, and close to Poupart's ligament. The lower portion of the abdominal muscles, nearly the whole length of Poupart's ligament, and the unsevered muscles of the thigh for a considerable extent, were exposed by the retracted skin. Hæmorrhage was considerable, so that it became necessary to pack the wound with sponges, pending the arrival of Dr. Langmaid. The femoral vessels could not be seen or felt in the wound.

An hour later the child was etherized. Under the spray, and with antiseptic precautions, the wound was carefully cleaned, and the dislocation reduced by Dr. Langmaid. The reduction was easily accomplished at the first attempt, by flexing the hip and making direct pressure on the head. The femoral artery and vein, which had been held down outside and beneath the cervix femoris, were now found in their normal position, exposed by the laceration of the sheath. The rent in the capsule was anterior. The tendinous insertion and about two inches of the adductor longus, which was almost free in the wound, were removed. No bleeding points were found, drainage-tubes were inserted, the skin brought together with silk, and a dressing of iodoform gauze applied, with a waterproof covering. The child was placed upon a Cabot hip-splint,[†] which was found to be of the greatest assistance throughout the subsequent treatment, not only in maintaining the leg in good position, but in handling the child. On it, she was easily raised, to renew the dressings or to change the bed—a consideration of great importance in view of the incontinence which followed.

An aseptic condition of the wound was not maintained. Attempts to have all urine passed by catheter were unsuccessful. Frequent involuntary passages saturated the dressing, in spite of its mackintosh covering. The left labium major, and the abdominal wall covering the left iliac fossa became red, swollen, painful. Enemata, and even the introduction of a thermometer into the vagina caused pain. The urine and stools were never bloody. The temperature and pulse rose steadily until the third day after the acci-

^{*} Used by Dr. C. Fayette Taylor since 1871.

[†] Described in Boston Medical and Surgical Journal, vol. ex., p. 6.

dent when the temperature reached 104.5° F. Pus appeared in the wound and the febrile condition declined. On the fifth day secondary hæmorrhage occurred, from the upper end of the wound, about eight ounces by estimation.

The child, who previously had become very nervous, now became exceedingly fretful and irritable. Night screams, similar to those occurring in the early stages of tubercular joint disease, were of frequent occurrence. She lost flesh rapidly. The wound gaped. Three days after the first, a second hæmorrhage took place, about the same amount as before. The flow on both occasions was quickly discovered by the nurse and checked by immediate compression. There were no more hæmorrhages.

Following this second mishap, the child's condition became very trying. Restless and irritable before, she was now almost unmanageable, at times wildly delirious. Her temperature fluctuated between 100 and 102° F. daily—her appetite was fickle, her physical condition daily grew worse. Bed-sores formed in spite of every precaution. The skin sloughed wherever the splint pressed. Intense pain in the hip and knee were constant whenever the leg was disturbed.

At the end of the second week, by Dr. Cabot's direction, a second splint, similar to the first was applied, having slightly different curves and dimensions, thus altering the points of pressure upon her body and leg. In addition, an anterior splint, similar to a "Smith" was made, by means of which extension was applied to the suspended leg. From this time on, her condition improved; the wound healing rapidly although frequently soaked with urine. The leg took on the peculiar condition not infrequently seen in paraplegics; pallid and oedematous throughout, its vitality was so low that the pressure of the most carefully padded splint produced sloughs in a night.

Six weeks after the injury, the wound had almost closed, the bed-sores healing, and her general condition greatly improved. The leg was still swollen, even larger than before, the thigh measuring thirteen inches, the calf nine and three-eighths inches. There was slight motion at the hip-joint. She convalesced rapidly and at the end of three months she could walk without the aid of crutches, the foot being considerably everted.

