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DR. SENN'S HYDROGEN GAS TEST.

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A CASE ILLUSTRATING THE EFFICIENCY OF DR. SENN'S HYDROGEN-GAS TEST FOR PERFORATION OF THE ALIMENTARY CANAL.

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Recognizing that whatever illustrates any new method in surgery is of advantage to the profession, I take pleasure in reporting the following case:

August 13, 8 P.M., I was called to see J. Williams, a strong man æt. 49 years, and City Marshal, who had been shot about two hours before. Dr. Shaw had previously reached the case and administered a full dose of morphine. Found the countenance anxious, breathing slightly accelerated and pulse 80, temperature not taken, but about normal, pain and jactitation considerable. The ball, from a 42-calibre pistol, struck the abdominal wall on a level with and 4 inches to the left of the umbilicus. There was considerable hæmorrhage but no escape of gas from the wound. The finger would not enter it, but the probe followed it for about 3 inches toward the umbilicus when, in the position the body occupied, it refused to go any further. While there was no special evidence of the bowels having been injured, we decided to insufflate with hydrogen gas. The urine drawn with the catheter gave no evidence of injury to the urinary organs. The bowels not having been moved for two days, large and repeated enemata of soap and water were administered, but with little result, no peristaltic action being excited and voluntary effort causing unendurable pain. Before we could complete our arrangement for the insufflation midnight came. The general condition of the patient seeming good, we decided rest for the remainder of the night would be better for him than an operation by lamplight. Administering $\frac{1}{2}$ grain of sulph. morph. and $\frac{1}{20}$ gr. of sulph. atrop. hypodermically and leaving morphine to be given *pro re nata*, we adjourned until 9 A.M.

August 14, 9 A.M. The patient had had a quiet sleep and, though the countenance was anxious, the face pallid, the breathing hurried and the pulse 120 and quite compressible, he was cheerful and courageous.

In a few moments we were ready to insufflate and, if need be, to operate—Dr. J. M. Heller to administer chloroform, H. C. Galliher, chemist, to attend to the gas, and Dr. Schenck, assisted by Dr. Shaw, to use the knife. At this juncture, alas! the man of the law came upon the scene to prepare for a post-mortem by an ante-mortem examination. Encouraging the patient with the thought that the operation might prove fatal, he proceeded to take his testimony. We waited impatiently until 10:30, when, with greatly increased exhaustion, after a full dose of brandy, the patient

went kindly under the influence of chloroform and ether aa, and the hydrogen gas was soon traversing the rectum, descending, transverse and ascending colon. At the ileo-cæcal valve there was a slight gurgling sound followed by a tremulous movement, which was very soon transferred to the track of the ball through the abdominal wall, and in a moment the diagnostic flame told the tale of a perforated bowel. The bladder was emptied, the abdomen shaved and washed with an antiseptic solution, and at 11 o'clock an opening made from a little above the pubic bone to 2 inches above the umbilicus, and very soon an opening was found in the ileum 3 feet from its cæcal terminus. The edges of the opening were trimmed and it was closed with Gely's suture. Six inches nearer the ileo-cæcal valve the ball passed through the gut, its exit making a wound $\frac{1}{2}$ inch in length. The edges of these wounds were trimmed and closed with a continuous suture. Four inches further up the bowel there was a solution of continuity in its peritoneal and muscular coats. These were brought together with a few stitches and, there being no other wounds near except a perforation through the mesentery, the gas was again injected, when other openings were quickly demonstrated. Twenty inches further up the bowel was a hole in the bowel near its mesenteric attachment. This being closed, it was found that a little further on the ball had again passed through the bowel, one opening being an inch in length, and the space between the openings very narrow. This was closed by folding in the peritoneal coat and making the cuff suture with a continuous stitch, trusting to adhesion of the serous surfaces and the sloughing away of the intervening portion. The last perforations were double ragged wounds extending to within $\frac{1}{4}$ inch of the cæcum. Another injection of the gas proved all the openings, nine in number, closed. The bullet passed thence behind the cæcum, bruising it as it passed, and entered the crest of the ileum $\frac{1}{2}$ inch beneath its superior border. Either the twisted position of the body when the shot was received had lifted up the colon, or it was congenitally higher than is supposed to be normal.

During the operation the bowels were kept covered with a warm solution of boracic acid, and the cavity was well sponged and washed with solutions of the acid and of bichloride of mercury. The external opening was closed, with a drainage-tube at its lower angle, the suture dusted with iodoform, covered with a pad of absorbent cotton saturated with a 5 per cent. solution of boracic acid and kept in place by a broad flannel bandage. The patient had been on the table three and one-half hours, the latter part of the time but slightly under the influence of the anæsthetic, and was nearly pulseless. Hypodermic injections of brandy and, as soon as possible, brandy and ammonia by mouth, were administered. Slight reaction occur-

ing, he was wrapped in warm blankets and removed from the operating-table, but at 4 o'clock he sank rapidly and expired.

