AMPUTATION OF THE RIGHT LOWER LIMB AFTER EXCISION OF THE HIP: USE OF DAVY'S LEVER.

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RICHARD C., aged eleven years, a boy in this school, who had always been previously in good health, although of delicate appearance, came to the Infirmary on February 2nd, 1878, complaining of pain in the left ankle. There was some swelling about the joint, but no redness, nor much pain on moving it. He said he thought he had sprained it, but did not remember doing so. There was a slight graze on the right knee, which was healing and looked healthy. Fomentations were applied to the ankle.

On the next day, he had sharp feverish symptoms. His temperature was 104.4°; tongue white and furred. The case was judged to be one of acute rheumatism, and ten grains of salicine were ordered to be given every hour. On February 4th, the morning temperature was 101.3°, falling in the evening to 101°. The ankle was very red, and acutely painful. On the 5th, the left middle finger was very red and swollen; temperature at night 103°. On the 7th, he complained of pain in the right hip, thigh, and leg. On the 9th, the heart's action was tumultuous and irregular, and pain in the right ankle was complained of. The dose of salicine was increased to fifteen grains every hour, which was continued until the 12th, when, it being evident that pus had formed in the left ankle and in the metacarpo-phalangeal joint of the left middle finger, the salicine was discontinued and free incisions were made into these joints, a considerable amount of pus being evacuated. On February 16th, he had pain in the right heel and back of the right knee; he improved slightly, sleeping better, and having less pain, until the 23rd, when the right knee became painful, but the pain passed off. It returned on March 1st, and the joint swelled and became full of fluid. On March 3rd, redness and swelling were noticed below the left internal malleolus. On the 6th, an abscess, which had formed without pain just above the left elbow-joint, was opened. On the 10th, an abscess behind the left ankle-joint was opened. On March 18th, the right knee was freely incised on the inner side, and a good deal of pus let out. On the 26th, he was placed on a water-bed, there being a sore on the lower part of the sacrum; and, although great care was taken, others formed over the spines of the dorsal vertebra. On April 7th, there were petechiæ on the left arm. An abscess, which had formed about the right hip-joint, was opened, the incision being over the great trochanter; six ounces of pus were evacuated. On the 11th, an opening was made on the outer side of the right thigh, three inches above the knee. There was free discharge from all the openings in the right limb. On April 25th, a bed-sore formed on the right ankle. He was very weak and exhausted, but took nourishment and wine well.

From this date he gained somewhat in strength, and the abscesses on the left side healed; the sores on the back became cleaner, but did not heal; the discharge from the right thigh and hip were very great, and until December he continued in this state, when Mr. Johnson Smith of the Seamen's Hospital and Mr. Pink saw him, in consultation with me. The right knee was ankylosed; and, no bare bone being felt in the shaft of the femur, it was determined to try if excision of the hip would preserve the limb. Accordingly, on December 17th, Mr. Johnson Smith, Mr. Pink, and Mr. Purvis kindly assisting, Dr. Williams administered chloroform, and I made an incision about six inches long over the great trochanter, and through this removed the head and both trochanters of the femur, and gouged away the whole of the acetabulum. Some strips of lint were placed in the wound, and its edges were brought together by sutures. The limb was laid between sand-bags, and a bag, containing six pounds of shot, was attached to the leg by strips of plaster, and hung over the end of the bed to extend the limb. He slept well after the operation, under the influence of two doses of fifteen minims each of tincture of opium.

December 20th. He was put under the influence of chloroform, and the sheets were changed and the back dressed, etc. There was very great discharge of pus from the wound at the hip, and also from the inner side of the thigh. This method of dressing, under chloroform, was repeated every two days until January 21st, 1879, on which day he was so weak that it was not deemed safe to administer chloroform. Mr. Johnson Smith and Mr. Pink saw him with me on this day; and we determined that, if he were stronger on the morrow, we would amputate the limb.

