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Belfast.

NOTES ON 300 CASES OF GENERAL ANÆSTHESIA COMBINED WITH NARCOTICS.

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My object in compiling these notes was twofold: (1) to see the effect of combining narcotics with general anæsthesia; and (2) to see whether ether by the open method in my hands had any substantial advantage over other anæsthetics. I had unusual facilities for following the cases throughout, as they were nearly all inmates of the Hospital for Women, Shaw-street, Liverpool, during my term of office as house surgeon, so I was able to examine the patients thoroughly beforehand, to give the anæsthetic, and to watch them during the remainder of their residence in hospital. For convenience of arrangement I had forms printed of which I give a sample:—

| | |
|-------------------------|-------------|
| Date..... | No..... |
| Surgeon | |
| Patient's Name..... | Age..... |
| Disease | |
| Operation..... | |
| Hypodermic | |
| Anæsthetic begun | |
| Operation begun | |
| Anæsthetic stopped..... | Amount..... |
| Operation stopped | |
| Remarks | |

The state of the patient before operation and complications afterwards were entered under "Remarks."

CASE 1.—Date: 1/1/10. No. 186. Surgeon: Dr. Wallace. Patient's name: —. Age: 56. Disease: Carcinoma of cervix. Operation: Pelvic dissection. Hypodermic: $\frac{S}{100} \frac{A}{50} \frac{M}{6}$. Anæsthetic begun: 2.45, ethyl Cl; 2.46, Ormsby. Operation begun: 2.52. Anæsthetic stopped: 3.50. Amount: 5iiss. Operation stopped: 4.5. Remarks.—Much wasted; weak. Edentulous, therefore ether. Taken well. 3.27–37 no ether. Aseptic ergot given. Vomited three times. Bronchitis for ten days afterwards.

The anæsthetics used were: 1. Ether by open method. 2. Ether by closed method, using both Ormsby's and Clover's inhalers. 3. Chloroform on a Schimmelbusch's mask. 4. Mixtures of chloroform and ether in different proportions and also A.C.E. 5. Ethyl chloride, using both the simplex inhaler and Ormsby and Hedley's; the last named I found the best. 6. Sequences of different anæsthetics. Times used: open ether, 143; closed ether, 103; ethyl Cl, 143; mixtures, 27; and chloroform, 70.

The narcotics used were:—

1. Morphine in doses varying from gr. 1/8 to 1/4, sometimes combined with hyoscine or scopolamine in doses of gr. 1/180 to 1/50, and usually combined with atropine gr. 1/200 to 1/50.

2. Hyoscine and scopolamine. There did not seem to be the marked difference between these two which has been claimed by some observers. They were given in doses gr. 1/180 to 1/50, sometimes combined with morphine, sometimes not.

3. Veronal used by several observers in Germany, who report favourably on it. Given in doses varying from gr. 5 to 30 from one to two hours before operation in hot water or weak tea. This drug was only used seven times, as about that time there appeared in the medical journals one or two cases of veronal poisoning. I never saw any ill result from it, though one case was certainly peculiar.

CASE 2.—Date: 11/3/10. No. 280. Surgeon: Dr. Briggs. Patient's name: —. Age: 29. Disease: Lacerated perineum. Operation: Perineorrhaphy. Hypodermic: Nil, because of hurry. Anæsthetic begun: 2.26. C₂H₅ on open mask throughout. 2.30, 3ii. Operation begun: 2.40. Anæsthetic stopped: 2.50. Amount: 5v. Operation stopped: 2.56. Remarks.—Slight subacute bronchitis. Veronal gr. xxx. given 1½ hours before. Patient fast asleep but struggled slightly during induction of anæsthetic. Pupils small throughout. Slept all night, next day and next night and another. No vomiting. Has no recollection of anything re operation.

4. Chloral and bromide only used a few times. One was the patient who had taken M H A nightly for some weeks before admission; another was an alcoholic.

CASE 3.—Date: 12/2/10. No. 210. Surgeon: Dr. Wallace. Patient's name: —. Age: 24. Disease: Hydroperitoneum cum hypertrophic cirrhosis of liver. Operation: Abdominal drainage. Laparotomy. Hypodermic: $\frac{S}{100} \frac{A}{50} \frac{M}{6}$. Anæsthetic begun: 11.22. Ether in Clover throughout. 11.27, under. Operation begun: 11.40. Anæsthetic stopped: 12.7. Amount: 3ii. 4. Operation stopped: 12.12. Remarks.—For some two or three weeks has had $\frac{H}{100} \frac{A}{150} \frac{M}{4}$ nightly, till last four nights given pot. brom. gr. xxx., chloral hyd. gr. xx., at 9.30. Took anæsthetic very well. No vomiting. Died suddenly 21/2/10.

