CRITICAL REVIEW

SPINAL ANÆSTHESIA IN POST-OPERATIVE AND OTHER FORMS OF ILEUS.

By DAVID M. GREIG, C.M., F.R.C.S.E., Conservator, Royal College of Surgeons' Museum, Edinburgh.

At a meeting of the Société Nationale de Chirurgie in February, P. Duval reported for MM. Chenut and Quénu two cases of spinal anaesthesia in acute ileus. The first of these, under the care of A. Chenut (Bordeaux), was that of a female, aged 45, on whom a subtotal hysterectomy had been performed for a uterine myoma, complicated two days later by a left bronchopneumonia. No movement of the bowels and very little escape of flatus led to gradual abdominal distension which reached its maximum on the ninth day after operation. The enormous tympanitic abdomen was not painful, and no intestinal peristalsis was observed nor had vomiting occurred. A post-operative paralytic ileus was diagnosed and preparations were made for an emergency enterostomy. After removal of 10 c.cm. of cerebro-spinal fluid by lumbar puncture 7 c.cm. of "scurocaïne" were introduced. Immediately the bed was inundated with intestinal contents and the abdomen flattened to its normal size. There was a subsequent slight rise of temperature and the pulse for some time remained rapid. The woman made a rapid recovery and left hospital three weeks later.

The second case, under the care of J. Quénu (Paris), that of an enormously fat female, aged 55, who twenty years previously had had a hysterectomy done for uterine myomata, and now had a large post-operative ventral hernia which for thirty-six hours had been strangulated. The woman had severe pain and was vomiting black foetid liquid. With difficulty, on account of her fatness, 3 c.cm. of 5 per cent. solution of "sîcaïne" were administered by lumbar puncture and the operation of herniotomy was proceeded with. During the operation a copious evacuation occurred. The operation was completed and the woman left hospital well, a fortnight afterwards.

Wagner (Prag.) seems to have been the first to recommend (Zentralbl. f. Gynäkol., Leipzig, 1922, xlvi., 1225) the use of spinal anaesthesia for paralytic post-operative ileus and he was quickly followed by Mayer (Tubingen) who recommended it (Zentralbl. f. Chirurg., Leipzig, 1922, xlix., 1882) for the spasmodic form. Its employment is not now restricted to such forms of ileus.

Duval has now collected 22 observations of this method of treatment (including Astériadès' three cases referred to in the Periscope a year ago). These are distributed as follows: 6 were for post-operative
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obstruction from no definite cause; the injection definitely abolishing the ileus; 1 was for a post-operative spasmodic obstruction verified by operation; 8 were for strangulated hernia; 4 were for carcinoma of the colon; 1 was for volvulus of the small intestine; 2 were for obstructions by bands, one of the small intestine, the other of the colon. That relief should have been afforded in some of these cases is surprising, as originally no benefit was expected from spinal anaesthesia in cases of mechanical obstruction. Indeed Mayer considered such a proceeding dangerous, and Leriche warned his readers against thus losing valuable time. If failures have occurred they have not been published.

In Bonniot's case of a woman, aged 68, acute obstruction had lasted for five days associated with cancer of the descending colon. Spinal anaesthesia produced une véritable débâcle diarrhéique within one minute of the injection. The symptoms reappeared on the following day and coeliotomy disclosed two epiploic bands obstructing the transverse colon and division of them produced a permanent cure of the ileus.

In Leriche's case of a feeble old man with volvulus of the small intestine evacuation followed spinal anaesthesia while a right iliac incision was being made. The volvulus was rectified, but recurred five or six days later, ruptured and brought about a fatal termination. Leriche had a second fatality which, like his first, had no relation to the spinal anaesthesia. Ileus without subjective symptoms appeared in a woman five days after removal of a huge ovarian fibroma. Spinal anaesthesia was employed in order to reopen the abdomen and was immediately followed by copious evacuation and complete relief. Distension recommenced on the following day, the abdomen was opened and a kink of the small intestine without inflammation or adhesions was found, an entero-anastomosis was carried out but death supervened.

It will be noted that in the above variously caused obstructions in no case did spinal anaesthesia fail to produce a rapid, copious and satisfactory evacuation from the bowel. The authors urge that it is the treatment for intestinal obstruction, no matter from what cause, and that it should take precedence of any other procedure.

