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# ANÆSTHESIA.

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*Non-fatal Accidents from Anæsthetic Agents, with Observations. Read before the Medico-Chirurgical Society of Cincinnati. By W. H. MUSSEY, M. D.*

Recently, in one of the courts of justice in Paris, two surgeons were condemned to pay a fine (merely nominal) for allowing a patient to die under the effects of chloroform. The court sustained the following allegations, and hence its decision.

1st. That chloroform was unnecessarily administered, as the operation to be performed was not of sufficient magnitude to justify its employment.

2d. That the room was not sufficiently ventilated.

3d. That no provision had been made against accident.

In view of the last point, the very natural question arises, What precautions against accidents should be taken by those administering anæsthetic agents?

One answers, that no death has occurred from the use of sulphuric ether, and therefore there need be no apprehension from its administration; another has never *heard* of a death from the chloric ether, and claims for it great advantages over other agents; whilst the advocates of chloroform attribute all accidents to the *impurity* of the article.

It is not my purpose to discuss the comparative merits of these agents, but I am persuaded that each, however pure it may be, will meet with idiosyncracies forbidding its administration.

In death from anæsthesia, there is suspension of respiration from paralysis of the nerves presiding over this function, and

consequently, suspension of the heart's action. To reanimate, Mr. Jobert de Lambelle (of l'Hotel Dieu) counsels the use of irritants to the skin, currents of air passed over the body, excitants applied to the tongue, cauterization of the mouth and throat with ammonia and currents of electricity. M. Ricord remarked to me that artificial respiration alone, if persevered in, would prevent fatal results, and instanced three cases in his own practice which were saved by that procedure. The following case will illustrate the value of the suggestion.

But first a word as to the agent employed, and means of its administration. We have used for four years the mixture of one part (by measure) of chloroform, and two parts of washed sulphuric ether, both of which are from the manufactory of Messrs. Powers & Weightman, Philadelphia. The vehicle for administration is a large silk handkerchief (an old bandanna) of very loose texture, which has been used for this purpose solely for four years. This is shaken out of its folds and gathered lightly in the hand, and usually a fluid drachm of this mixture is put upon it, and it is held lightly over the face, covering the nose and mouth. If there is much irritation of the lungs, the handkerchief is removed from time to time till it ceases, and when the patient is sufficiently quiet for the commencement of an operation, we not unfrequently add a little fresh material, and leave the handkerchief upon the face for a few minutes.

JUNE 6th, 1852.—Michael O'Hara, native of Ireland, emigrated seven years since; is 27 years old, of sanguine temperament, full habit, capacious chest, great muscular development, and weighs 170 pounds. Once in two or three weeks drinks freely of whiskey for two days, and works steadily in the intermediate time. Had a "spree" for two days last week. Eight months since was working under a bank of earth, which caved upon him and injured his back, since which has had incessant pain in the lumbar portion of the spine, notwithstanding internal medication and the application of cups, blisters, and irritating ointments; now, pressure over the third lumbar vertebra produces pain.

15th.—Propose to apply the actual cautery over the spine.

16th, 8 o'clock, A. M.—At the patient's lodgings, an Irish lad of sixteen years present with us. Patient has eaten nothing for thirteen hours; is lying on his back in a room ten feet square; the head of the bed is under an open window, and at the foot the door stands open. Circulation full

and strong, with eighty pulsations per minute. Commenced the administration of the mixture of chloroform and ether. The first approach of the handkerchief to the face caused slight coughing, which soon subsided. In four minutes, the patient became very loquacious, jabbering in Gaelic, and made great muscular exertion (usually the case with Irish patients), and muscles became rigid; pulse 70. The handkerchief was removed for 30 seconds; the muscles relaxed, the respiration became disembarassed, and pulse 65. Inhalation was resumed and continued for one minute, when I considered the effect nearly sufficient; pulse 60, full and regular.

Putting half a fluid drachm of the mixture upon the handkerchief, I left it upon the face, and stepped below stairs for the heated iron, leaving the lad with the patient. (The iron was in a stove twenty-five yards from the bedside, and I found subsequently, on going over the ground with the same expedition, that I was absent from the room forty seconds.) On my return the wrist was pulseless, and the action of the lungs and heart entirely suspended. I shook the patient, dashed water in his face, turned him upon his side, then upon the back again, gave various positions to the head, pressed upon the chest to expel the air from the lungs and allow fresh air to replace it. This was kept up for one minute. I then placed myself on the bed at one side of the body, and with my own mouth upon that of the subject, inflated the lungs, then expelled the air by pressure upon the chest, and allowed the pure air to take its place; this in turn was expelled, and the lungs again inflated by my own. In this manner I kept up artificial respiration for the space of three minutes, every alternate inflation being from the atmosphere. Suspending these efforts for a few seconds and seeing no signs of life, I despatched the lad for a professional friend, and resumed artificial respiration. After one minute, I thrust my finger into the throat, and agitated the epiglottis, in hopes to provoke a spasm of the glottis, but without success. Continued artificial respiration for another minute, and a second time thrust my finger into the throat with no better success. Artificial respiration for half a minute, and a third time thrusting my finger into throat, but deeper than before, so as to penetrate between the cords of the glottis, I suddenly withdrew it, but immediately repeating the movement with greater violence, the much wished-for "spasm" grasped my finger, and there was a slight quivering motion of

the chest. Artificial respiration resumed, and in two minutes the patient had no need of my assistance.