The narcotics were given to consecutive cases, not picked ones. So several cases of heart disease, some profoundly anæmic and one or two suffering from phthisis, were included in the series and no contra-indication was discovered.

CASE 4.—Date: 16/11/09. No. 120. Surgeon: Dr. Wallace. Patient's name: —. Age: 33. Disease: Dysmenorrhœa. Operation: Posterior section. Dil. and curet. Hypodermic: $\frac{H}{100} \frac{A}{50} \frac{M}{6}$. Anæsthetic begun: 4.30. Ethyl Cl throughout. 4.32, under. Operation begun: 4.35. Anæsthetic stopped: 4.45. Amount: 28 c.c. Operation stopped: 4.45. Remarks.—Has active late secondary syphilis. Has phthisis of both apices, most at left. Vomited three times.

CASE 5.—Date: 4/3/10. No. 260. Surgeon: Dr. Briggs. Patient's name: —. Age: 30. Disease: Lacerated perineum. Right ovarian cyst, simple. Left salpingo-oöphoritis. Operation: Dil. and curet. Perineorrhaphy. Trachelorrhaphy. Right oöphorectomy. Left salpingo-oöphorectomy. Hypodermic: $\frac{A}{50} \frac{M}{4}$. Anæsthetic begun: 11.13. Ethyl Cl in Hedley. 11.15½. Open ether. Operation begun: 11.23. Room changed. 11.47. Anæsthetic stopped: 12.13. Amount: 3vi. Operation stopped: 12.20. Remarks.—Goitre and lateral nystagmus. Small theatre 65°. Vomited very slightly twice under the anæsthetic. Nine stumps removed. Vomited three times same night but only slightly.

The ages of the patients varied from 17 to 72 years. The operations I divided into two classes: (1) Abdominal, in which the time of anæsthetic varied from 16 to 139 minutes with an average of 60.8 minutes; and (2) vaginal and others. The time varied from 3 to 100 minutes or omitting examinations, 15 to 100 minutes with an average of 31.6 minutes.

The effects I attribute to the narcotics are:—(a) Before the operation the patient is much more tranquil and may become slightly amnesic. In fact, some patients went to sleep whilst waiting to be taken to the operating theatre.

CASE 6.—Date: 11/3/10. No. 277. Surgeon: Dr. Briggs. Patient's name: —. Age: 40. Disease: Lacerated cervix. Lacerated perineum. Operation: Dil. and curet. Trachelorrhaphy. Perineorrhaphy. Hypodermic: $\frac{A}{50}$. Anæsthetic begun: 10.46, open ether. 10.51, under, 3i½. Operation begun: 10.57. Anæsthetic stopped: 11.27. Amount: 3iv. Operation stopped: 11.33. Remarks.—Veronal gr. xxx. before anæsthetic 2 hours. Asleep. Mitral stenosis. Edentulous. Very well taken. Very neurotic. Pupils contracted all the time. Hæmorrhage same night. No vomiting.

(b) The anæsthetic (which to many is more terrible than the actual operation) is not dreaded, and therefore taken better and usually without any stage of excitement.

CASE 7.—Date: 22/11/09. No. 130. Surgeon: Dr. Gemmell. Patient's name: —. Age: 46. Disease: Prolapse. Operation: Perineorrhaphy. Ventrofixation. Hypodermic: $\frac{H}{50} \frac{A}{50}$. Anæsthetic begun: 1.13, open ether. 1.22, under, 5iiss. Operation begun: 1.29, 3iv. Room changed: 1.55. Anæsthetic stopped: 2.20. Amount: 5viiss. Operation stopped: 2.29. Remarks.—Took anæsthetic but very quietly, no need for holding. No stage of excitement. Slight mitral stenosis. No vomiting.

(c) The induction is generally quicker, but occasionally the patient becomes too placid, breathes in a shallow manner, and so the time is prolonged.