But after the evacuation what is to be done? The answer depends on the cause of the ileus. The success of the spinal anaesthesia does not necessarily obviate a coeliotomy. There is no doubt, however, that it places the patient in a better condition for surgical interference. It insures rest and comfort, and thus, even though temporarily, allows the heart, lungs and other organs to regain something of their normal conditions. Obviously in volvulus, strangulated hernia, and in other conditions which require recognition and not specification, coeliotomy cannot be delayed, but the conditions for operating are improved.
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Chenut believes that peristalsis of the intestine is controlled by two centres, the medullary, which is inhibitory, and the ganglionic, which is excitatory. Ileus, he considers, is produced by excitation of the peripheral nerves of the intestine and their action on the medullary centres. Spinal anaesthesia, by suppressing the inhibitory action of the spinal cord, permits excitatory action of the ganglia and promotes intestinal peristalsis.

Rosenstein and Kohler directly stimulating with a solution of nicotine the cœliac ganglia in rabbits produced violent peristalsis. In the same manner they have treated six cases of acute paralytic ileus in the course of peritonitis in man, and in every case obtained peristalsis and evacuation of intestinal contents. These observations seem to confirm the theory advanced by Chenut. Direct stimulation of the excitor nerves and paralysis of the inhibitory nerves act clinically in the same way by promoting peristalsis and producing evacuation of the bowels.

Colville reports 3 cases of spinal anæsthesia for intestinal obstruction, 2 of which were successful.

CASE I. A female, aged 56, had acute intestinal obstruction during three days. The obstruction was absolute and the abdomen was painful and greatly distended. Palpation and rectal and vaginal examination were negative. There was no evidence of tumour. Though there had been a good deal of vomiting before her admission to hospital she was in fairly good condition though nervous and anxious. Suspecting a volvulus or obstruction by a band, preparations were made for immediate coeliotomy. An intrathecal injection of stovain was given, and in five or six minutes while the abdomen was being prepared a copious evacuation of gas and fluid feces rendered an operation unnecessary. She remained under observation for some days, was radiographed and otherwise examined but a cause for the obstruction was not discovered.

CASE II. A male, aged 73, had for some time shown signs of a neoplasm of the left colic flexure. Obstruction gradually set in until it became absolute. He refused a colostomy, so spinal anaesthesia was induced but without effect, and as matters did not improve a cæcostomy was done on the following day.

CASE III. A male, aged 50, had a strangulated left inguinal hernia the size of a turkey's egg. Herniotomy showed an oedematous loop of small intestine in the sac and a radical cure was performed. Some status passed the same evening, but on the two following days there was no evacuation and there were complaints of pain with abdominal distension and frequent nausea. Considering it to be a paralytic ileus spinal anaesthesia was induced, and in less than an hour there was considerable diarrhœic discharge which was repeated six or seven times in the course of the day.

In the same issue of this Journal, Ch. Dujarier records that in a case of strangulated epigastric hernia the intrathecal spinal administration
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of 8 c.g.m. of novocain was followed by spontaneous reduction of the hernia on the operation table. Incision of the sac showed it to be discoloured, oedematous, but empty and with a very narrow neck.

Lécène records two experiences, one of a female, aged 53, in whom coeliotomy, under stovain spinal anaesthesia, disclosed a partial volvulus of the small intestine, and though the patient died while the abdominal wound was being sutured, Lécène states that the relaxation caused by the spinal anaesthesia greatly facilitated the manipulations in a difficult case. The other case which he briefly refers to was that of a male, aged 78, in whom obstruction had lasted two and a half days and the vomiting had become faecal. On coeliotomy an enormous distension of part of the small intestine ended sharply at a narrow loop beyond which the bowel was collapsed and empty. There was no other mechanical obstruction and violent peristalsis was observed, and as the abdominal wound was being closed a copious diarrhoeic discharge took place. While he was being removed to the ward heart failure occurred and death at once supervened.

Papers on this subject appear consecutively in Bull. et mém. de la soc. nat. de chirurg. Paris 1927, liii., 472. Mauclaire reported his experience of two cases, one of an obese woman whose strangulated umbilical hernia spontaneously reduced itself immediately after spinal anaesthesia and was followed by a copious evacuation. The other was a female also whose intestinal obstruction had lasted for three days. Spinal anaesthesia was induced and the abdomen opened to show only a spasmotic narrowing of the small bowel without any mechanical obstruction. As the wound was being closed alvine discharge inundated the operation table. In spite of a secondary distension the convalescence was satisfactory.