At 7 P.M. Dr. Shaw and myself made a legal autopsy, and found the ball had passed obliquely through the abdominal wall, as indicated in the diagnosis, entering the cavity $\frac{1}{2}$ inch from the umbilicus, passing through the bowels with a very slight downward obliquity, injuring them as already stated, and imbedding itself in the ileum near its superior border. No further injury to the bowel was discovered, and the cavity of the abdomen was found well cleansed.

Whilst this case proved fatal from the extent of injury to the bowels, it admirably illustrated the efficiency of Dr. Senn's method of diagnosis. The apparent direction of the ball left room for questioning whether it had dipped deeply enough into the abdominal cavity to reach the bowels, and the general condition of the patient did not solve the doubt, while the insufflated gas quickly told the tale.

MEDICAL PROGRESS.

LOCAL ANÆSTHETIC EFFECTS OF HELLEBOREIN.—V. VENTURINI and E. GASPARINI, working in the laboratory of Professor Buffalini, at Siena, recently made the discovery that helleborein had a local anæsthetic effect. A communication on the subject was made on March 9 by Prof. Buffalini to the Società tra i Cultori delle Scienze Mediche, of Siena. The physiological effects of helleborein and helleborin were already partly known by the experiments of Schroff, Dragendorff, Marmé, Santoliquido and Paul. Santoliquido recently contemplated an investigation of the influence of these two glycosides on the heart. The local anæsthetic effects of these two substances, however, had been quite unknown hitherto. The following is a summary of the observations of Venturini and Gasparini: On the instillation of some drops of a solution of helleborein into the conjunctival sac of rabbits, complete anæsthesia of the cornea came on after fifteen minutes. Pricking with a needle was not felt by the animals. The same results were also obtained in experiments on dogs, without any interference with the function of the pupils or eyelids or with vision. The experiments were then repeated with a solution each drop of which contained about 0.0005 grams of the glycoside; the same anæsthetic effect was produced on the cornea after an interval of fifteen minutes, when 3 or 4 drops of this strength were injected into the eye. The cornea regained its normal sensibility in half an hour from the commencement of anæsthesia. No bad after-effects were observed on the subsequent days. Venturini and Gasparini consider that, in operations on the eye, helleborein is pref-

erable to cocaine, as its effect is limited to the cornea, and does not affect the sensibility of the other parts of the eye in any way. They conclude that: 1. Helleborein, even in a very diluted solution, produces complete anæsthesia of the cornea, without irritating the conjunctiva or the cornea. The anæsthesia produced by this substance is of longer duration than that obtained with cocaine. 2. Though the anæsthesia is complete, there is no relaxation of the eyelids. 3. No change in the pupil or in the intraocular tension is observed. 4. Helleborein causes local anæsthesia in the parts into which it is injected. As, however, it has a powerful cardio-toxic effect, its application to the cardiac region requires great precaution. Whether the influence of the helleborein is to be ascribed to the helleborin (as Professor Buffalini thinks) has yet to be decided.—*British Medical Journal*, August 4, 1888.

ELECTRICITY vs. LAPAROTOMY IN INFLAMMATORY AFFECTIONS OF THE UTERINE APPENDAGES.—DR. EGBERT H. GRANDIN, of New York, says:

The class of cases in which I would contend electricity will prove as serviceable, and frequently more so, than laparotomy; and this, too, without subjecting the woman to the slightest risk, are those in which careful exploration, if necessary under anæsthesia, fails to suggest the presence of pyosalpinx. Disease of this nature calls for speedy and radical action. The knife is here indicated, even as it is in any other region of the body where pus is predicated. A history of recurrent attacks of pelvic peritonitis should constitute the call for laparotomy, lest the next attack should eventuate in a general peritonitis fatal to the patient. Where, however, the careful bimanual exploration of the patient, the rational history and the appearance do not suggest the likelihood of pyosalpingitis, then the greatest palliation, if not entire cure, may be predicated from resort to electricity. The conditions termed catarrhal salpingitis, pachysalpingitis, perisalpingitis, perioophoritis, I would include in the class which may properly be subjected to electricity rather than to the knife.

When I first began to systematically use electricity in my gynecological practice, I deemed it contraindicated in acute pelvic peritonitis—the term under which, for the sake of brevity, I would include the affections just referred to—and to be used with caution in subacute instances. With increased experience I have learned that the agent may not alone be resorted to with safety, but with benefit as well, where the condition is acute. By means of electricity the circulation is regulated, absorption is favored, and we effectively counter-irritate. The technique of the application I have so recently described that it is unnecessary here to do more than lay stress on certain of the cardinal