He was still insensible, but the application of the iron, which was re-heated, partially aroused him. Five minutes after, he was perfectly sensible, complained of great weakness, but had no idea of the peril he had passed through. Half an hour later he seemed as well as patients ordinarily are after the use of chloroform, and subsequently there were no unusual symptoms.

The amount of the mixture used on this occasion was six fluid drachms—two of chloroform and four of ether.

There was no pulsation of the heart, or respiratory movement, for seven minutes.

Reanimation is attributable to artificial respiration and irritation of the glottis.

*Cincinnati, Sept. 20, 1853.*

Since preparing the foregoing, I have witnessed another case of the unfavorable effects of an anæsthetic agent.

Mr. L., farmer, aged 49 years, height five feet ten inches, moderately fleshy, and of lymphatic temperament.

OCTOBER 12th, 11 A. M.—Patient in the horizontal position; has not eaten for 17 hours; pulse 95 per minute. Commenced the inhalation of the mixture of chloroform and ether. There was slight irritation of the lungs at first, which occasioned some delay. At 11 o'clock, 10 minutes, partial anæsthesia; respiration easy; pulse 80. One minute later, the pulse suddenly dropped to 60, and I removed the handkerchief. There was but little respiratory action; the muscles of the chest were quiet, but those of the abdomen moved feebly. Pulse rose to 18 for a quarter of a minute, and immediately fell to 13. The movement of the abdominal muscles ceased, but only one respiratory movement was lost, as with one hand I opened the mouth, and with the other made pressure upon the chest. Three movements of this kind gave sufficient impulse to the respiration, and no farther assistance was necessary. The pulse steadily improved. A little water was thrown in the face, and the patient returned to consciousness ten minutes after, and for several days he complained of great weakness. Eight days subsequently, with great composure, (without anæsthesia), he submitted to the extirpation of a large tumor of the neck, previous to which I ligated the primitive carotid artery.

Six drachms of the mixture were used.

The facts in this case strengthen the position assumed in connection with the other, viz : that the derangement of the circulation is consequent upon impaired respiratory action.

My Father, Dr. R. D. Mussey, informs me, that a year since, on account of untoward symptoms similar to the above, he was obliged to postpone an operation which was subsequently performed without anæsthesia.

In March, 1849, we were near losing a patient, from the unskillful management of chloroform by a non-professional bystander ; and not long after, we tried the mixture of chloroform and ether, and have used no other anæsthetic agent since, under the opinion that the ether sustains the vital powers against the purely sedative effect of the chloroform. Experience has taught us, however, that there is liability to accident from its use.

I am constrained to believe, that a frank avowal of the profession would create astonishment at the great number of non-fatal accidents that have occurred, and that the details would aid in the establishment of principles for conduct in its administration, and serve to throw around the sale and use of anæsthetic agents, such guards as would protect the community from their direful effects. Even in Edinburg, where it is claimed, that in a hundred thousand cases where chloroform has been used, not a single accident has occurred ; *untoward symptoms have compelled the suspension of the use of the article*, (as I was informed by an assistant of Dr. Simpson), which the operators profess to be able to trace to the *impurity* of the agent employed.

My attention has just been called to the researches of Prof. Horsford, of Cambridge, Mass., (*Bost. Med. and Sur. Journal*, Oct. 19), and to a paper in the *Am. Journal of Medical Science* for Oct., from Dr. Bickersteth, of Liverpool, to which I refer as corroborative of the positions herein assumed, viz :

*First.* That accidents from anæsthesia are generally attributable to idiosyncracies in the subjects.

*Second.* That derangements of the circulation depend upon the disturbance of the function of respiration.

*Third.* That artificial respiration is the most valuable of all means for counteracting dangerous symptoms.—*W. Lancet*, Oct. 25, 1853.

*Tracheotomy for Foreign Body.* By W. H. MUSSEY, M. D.,  
Cincinnati.