A year and a half after the injury I carefully examined the child—noting the following:

The left hip was completely ankylosed, the joint absolutely without motion. The thigh was slightly abducted, somewhat rotated outward and flexed on the body at an angle of about fifteen degrees. Lordosis marked when the thigh was brought parallel with the table. The pelvis was not tilted. There was no difference in the length of the two legs. The left thigh measured one-half an inch less in circumference than the right, but the left calf measured one-half inch more than the right. The left foot was ordinarily held much everted but could be brought to the median line but not inverted beyond this point. Extreme eversion was greater with the left than with the right foot. The gluteal fold was about three-quarters of an inch lower on the left than on the right side, the left glutei muscles being noticeably flattened. The cicatrix extended from one inch inside the anterior superior spine directly along the fold of the groin six and one-half inches, to a point on the upper thigh, on a level with the

perineum. The child walked easily, with much everted foot and a limp, a slight jog, quite noticeable, but which did not inconvenience or weary her in the least. There was no pain or tenderness about the joint. Her physical condition was excellent.

Remarks.—Compound dislocations of the hip are certainly rare. Malgaigne wrote that it had probably never occurred. Sir Astley Cooper had never seen one, but in his work "On Dislocations," Mr. Bransby Cooper gives a case of his own and records a second related by a former pupil, Dr. Walker of Charlestown, Mass. Hamilton adds one recorded by Wm. Taylor, and Stimson gives four others. These cases, briefly, are as follows:

CASE I. A healthy boy aged seventeen, attempted to kick a stone out of the way of his wagon-wheel. The wheel caught his left foot, forced him to the ground and passed over his right hip. The following day at Guy's Hospital, Mr. B. Cooper² found the head of the femur in the right groin, placed to the inner side of the femoral vessels, which he describes as "very unusual." An extensive lacerated wound was situated just below Poupart's ligament, a little to the inner side of the centre. The dislocation was reduced with pulleys, aided by the usual depletives. The wound became sloughy, suppurated profusely and the patient died in twenty days.

CASE II. Walker's³ patient was a very muscular man who fell from a wagon "laden with many tons of manure," upon his hands and knees. While in this position the wagon passed over the posterior part of his pelvis and right thigh, forcing the head of the femur out of the acetabulum upon the groin, and pressing the head through the integuments. After several vain attempts at reduction by extension, Dr. William Ingalls replaced the head by flexing the thigh on the pelvis, abducting and rotating inward, assisted by direct pressure on the head, with the thumb in the wound. "The reduction was effected with the greatest ease and elegance." Extensive suppuration again proved fatal to the patient at the end of three weeks.

CASE III. A third case of compound pelvic dislocation is reported by a German military surgeon, name not given.⁴ An artillery man, galloping, fell with his horse in such a way as to bend his left leg forcibly backward, until the heel lay against the back of the shoulder. The head of the bone, with a portion of the round ligament, projected through the skin of the groin. The femoral vein was ruptured and bled profusely. He died the following day.

CASE IV. Taylor's⁵ case was a boy aged seventeen, who was engaged in sawing down a tree when it suddenly fell, pinning him to the ground. He extricated himself, and was found to have a dislocation of the hip with a lacerated wound of the perineum nearly two inches in length. Through this, the head of the femur was plainly felt lodged in the obturator foramen. The dislocation was reduced with some difficulty, and pelvis and leg fixed by a long straight splint. The method of reduction is not stated. The wound suppurated. A large abscess formed in the neighborhood of the hip, which was opened there, and which also discharged through the perineum. The wound healed well, and

² Cooper: On Dislocations, Case lxxv, p. 116.

³ Cooper: Loc. cit., Case lxxiii, p. 119.

⁴ Statistisches Sanitäts Bericht über die Königlich Preussische armee, und das xlii (Königlich Württembergische) armee korps, für die vier Rapport jahre vom 1 April, 1874, bis 31 März, 1878. Berlin, 1880, p. 60.

