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CÆSAREAN SECTION UNDER COCAINE ANÆSTHESIA.

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THE chief interest of the case to be recorded lies in the complete success of the method of producing anæsthesia with the object of performing Cæsarean section, as far, at least, as the surgical proceedings were concerned. The facts of the case are also of considerable interest.

Mrs. B., aged thirty-nine, alleged to have been recently married, was sent to the Manchester Maternity Hospital early in May, 1901, from Preston as a case suitable for Cæsarean section. The most obvious deformity was considerable shortening of the left leg, owing to infantile paralysis, which came on when the patient was seventeen months old. Pregnancy was near full term, and the patient suffered from chronic bronchitis, occasional attacks of asthma, and some indefinite affection of the heart, probably alcoholic.

On detailed examination, it was ascertained that the mass of the pregnant uterus was high in the abdomen, and exceptionally prominent. The intercrystal diameter was $8\frac{7}{8}$ inches, and the intraspinous $9\frac{1}{8}$ inches. *Per vaginam* examination showed the pelvis to be deformed obliquely, chiefly owing to want of development of the left half. The longest pelvic diameter at or about the brim was $3\frac{3}{4}$ inches; it was no regular diameter, but largely oblique. The os uteri was lying far back near the promontory of the sacrum, and could be reached with difficulty. A bony mass appeared to project into the lumen of the inlet, as if the bone were pushed inwards; but the

dimensions were small in proportion to the rest of the pelvis, and want of curve owing to arrested development may have given the impression of projection inwards.

The muscular system of the left lower extremity was wasted and toneless. The joints appeared to be exceptionally supple. This limb was 3 inches shorter than the right. The foot was in a position of equino-varus, and an enormous callosity had formed on its outer margin.

The foetal heart-sounds were heard to the left higher in the abdomen than usual in a primigravida. Beats, 156 per minute.

It was evident that a living child could not be extracted through this deformed pelvis, and as the patient had come for the purpose of undergoing operation, it was decided to perform Cæsarean section just before labour was expected.

The chief danger appeared to exist in the patient's chest symptoms. Previous experience in this operation led us to fear an attack of acute broncho-pneumonia from the administration of chloroform or ether. It was therefore decided to inject a solution of cocaine in the subarachnoid space, according to the method now generally recognised.

The operation was performed on May 11, 1901, with the assistance of Dr. John Scott, Dr. Arnold Lea, and Dr. Fothergill. At 9.30 a.m. $\frac{1}{4}$ grain of morphia was injected hypodermically. The object was to render the patient apathetic, and to modify the pain from the wound until a general anæsthetic could be administered if 'cocainization' partially failed to produce the desired effect.

Dr. John Scott acted as chief assistant; Dr. Lea injected the cocaine solution, and the notes include his description of the proceedings; Dr. Fothergill assisted and described the operation.

Operation.—Cocaine injected 10.16; operation begun 10.30; operation completed 11.1.

Dr. Lea's description is as follows: 'The skin of the lower lumbar region was carefully cleansed with soap and water, followed by turpentine and ether. The spine of the fourth lumbar vertebra was taken as a fixed point; this lies along a line between the highest points of the iliac crests. The patient was placed in a sitting position, inclining forwards as far as possible, with the arms folded in front of the chest. The needle was now inserted $\frac{1}{2}$ inch to the left of the fourth lumbar spine and plunged inwards, slightly inclining towards the middle line. A needle about 4 inches long, with a short point, was used as recommended by Tuffier. The needle entered the subarachnoid space between the laminæ of the fourth and fifth lumbar

vertebræ, and cerebro-spinal fluid exuded drop by drop. The syringe, previously filled with 2 c.c. of a 2 per cent. sterilized solution of cocaine, was now attached, and the solution very slowly injected. The needle was then withdrawn and the puncture closed by collodion. This proceeding caused no pain beyond the momentary puncture of the skin. Four or five minutes after the injection the patient felt nausea, and vomited two or three times; this, however, soon ceased, and she expressed herself as feeling comfortable. Ten minutes after the injection complete anæsthesia had been induced, and the operation was commenced.'

It may be added that very soon after the injection the patient complained of pain in the lower extremities. The pain would apparently have been rather severe but for the morphia injected three-quarters of an hour before. She kept murmuring, 'Oh, my legs!' until after the operation was begun.