John Wildey, aged 7 years, son of German parents, residing four miles from the city. At 12 M., August 8th, while eating soup, was seized with a violent fit of coughing, which was followed with great difficulty of breathing, and inability to speak above a whisper. He was brought to my office at 10 A. M. the next day, (twenty-two hours after the accident), in a state of great prostration; skin purple, and great distress depicted upon the countenance. On examination, I recommended tracheotomy as the only chance for relief. Whilst the mother was undecided, my friend, Dr. Christopher Johnston, of Baltimore, very opportunely called, and joined in urging the importance of prompt action. When it was evident that the boy could not long survive, consent was given, and as we laid him upon the operating table, he swooned; the stroke of the knife, however, aroused him to vigorous struggles till the trachea was reached, when he swooned again. The cricoid cartilage and two rings of the trachea were divided, but the admission of air to the lungs did not produce reaction.

With a bi-valve ear speculum, the lips of the wound were separated, and the trachea found to be loaded with mucus. Placing my mouth over the orifice, I removed a large quantity of mucus and blood, and then introduced a tube; still there was no respiratory movement. I then commenced artificial respiration, by inflating the boy's lungs from my own, and producing expiration by pressure upon the chest, then allowing the ingress of air from around us. In this manner was artificial respiration maintained—the ingressions of fresh air alternating with the inflations from my lungs, and the expirations assisted by pressure upon the chest—occasionally, as at first, the air passages being cleaned from the mucus and blood that accumulated. After five minutes, the respiration appeared voluntary, but soon flagged, and it became necessary to continue the assistance, at short intervals, for a half hour, before consciousness returned, and we felt safe in trusting the natural efforts. All this time, Dr. Johnston was most assiduous in the application of various stimulants to the skin of different parts of the body.

Supposing that the obstruction was in the larynx, we passed a probe through the wound and fauces, and out at the mouth, carrying with it a couple of threads. To each was attached a small bit of sponge, and as the first was drawn up through

the glottis, the patient was cautioned not to "swallow," but an involuntary act of deglutition carried down, as we supposed, whatever cause of obstruction had existed, as the second sponge was drawn through much more easily, though larger than the first. The tube was replaced, and at 2 P. M., the patient was carried to lodgings in town.

Twenty-eight hours after the operation, the patient complained of pain on the right side of the neck, particularly on a level with the thyroid cartilage, where there was considerable tumefaction. Five leeches gave relief.

So abundant was the secretion of mucus for two days, that it was necessary to remove the tube every six or eight hours, to clean it, and to exercise the patient in coughing, to clear the bronchial tubes. On one occasion of this "exercise," at 11 A. M. of the 10th, a chip of bone was coughed out of the opening in the trachea. Its center was the sixteenth of an inch in thickness, and its edges sharp. The longest diameter was thirteen-sixteenths of an inch, and the greatest width half an inch. The secretion greatly diminished, and on the fourth day, the tube was removed, and the wound gradually closed up, with the aid of adhesive strips after the tenth day. The patient could speak audibly on the 15th day; and the wound was entirely healed five weeks after the operation.

*Cincinnati, Oct. 1853.*

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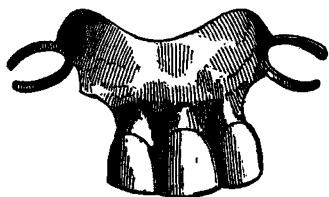
*A Plate of Artificial Teeth swallowed, and subsequently discharged per Anum.* By W. H. MUSSEY, M. D.—Mr. E. S., of Fulton, was awakened at midnight, of June 14th, 1853, by a distressing sensation in the throat, and discovered that a plate of three teeth, which he wore in the upper jaw, had disappeared. Successive acts of deglutition did not relieve the oppression, and Dr. E. H. Ferris was called, who employed such means as were at his command to clear the œsophagus, but emetics, &c., affording no relief, they called on me at 2 A. M., the 15th.

The patient insisted that the missing teeth were in the œsophagus, at a point corresponding to the last cervical vertebra. In using the various œsophageal instruments, there was no difficulty in passing them below the point indicated, and that without contact with any foreign body. Instruments were employed for twenty minutes, at intervals of three or four



minutes, when the question of the expediency of œsophagotomy was considered. In order to assure myself of the presence of a foreign body, I again introduced a slender instrument, having a slightly-hooked extremity. The exploratory movements caused some irritation, and a vigorous spasm of the œsophagus. The withdrawal of the instrument was followed by a more violent spasm, and the sense of obstruction was relieved: the patient exclaimed, he had "swallowed the teeth!"

The use of bulky food, as mush, rice bread, and potatoes, was advised, and a patient waiting for developments.



JUNE 21st.—At 8½ o'clock, A. M., (six and one-third days after the accident), without any previous unpleasant symptoms, there passed the anus, attended with slight pain and a few drops of blood, the set of teeth, of which the accompanying cut is a representation.

To this day, the patient has not had the slightest derangement of his system.

CINCINNATI, Oct., 1853.