⁵ W. F. Taylor: Lancet, 1881, p. 732.

at the end of five months he had left the hospital with the joint, as Taylor supposed, in a satisfactory way towards ankylosis. Eight months later, however, he met his patient riding on horseback seated in bushman style on a large colonial saddle. He could mount and dismount with ease, and suffered no inconvenience from the hip excepting a little occasional stiffness.

CASE V. Moxon's⁶ case was a railway porter knocked down violently by the train, while closing a door. Accounts of the accident varied. Some said he was caught between the train and platform; others that he was doubled up in some indescribable way. He was taken to Guy's Hospital, bleeding from a wound in the perineum, and died shortly after admission. It was said he had lost a great deal of blood. The left lower extremity was much swollen and discolored throughout its whole extent. The limb was in the position of dislocation onto the dorsum ilii. The wound was large, admitting several fingers, just under the fold of the gluteus maximus, its position corresponding to the junction of the left sacro-sciatic ligament with the tubus ischii. The head of the bone had escaped between the quadratus femoris and the obturator internus, and lay half an inch outside the great sciatic nerve, free under the remains of the glutei. A portion of the head with the round ligament was found in the socket. Besides a sculp wound there was nothing else discoverable. Death was attributed to hæmorrhage and shock.

CASE VI. Woodward's⁷ case was also a railway accident. A boy aged twelve years was rolled over and over in front of a moving freight car, the wheels not passing over any part of his body except one toe, which was crushed. The head of the right femur projected about four inches through a wound two inches long on the inner side of the thigh, two and one-half inches below the angle of the pubes. The ligamentum teres had been torn away from the head of the bone. There was no fracture of femur or pelvis and the great vessels were not injured. Hæmorrhage was slight. The patient had sustained other injuries, however, including several fractures, and died of shock in five hours. After death the dislocation could not be reduced, owing to the muscular attachments falling over the acetabulum.

CASE VII. Macouchy's⁸ case was a boy aged fourteen, who fell from the mast of a vessel to the deck, sixty feet. He was found sitting on the deck with the head of the femur appearing between his legs through his trousers, as if it protruded from the anus. The head, neck and great trochanter had protruded through the integuments covering the posterior third of the tuberosity of the ischium, the head resting on the posterior portion of the opposite ischium. Reduction had been tried and failed. The head was sawn off and the shaft replaced. The patient had sustained a fracture of the base of the skull in addition, and died two days later with the usual symptoms of compression.

We have in all, eight cases, five of which occurred between the ages of eight and seventeen years. Four of the eight died within forty-eight hours — two uncomplicated from hæmorrhage, and two complicated with other injuries, from shock and compression of the brain. Of the remaining four, two died from the effect of prolonged suppuration — in eighteen and twenty-

one days — and two recovered, one with completely and one with partially ankylosed joint.

Four of the eight dislocations were of the pubic variety, two obturator, one dorsal and one ischiatic — a ratio⁹ exactly the reverse of what is generally accepted as the relative frequency of the uncomplicated varieties. This result is perhaps to be expected from the fact that the thinnest covering of the joint lies towards the pubes. In both the posterior dislocations as well as in both the obturator cases, the violence was certainly very great; as witnessed by the fact that three of the four died within two days of the immediate effect of their injuries, and in two of them the head of the bone was protruded four inches or more through the integument. It is worthy of remark that three of the four pubic cases were produced in identically the same way — namely, by the passage of a wagon wheel over the back of the thigh near the hip. The resulting hyperextension of the joint, and stretching of the integuments must have been important factors in producing this dislocation and in rendering it compound. It is not probable that the same degree of force applied to the front of the thigh would have rendered a dislocation compound posteriorly, if indeed the resultant of the forces produced a dislocation at all.