Lapointe only found spontaneous evacuation in 5 per cent. of stovain spinal anaesthesia cases. The cases published he thinks only represent a very small proportion of those treated. He had never seen evacuation of the bowels follow spinal anaesthesia in obstruction or strangulation.

Okinczyc reported 6 observations: 2 were cases of carcinoma of the left colon and spinal anaesthesia had no result; spinal anaesthesia did not hinder the fatal result in 1 case of post-operative ileus; 3 cases were successful (volvulus of the small intestine, strangulation by a band and post-operative obstruction), but each was operated on immediately the spinal anaesthesia allowed. He maintains that spinal anaesthesia should never be the sole treatment. He considers that sudden copious evacuation is not without danger, that the danger is really great in high obstruction, that relief by puncture or short circuiting is the preferable treatment, and that spinal anaesthesia in such cases is dangerous.

According to Picot the fall in arterial tension was a serious matter,
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successfully combated on occasions by the intravenous administration of adrenalin, and Bazy insisted on the danger of toxicity of the patient from septic absorption.

In addition to the cases mentioned in the discussion on the treatment of ileus by spinal anaesthesia in which so many distinguished surgeons in France have taken part and some of which are referred to above, many surgeons from other parts of France have communicated their experiences to M. Duval and thus enabled him to make a synopsis of 400 cases. Individual reports are much at variance, which makes the summation of experiences more valuable. The cases Duval has collected he divides as follows and shows the number and percentage of successful cases in the various divisions:—

| Division | Cases | Successes | Per cent. |
|----------|-------|-----------|-----------|
| I. Strangulated hernia | 257 | 27* | 10 |
| II. Dynamic ileus | 44 | 30 | 68 |
| III. Mechanical ileus | 99 | 16 | 16 |

* Spontaneous reduction.

The second and third divisions he subdivides to provide further detail as follows:—

II. Dynamic ileus.

| Case | Cases | Successes | Per cent. |
|------|-------|-----------|-----------|
| 1. Spasmodic | 8 | 8 | 100 |
| 2. Post-operative | 11 | 9 | 90 |
| 3. Ileus without obvious cause | 2 | 2 | 100 |
| 4. Ileus in peritonitis | 18 | 10 | 55 |
| 5. Pure reflex ileus (renal colic) | 1 | 0 | ... |
| 6. Ovarian cyst twisted pedicle | 4 | 1 | 25 |
| Total | 44 | 30 | 68 |

III. Mechanical ileus.

| Case | Cases | Successes | Per cent. |
|------|-------|-----------|-----------|
| 1. Volvulus | 53 | 7 | 13 |
| 2. Bands and adhesions | 25 | 5 | 20 |
| 3. Carcinoma colon | 17 | 4 | 24 |
| 4. Intussusception | 3 | 0 | ... |
| 5. Biliary ileus | 1 | 0 | ... |
| Total | 99 | 16 | 16 |

From these statistics and their consideration Duval draws certain conclusions.

1. Spinal anaesthesia is contra-indicated in acute ileus should the patient be exhausted, toxic or collapsed.

2. Spinal is not preferable to local anaesthesia in strangulated hernia.

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3. Spinal anaesthesia is the method of choice in post-operative ileus in which it is very frequently successful. Riche recommends that spinal anaesthesia be employed as an anaesthetic not as treatment, Leriche considers delay of operation as a waste of precious time, and Duval sums up that coeliotomy should invariably follow the satisfactory evacuation of the bowels brought about by spinal anaesthesia.

4. Spinal anaesthesia, when successful relief of the ileus has been obtained, makes the subsequent operation easier for the surgeon and the patient alike, absence of distended intestine allowing a freer and more thorough manipulative investigation.

REFERENCES. — A. Chenut, “La rachianesthésie dans le traitement des occlusions intestinales aiguës; ses indications, ses résultats.” J. Quéné, “Eventration étranglée, cure opératoire sous rachianesthésie, selle abondante sur la table d'opération.” Bull. et mém. de la soc. nat. de chirurg., Paris, 1927, liii., 160. Colville, “Sur la rachianæsthesie dans l'occlusion intestinale,” Bull. et mém. de la soc. nat. de chirurg., Paris, 1927, liii., 447. P. Duval, “La rachianesthésie dans l'iléus aigu. Résumé et conclusions de la discussion,” Bull. et mém. de la soc. nat. de chirurg., Paris, 1927, liii., 596.