Dr. Fothergill, after referring to the injection of cocaine, writes: 'The vomiting was not repeated, although the patient complained of a feeling of nausea once or twice during the operation. The patient's eyes being bandaged and her ears plugged with cotton-wool, the abdominal region was prepared exactly in the manner adopted under ordinary circumstances. On this occasion the membranes were not ruptured before the operation for the purpose of reducing the bulk of the uterine mass. At 10.30 the abdominal incision was made, and the uterus being quickly brought into view, it was observed that the anterior wall was covered with a plexus of large veins, and it was consequently anticipated that the placenta would be found in this situation. The uterus was not drawn out through the wound, but after the insertion of sponges above it and at each side within the abdominal cavity, an elastic tube was passed round it and held ready for tightening if required. The uterus was now pushed towards the abdominal wound, and held firmly by a hand on each side. An incision a little over 4 inches in length was then made in the middle third of the anterior uterine wall in the middle line. The placenta was cut into in the central portion of the wound; there was free hæmorrhage. The placenta having been quickly torn out of the way, the child was found to be lying with the head well down in the lower segment of the uterus. It was at once extracted without any laceration of the uterine wall. The elastic tube was now drawn tight, and the removal of placenta and membranes was carefully completed.

'The uterine wound was next closed by means of numerous deep sutures of fine silk and superficial sutures of catgut. During the

introduction of the sutures the uterus remained dark-coloured and atonic. On slackening the tube after completion of the suturing of the uterine wound, the organ rapidly changed colour, became red, recovered tone, and contracted firmly.

'The abdominal wound was closed with deep silk and superficial silkworm-gut sutures, and when closed was found to measure 11 cm.

'The patient's condition during the whole operation was very good. She complained of thirst once or twice, and had a few gulps of brandy and soda-water from a feeder. The skin in the umbilical region was extremely tough, and the passing of sutures through it formed a complete demonstration of the fact that complete anæsthesia had been produced. The patient never once complained of pain. The operation was finished at 11.1 a.m., having occupied thirty-one minutes.

'Child, female; length, 18 inches; weight, $5\frac{1}{4}$ pounds. Dimensions of head: O.M., 5 inches; O.Fr., $4\frac{3}{8}$ inches; S.O.B., $3\frac{1}{2}$ inches; Bi.P., $3\frac{1}{4}$ inches; Bi.T., $2\frac{7}{8}$ inches; circumference, $13\frac{1}{2}$ inches.'

There are a few points in the case mentioned in the nursing notes which are worthy of notice. They appear to point to certain by-effects of the cocaine upon the spinal cord. It may be assumed all through that morphia was administered whenever required to prevent undue suffering.

Pain and Movement.—There was severe headache for the first seven or eight hours after the operation; this was relieved by cold applications to the head. The patient's hands quivered for the first seven hours. She could not see anything distinctly for about two hours, and she saw 'two of everything' for about forty-eight hours. She was unable to move her legs for about six hours after the operation.

Sickness.—Patient vomited five times during the first six hours; was then free from vomiting for thirty-two hours. Vomiting then became persistent for twenty-six hours. It then ceased for twenty-one hours, after which it returned and continued for nineteen hours. After the bowels were well moved the vomiting ceased. The vomit consisted only of glairy fluid with an acid reaction.

Bowels.—No flatus passed for forty hours. Calomel hourly in 1-grain doses up to 5 grains, followed by sulphate of magnesia and enemata, during second day. Enormous distension of the abdomen without pain; much flatus passing. Bowels did not act thoroughly well till the morning of the fifth day. Meteorism and passing of flatus continued for a week.

Temperature.—Slight rise almost immediately after the operation;

in five hours it was 101°. It then gradually fell to normal, and remained so for sixteen hours. There was then a rising and falling for six days from 99° to 100°; after that normal.

Pulse.—It quickened during the operation, and varied from 100 to 118 for nine days. It then gradually slowed down to normal rate.

Urine.—Sugar (lactose) reaction from first specimen obtained by catheter after the operation. (Notes defective.)

Lochia.—Slight blood-stained discharge for three days. No lochia in the sense observed in ordinary puerperium. On the twelfth day slight amount of something resembling pus, quite odourless.

Breasts.—No appreciable amount of milk at any time. It was never thought worth while to put the child to the breast.

The case after operation was quite eventless from the surgical point of view. During convalescence, in answer to the questions of a medical visitor regarding pain during the operation, the patient said: 'I just knew they were doing something at me, and that was all.' Mother and child left hospital well.

A curious social circumstance is mentioned in the notes. The patient was the fourth wife. The three first wives of her husband died in child-bed!