CASE 8.—Date: 8/3/10. No. 273. Surgeon: Dr. Wallace. Patient's name: —. Age: 30. Disease: Lacerated perineum. Left simple ovarian cyst. Operation: Perineorrhaphy. Left oöphorectomy. Int. round ligament operation. Hypodermic: $\frac{S}{100} \frac{A}{50} \frac{M}{6}$. Anæsthetic begun: 1.3, Clover throughout. 1.14, under, 3i. Operation begun: 1.18. Anæsthetic stopped: 2.8. Amount: 3iii. Operation stopped: 2.14. Remarks.—Stolid shallow breather, therefore c. scopolamine = long induction. Slight vomit of foul-smelling watery fluid part way through

anæsthetic. Gastropnoea. She often has attacks of vomiting. Vomited once.

Many of the cases were first anæsthetised with ethyl chloride, so that time might be saved, and there was never any trouble due to the ethyl chloride, though in one or two cases where the change to the next anæsthetic was not made quickly the patient came partly round.

One case was very interesting, as the patient's own medical attendant told me he had given 2 oz. of pure chloroform to induce anæsthesia a few days before.

| Anæsthetic. | Average in minutes; time of induction. | Average amount used. |
|--------------------------------------|---|---|
| Open ether | 8.68 | 3 1.65 |
| Chloroform | 5.58 | 3 2.44 |
| Closed ether | 7.7 | ? |
| C ₂ F ₂ | 5.3 | 3 4.2 |
| Ethyl Cl | 1.5 (from ¼ to 4 min.) | In 11 out of 138 more than 1 dose used. |

(d) The amount of anæsthetic used is much less: this is especially noticeable in the case of open ether. Barton¹ states that the ether by the open method which he uses amounts to 14 ounces per hour. I found in these cases the amount averaged as follows:—

| | |
|---------------------|----------------------------|
| Open ether... .. | 3vii. in first 67 minutes. |
| Closed ether | 3iv. " 64 " |
| Chloroform... .. | 3ix. " 64 " |

In one of the long cases I found that the amount of ether used was, on four layers of gauze by the open method, during the first half-hour, 4½ oz.; to end of the second half-hour, 7 oz.; of the third, 10 oz.; and of the fourth, 12 oz.

(e) Salivation and excess of mucus in the throat did occur once or twice during anæsthesia, but was very rare. During the total number of anæsthetics (about 500) which I gave at the Hospital for Women I had to use the gag once, the stick sponges twice, and the tongue forceps once.

(f) Post and anæsthetic vomiting was rare unless chloroform (or a mixture containing it) had been used. When it did occur vomiting was usually only once and that slight.

CASE 9.—Date: 29/11/09. No. 149 (?). Surgeon: Dr. Gemmell. Patient's name: —. Age: 41. Disease: Lacerated cervix. Retroversion. Small cyst of right ovary. Operation: Dil., curet. Trachelorrhaphy. Right ovarian cyst punctured. Ventrifixation. Hypodermic: $\frac{H}{50}$ 30 minutes before. Anæsthetic begun: 2.14, open ether; 2.23 under, 3iii. Room changed 2.56. Operation begun: 2.28. Anæsthetic stopped: 3.15. Amount: 3vii. Operation stopped: 3.19. Remarks.—Neurotic. No vomiting.

In two cases of general peritonitis which came on after operation vomiting occurred once only in the first 12 hours, but after that continued till death.

(g) Shock seemed to be lessened.

(h) Post-operative pain was very much minimised, in many cases absent. Some of the patients who had undergone other operations were very emphatic about the difference. There was good opportunity of judging this, as there seems to be a type of gynecological patient who returns about every six months to have another operation—some of them even six or seven times. One woman I anæsthetised four times, and I know she had 11 anæsthetics, possibly several more since then.

CASE 10.—Date: 19/10/09. No. 43. Surgeon: Dr. Wallace. Patient's name: —. Age: 28. Disease: Vesico-vaginal fistula. Operation: Repaired. Hypodermic: $\frac{H}{100}$ $\frac{A}{50}$ $\frac{M}{6}$. Anæsthetic begun: 2.40, CHCl₃; 2.46, Ormsby. Operation begun: 2.47. Anæsthetic stopped: 3.35. Amount: 3iii. Operation stopped: 3.40. Remarks.—Eleventh operation on same patient. Took anæsthetic very well. Hemorrhage two days after, but stopped by itself. Vomited slightly once.