On January 22nd, kindly assisted by Mr. R. Davy of the Westminster Hospital, Mr. Johnson Smith, Mr. Pink, and Mr. Bampton, the boy was anæsthetised by Dr. Williams. Mr. Davy controlled the hæmorrhage by his peculiar method. He introduced a wooden staff, about

two feet in length and three-fourths of an inch in diameter, having a bulbous extremity, into the rectum, for a distance of nine inches; and then, using the anus as a fulcrum, compressed the common iliac artery against the pelvis. I removed the limb by antero-posterior flaps, commencing in the wound made for the excision. Fifteen ligatures were applied; and so completely did Mr. Davy's instrument prevent hæmorrhage, in both anterior and posterior flaps, that we were obliged to ask him to relax his pressure in order to discover the bleeding points. The total quantity of blood lost was measured, and was only three ounces, this being mixed with pus. The acetabulum and pelvis were examined, but no bare bone could be felt. The flaps were brought together with silk sutures.

The patient was greatly exhausted after the operation, and was almost pulseless. Brandy being freely administered, he gradually rallied, and, after a dose of fifteen minims of tincture of opium, he slept for a time.

On the 23rd, he had passed a fair night, taking nourishment freely. There was a considerable discharge of serum from the outer part of the wound. On the 24th, there was much serous discharge. He was carefully lifted; the stump and back were sponged, and simple ointment on lint applied to both, and the sheets, etc., were changed. On January 25th, the purulent discharge was offensive and copious; the scrotum and left thigh were cedematous. He was dressed as yesterday. On the 26th, the stump looked rather better; tongue moist. At his own wish, he tried to eat part of a mutton-chop, which caused vomiting and slight oozing of blood from the wound. The vomiting exhausted him very much, and at night he was very weak. The voice was hoarse, and he could not clear the larynx by coughing. On the 27th, his bowels were relaxed, to check which small doses of tincture of opium were administered, and a teaspoonful of Brand's essence of beef was given every hour. On the 28th, he took the essence well; the purging was stopped. He slept fairly. There was a free discharge of pus from the stump. On the 29th, he was very weak. The side was excoriated by the discharge which ran under him. He was ordered to have as much port-wine as he could take. On the 30th, the œdema of the left limb and scrotum had increased and was extending over the abdomen. He passed very little urine. On the 31st, the pulse was hardly perceptible. There was a glazed swelling over the left groin, with slight blush. He sank gradually, and died at 5 P.M.

February 2nd. I was allowed to open the abdomen, but, the father wishing to be present, I could only make a very partial examination. The peritoneum lining the cavity of the pelvis appeared healthy, and no pus or slough appeared on incising this membrane in several places. I examined the course of the right common iliac for any sign of pressure exercised whilst controlling the hæmorrhage at the operation, but could see none; nor was any cause discovered by me, in the necessarily imperfect examination, for the œdema of the left limb. The shaft of the removed femur was atrophied, but in other respects healthy and covered by periosteum, save over a small portion, about two inches in extent, of the posterior surface, near the upper and truncated extremity of the bone.

ON THE CAUSE OF EVERSION OF THE LIMB AFTER FRACTURE OF THE NECK OF THE FEMUR.*

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FROM the time when this subject was first touched by the great master, Astley Cooper, surgical writers have, for the most part, been content to adopt the explanation which he gave. These were Cooper's words: "This state (eversion) depends upon the numerous and strong external rotatory muscles, to which very feeble antagonists are provided." So far as I am aware, no experiments had ever been instituted with the view of determining the relative strength of the muscles which rotate the thigh inwards and outwards, and it is not improbable that Cooper himself based his statement on *à priori* grounds; nevertheless, his dictum has remained an excellent working hypothesis, though its truth has been but little questioned, and still less challenged.

It will be my object to-day to show that the eversion is due solely to the force of gravity; that when the neck of the femur is broken, the limb "tumbles" on to its outer side. I shall affirm that the muscles of external rotation, though greatly superior in number, are inferior in

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† *Treatise on Dislocations and Fractures of the Joints.* Edit. vii, p. 82.