The occurrence of severe hæmorrhage in four of the cases, with two deaths directly due to that cause, suggests the importance of ascertaining the position of the dislocated head with reference to the femoral vessels, especially in the pubic form, where they come in close proximity. In the case reported, the vessels were caught under the head, so that they might easily have been torn by rotating the head outward. The degree of difficulty, which may result from their close association, is well illustrated by the following set of cases of pubic dislocations, not compound:

(1) Sir Astley Cooper¹⁰ records the case of a man, aged thirty-six, knocked down by a cab, who sustained a dislocation of the left femur upon the pubes. "The head of the bone could be felt on the pubes, pressing Poupart's ligament upward, and was placed upon the femoral artery, so as to stop the pulsation."¹¹ No difficulty was experienced in this case, the pulsation returning after extension for about a quarter of an hour, the dislocation was ultimately reduced, and the patient made a perfect recovery.

(2) Stokes¹² was not so fortunate. His patient, a young man aged twenty-seven, had sustained a dislocation onto the pubes by falling off his team. Ether was administered, and the dislocation reduced. The patient died, at the end of the operation, of pulmonary embolism. At the post-mortem, a clot was found in the femoral vein, which had apparently been formed in consequence of the traumatism, and been detached by his efforts at reduction.

(3) The third case is that of Goldsmith:¹³ a man aged forty, in whom the head of femur was thrust under Poupart's ligament, over-riding the margin of the pelvis in such a way as to underlie the femoral artery. It remained unreduced for two months, when he came under observation with a diffused swelling occupying

⁶ Post-mortem report by Moxon, Medical Times and Gazette, 1872, i, p. 98.

⁷ Woodward: Boston Medical and Surgical Journal, vol. 108, p. 129.

⁸ Macouchy: Dublin Hospital Gazette, 1859, i, p. 21.

⁹ "From what I have had an opportunity of observing on the subject of dislocations, I believe that the relative proportion of cases will be in twenty, as follows: twelve on the dorsum ilii, five in the ischiatic notch, two in the foramen ovale, and one on the pubes." Sir Astley Cooper: On Dislocations, p. 120.

¹⁰ Sir A. Cooper: loc. cit., p. 114.

¹¹ Italics his.

¹² Wm. Stokes: British Medical Journal, 1880, ii, 916.

¹³ Goldsmith: American Journal of Medical Sciences, July, 1860, p. 30.

the groin, filling the iliac fossa, and extending to the middle of the thigh; feeble pulsation, tumor appearing a few days after the accident; pain severe; diagnosis aneurism; treatment ligature of the common iliac artery; death on the fifth day. At the autopsy the femoral and external iliac arteries were found perforated to the extent of an inch on the postero-external aspect; the head of the femur lay in the cavity of the aneurism.

In view of the occurrence of such results, the importance of clearly ascertaining the relation of the dislocated head to the femoral vessels is manifest; and Stokes's case emphasizes the necessity of ascertaining the position before any attempts at reduction, and not after. I do not find any constant relation in the pubic form, although it has been so formulated by various writers. Sir Astley Cooper¹⁴ stated that in the ordinary pubic dislocation, "the head is situated upon the pubes, above the level of Poupart's ligament on the outer side of the femoral artery and vein." This observation was based on an autopsy in an old case of unreduced pubic dislocation. Of the ten cases of pubic dislocation which he quotes, the position is not noted in six. In one of the remaining four (the autopsy just referred to) the head lay to the outside; in the second, it lay to the inside — "very unusual" — he comments. In the third "the head of the bone had taken a course behind the femoral artery and rested in a space between the psoas and pectineus muscles"; and Mr. B. Cooper remarks that the position is "much more to the inner side than is usual in this dislocation, as the head of the bone is more frequently placed to the outer side of the femoral artery." In the fourth case, the head lay under the artery, stopping the pulsation, as already described. Of these ten cases, then, in one, the position of the head was noted to be on the outside, in one under the artery, and two on the inside, so that from the Coopers' own statistics, the inside position does not appear to be so "very unusual," and this is confirmed by other cases, demonstrated post-mortem, namely: In one, Aubrey¹⁵ found the head lying between the psoas and pectineus, raising the latter muscles, and with it the vessels. In a second¹⁶ the head was thrown upward resting against the outer side of the ilio-pectineal eminence, and had displaced the artery outward, so that it lay curved outwardly, below Poupart's ligament. In a third¹⁷ the vessels were found crossing the head, and in a fourth¹⁸ an old case, in which the neck of the femur had been fractured, the head was found on the inner side of the vessels.