# VESICO-VAGINAL FISTULA.

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Reprinted from the Western Lancet for June, 1854.

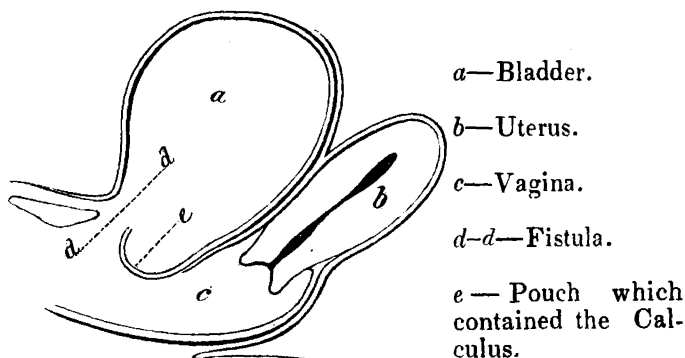
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*Vesico-Vaginal Fistula complicated with Vesical Calculus.*  
*Cured by operation.* BY W. H. MUSSEY. M. D.

Mrs. M., 24 years of age, was confined in September last with her first child. There was no discharge from the bladder till two days after the labor had terminated, at which time a very large quantity of water came away "*suddenly*." The discharge continued to be free, but uncontrollable, causing excoriations of the vulva. After attending three weeks, the physician made an examination, and discovered an "ulcer" on the anterior wall of the vagina. Three weeks later a fistulous opening in the Vesico-Vaginal wall was observed, and in November last, three successive attempts were made to remedy the calamity by operation, with only partial success.

On March 16th, I examined the patient and could pass my fore-finger into the bladder, and proved the fistula to have a diameter of thirteen sixteenths of an inch. The urethra was cut off from the bladder, excepting a strip of the superior wall, about the sixth of an inch in width.

The following diagram exhibits the position of the fistula, and will indicate the nature and extent of the operation required.



At the second interview with the patient, she informed me that there was a stone in the bladder, which was readily perceived on the introduction of a sound.

On the 20th of March I proceeded, with the instrument of Mr. Civiale, to crush the stone. Several fragments were removed through the fistula, but owing to the position of the Calculus, in the pouch *e*, and the contraction of the bladder from the impossibility of keeping it distended with fluid, it was feared the manipulations would cause too much irritation, and the completion of the operation was deferred. In the course of this operation, some *fibres of cotton* were removed, indicating the character of the nucleus. The patient, on coming out of the anaesthetic state, informed us, that when the "ulcer" was discovered, a lock of cotton, medicated in some way, was applied, and she "*never saw it afterwards.*" The next day several small fragments of stone were discharged, and on the second day, a lock of cotton with fragments of stone attached, passed through the fistula. This nucleus, after being dried, was one inch and a half long, the greatest width five-eighths of an inch, and in thickness one quarter of an inch; the calculous coating was one-eighth of an inch in thickness.

The bladder was repeatedly washed out with tepid water, till it was evident no more fragments of the calculus remained, as none could be detected by the finger in the explorations.

On the 10th of April I attempted the closure of the fistula.

In order that the patient should have the benefit of the anaesthetic state, she was placed upon her back. The hips were elevated, an assistant on either side supported the limbs, and held away the vulva, another assistant depressed the perinæum; for these purposes the instruments of Mr. Jobert de Lambelle, (of the *Hotel Dieu*) were employed. The mucous surface of the vaginal wall, for half an inch in width around the fistula, (including its edge,) was scarified, and the stitches entered one-third of an inch from these scarifications, including the muscular, without penetrating the mucous coat of the bladder. The "Clamp Suture" of Mr. Sims, of Georgia,\* was employed to hold the freshened surfaces in apposition. Threads of silk, (five in number) were first passed, then the silver wire was drawn through and fastened by means of the perforated shot, to slightly curved leaden bars one eighth of an inch in diameter, the anterior being one and a quarter and the posterior one and three quarters inch in length. An elastic catheter was kept in position in the Urethra, by means of tapes attached to a band around the body, the external orifice being depressed by means of a bit of sheet lead, so that the urine could not be conducted back into contact with the wound. This was removed and cleansed twice a day for three days, and after that once a day—the vagina and vulva being cleansed every day with tepid water, by means of a Glister Syringe.

The patient was kept on her back. On the ninth day the stitches were removed, but I was convinced that after the *sixth* day there was no tension upon them. There was a spontaneous evacuation of the bowels on the fifteenth day. On the eighteenth day the catheter was removed, and the patient allowed to rise.

On the twenty-seventh day of the operation, the patient returned to her home perfectly cured, there being no evidence that a particle of urine had passed the wound since the day of the operation.

*Cincinnati, May 23d, 1854.*

\* Am. Journal Med. Science, January, 1852.