The narcotic, or rather the combination, that I found most satisfactory was $\frac{M}{4}$ $\frac{H \text{ or } S}{100}$ $\frac{A}{100}$. I found open ether to be in my hands the best anæsthetic except where there was much chest trouble for the following reasons: 1. It was much safer and shock was much less, specially in long operations, such as Wertheim's pelvic dissections. 2. It was seldom followed by vomiting. 3. There was less chest trouble than with the closed method. I had good opportunities of judging this, as Dr. Wallace preferred ether in a

closed inhaler to open ether, and there was more chest trouble in his wards than in the others.

CASE 11.—Date: 21/10/09. No. 49. Surgeon: Dr. Gemmell. Patient's name: —. Age: 34. Disease: Carcinoma of cervix. Operation: Wertheim's abdominal panhysterectomy and pelvic dissection. Hypodermic: $\frac{H}{50}$ $\frac{A}{50}$. Anæsthetic begun: 1.7, CHCl₃, 3iv. 1.14, open ether. Operation begun: 1.20. Abd. part 1.38. Anæsthetic stopped: 2.53. Amount: 3ix. Operation stopped: 3.0. Remarks.—No vomiting. Bronchitis one day.

CASE 12.—Date: 17/3/10. No. 295. Surgeon: Dr. Gemmell. Patient's name: —. Age: 49. Disease: Carcinoma of cervix. Operation: Wertheim's pelvic dissection. Hypodermic: $\frac{M}{4}$ $\frac{H}{100}$. Anæsthetic begun: 1.12, open ether. 1.19, under, 3ii. Operation begun: 1.23. Room changed 1.25. Anæsthetic stopped: 3.6. Amount: 3xi. Operation stopped: 3.12. Remarks.—Slight mitral stenosis. Edentulous. 3viii. for first hour. 3x. in 1½ hours. Vomited five times.

I have to thank the medical staff of the Hospital for Women for their encouragement in compiling these notes.
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PROLAPSUS UTERI: VENTRIFIXATION.

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THIS is a subject to which I have given much consideration, for during the past 16 years I have performed hundreds of operations for fixation of the uterus to the anterior abdominal wall. At first, I presume, like many beginners, I was tempted by the apparent simplicity of the Alexander procedure, but soon I found that in many flabby individuals who suffered from procidentia the round ligaments were mere fatty degenerated expressions of anatomy, which could not bear even the most gentle traction, and consequently were unsuitable for any reefing process. This experience combined with two obvious potential dangers—the formation of “another” peritoneal fossa for the reception of errant intestine and the not infrequent coexistence of annexal adhesions—sufficed to make me abandon the method. And in order to show that my fears were not illusory, I wish to mention that I have recently heard of a case operated on by a colleague of mine in which during the operation the patient was noticed to become suddenly blanched, the pulse being small and rapid, and the abdomen becoming distended. Immediate coeliotomy was performed, and an intraperitoneal rupture of the round ligament was dealt with, but the patient had lost so much blood in a few minutes that death supervened some hours later, in spite of all known forms of resuscitation—“pelvic adhesions.” In a recent number of the *British Medical Journal* I read a case reported by Dr. Gussisberg, where intestinal obstruction followed an Alexander operation, the bowel having entered into a recess formed between the womb and the anterior parietal wall.

Some years ago I was induced to adopt the method advocated by that brilliant surgeon, the late Mr. Greig Smith—viz., to aim for sero-fibrous union, which was effected by suturing a scarified surface of the womb to the recti muscles. This plan has undoubtedly given me fairly satisfactory results, but I have found that from three to six years afterwards in some 20 per cent. of the cases there is a tendency to recurrence. I should mention that I have always combined Mr. Greig Smith's operation with excision of the cervix, if elongated or hypertrophied, and with anterior or posterior colporrhaphy, or both, as the vaginal prolapse demanded. But as one recurrence stands out more in surgical perspective than five successes, I have for some few years been carefully studying the matter in order, if possible, to find a method on the permanency of which I could rely.

Frequently, in performing hysterectomy, I have been impressed, on dividing the anterior peritoneal reflection, with the firm and resistant structure of the cervix—a fact well known to every student of anatomy, for, as Cunningham states, “The muscular coat of the cervix (tunica muscularis cervicis) contains more connective and elastic tissue than that of the body, and hence the greater firmness and rigidity of the cervical part of the uterus.” As my experience tended to prove that permanent reliance cannot be placed on any method of suturing the fundus, I adopted the following procedure, with, so far, most promising results.

The abdomen having been opened by a low central incision,

¹ The Practitioner, November, 1910.