From the cases quoted, then, it appears that (1) in pubic dislocation, a considerable danger may threaten the patient from injury to the femoral vessels; that (2) the relative position of the vessels and dislocated head are of interest with especial reference to efforts at reduction; but (3) their relative position is not constant; and (4) the position of the dislocated head with reference to the normal position of the vessels should give rise to no inference as to the actual position of the vessels, for, the head lying outside the normal situation of the vessels, may still have the vessels outside it.

It may be inferred that the careful location of the vessels should be the indispensable preliminary to any attempt at reduction, and that the primary manipulation should be directed towards freeing the vessels and head from a dangerous relationship.

REPORT OF FIFTY CATARACT EXTRACTIONS BY A NEW METHOD.

BY DR. H. R. CHANDLER,
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BROADLY speaking, the operation for the removal of the cataractous lens may be divided into two distinct methods; with and without an iridectomy, modified to a certain extent by the will and pleasure of the operator. In my limited experience as an operator and observer, neither method has resulted altogether satisfactorily; but in many cases, far from it.

Those advocating an iridectomy claim that the mutilated iris and resulting coloboma forms no particular objection, as the lid covers it, and that the lens and cortical can more easily be removed, and that there is less tendency to iritis and loss of vitreous. On the other hand, promoters of simple extraction maintain that an operation allowing spherical aberration, and at times a large and distressing amount of light to enter the eye, is far from ideal.

There can be no doubt in the minds of those who have operated by both methods, that so far as the removal of the lens and cortical are concerned, it is just as satisfactory under one method as the other, if the operator takes the precaution of following the expressed lens by the cortical before the iris becomes replaced. There is also less danger from loss of vitreous in simple extraction, that is, so far as I have observed, the reason being obvious.

It is not, however, the loss of vitreous, difficulty with the lens, etc., which has induced some of our best operators to abandon the operation of simple extraction, but the far more important and decidedly unsatisfactory accidental complication of prolapsed or incarcerated iris.

To have a patient, more especially a private one, complain of irritation and gritty feeling in the eye, and on examination to find a prolapsed iris is, to use a mild expression, very annoying, not that the prolapsed iris and necessary excision results in any particular danger to the ultimate success as regards sight, but our simple extraction has proved a failure, and the moral effect on the patient of a second operation is bad, leaving out of consideration the disturbance of a partially united wound and a second chance of septic infection.

If we are fortunate in escaping a prolapsed iris, there is a chance of incarceration which, although not as unsatisfactory as prolapse to the operator, may eventually prove more so to the patient.

Very little has been written about this mishap. Even a small incarceration which shortly after an operation seems of trivial importance may be the source of irritation to an eye in after months. I have seen patients whose anterior synechiæ were looked on as no particular misfortune, return with a misplaced pupil, and a tale of woe as regards irritation, and in some cases of considerable ciliary neuralgia.

The operation I now propose for your consideration, is one which I have attempted in fifty, and performed

¹⁴ Sir A. Cooper: *Loc. cit.*, p. 111.

¹⁵ Aubrey: *Bull. de la Soc. de Chir.*, 1853, vol. viii, p. 377.

¹⁶ Albert: *Chirurgie*, vol. iv, p. 276.

¹⁷ Roser: *Arch. für Phys. Heilkunde*, 1857, vol. i, p. 58.

¹⁸ Douglas: *London and Edinburgh Monthly Journal of Medical Science*, 1843, vol. iii, p. 1064.