the extract of the suprarenal medulla itself, and we have the extracts of glands known to work in unison with it. It is my practice to order mixed gland because I can see no harm in giving an overdose of a gland substance known to stimulate the suprarenal glands, and no harm in giving gland substance which has no demonstrable action on the suprarenal. But where there is evidence of hyperfunction of any particular gland I withhold that gland substance in treatment.

It will be said: "But we have all had failures with the exhibition of adrenaline in asthma." Perhaps these can be explained by reference to the properties of the extract and to what happens when it is administered. When given subcutaneously it brings about intense constriction of subcutaneous vessels and thus tends to defeat its own absorption. It does the same in the stomach, but this may not be a disadvantage. It is rendered inert though not destroyed in an alkaline medium. The stomach contents are acid and the vaso constriction produced would be useful in producing a slow, continuous absorption, unlike the quick absorption obtained from an intramuscular injection, for adrenaline dilates intramuscular vessels. Therefore, for immediate ease, an intramuscular injection should be given, and oral administration employed for a slow continuous action.

My great difficulty in compiling this paper has been the paucity of available bibliographic references to the endocrine glands and asthma. There are, I feel, many flaws in my argument, but if the paper serves to stimulate discussion I shall feel amply rewarded.

THYROFISSURE FOR MALIGNANT DISEASE IN A MAN OF 74.

BY

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THE case here reported is interesting in view of the advanced age of the patient. So far as I have been able to ascertain, the only instance in which thyrofiessure has been performed on a patient older than this is that of a man aged 75, on whom Sir StClair Thomson operated successfully. There is naturally a certain amount of hesitation in advising an operation on a patient of such an age, especially if he is at all debilitated, but this man is more vigorous than usual at this time of life—thin, but with good arteries, and unhesitatingly chose to have the operation.

W. T., aged 74, attended as an out-patient at the Throat Hospital in May, 1922. He complained of hoarseness of several months' duration, and this was the only symptom. A small warty growth could be seen on the margin of the right vocal cord, at the junction of the middle and anterior thirds. There was no lagging of the movement of the cord, the only impairment of the movement being caused by the mechanical obstruction of the growth to proper apposition. A specimen showed the growth to be a squamous-cell carcinoma.

On June 6th thyrofiessure was performed. The isthmus of the thyroid gland was ligatured and divided and tracheotomy performed in the median position. Before opening the trachea a 2 per cent. solution of cocaine was injected into its lumen and into the interior of the larynx. The tracheotomy tube was inserted and the larynx opened without any of the usual disturbance. On exposing the growth by sawing through the ossified thyroid cartilage it was found that, as is so often the case, it was much more extensive than it appeared to be, spreading below the cords across the anterior commissure to implicate the tissue below the opposite cord in the anterior part. In consequence a considerable amount of tissue on both sides of the larynx had to be removed; this was done after placing a swab dipped in 2 per cent. cocaine into the larynx and packing off the trachea and pharynx.

As soon as he recovered consciousness and there was no sign of bleeding the tracheotomy tube was removed, a suture having been placed in each side of the trachea at the time of the tracheotomy. These were left *in situ* for a short time, so that if necessary the wound could be readily opened and the tracheotomy tube reinserted. He was kept in the upright position in bed and encouraged to get up and sit in a chair from the third day onwards; convalescence was uneventful. A small tumour appeared at the anterior commissure and persisted for several months; this was removed and proved to be the remains of granulation tissue with no evidence of malignancy. He now speaks in a loud whisper, which, taking into account the amount of tissue which had to be removed, is as much as can be expected.

The case illustrates clearly the importance which should be attached to persistent hoarseness or alteration of voice occurring in a man over 40. Semon and all laryngologists have pointed out the great importance of a laryngeal examination when it occurs, but unfortunately this symptom is

frequently ignored until some other reason sends the patient for an examination. Then it is too often found that the disease has progressed to such an extent that operation is impossible, and only a very severe operation offers any prospect of success. Alteration of the voice, being the only symptom of intrinsic cancer for some considerable time, should arouse suspicion when occurring in a man of 40 or over, which suspicion should not be set at rest even if no growth is visible at the time of examination, unless some other definite cause can be found for the condition, treated and cured. It is now possible to examine the larynx below the vocal cords by means of a mirror, introduced by Irwin Moore, so early growths in this region can be detected. As in the case mentioned above, the growth is frequently more extensive below the cord than is at first imagined. Impaired mobility or lagging of the cord implies some infiltration of the intrinsic muscles by the growth, and when present in conjunction with a growth is considered pathognomonic of malignant disease. In the case recorded it was not present, in spite of the size of the growth. In the larynx, as in other situations, epitheliomatous growths may be divided into those which tend to grow outwards (exfoliate) and at first show little tendency to invade the deep tissues; those which at first tend to extend over the surface, with little tendency to exfoliate or invade the deeper tissues; and those which tend to invade the deeper tissues at an early period of their growth.

The injection of cocaine into the trachea and larynx is of great value in the operation. Everybody knows the violent coughing, venous congestion, wide movement of the trachea, etc., which occur as soon as it is opened. After introducing a few drops of the 2 per cent. cocaine solution it can be opened with absolutely no disturbance. The disturbance when opening the larynx is even more marked, and the manipulation of the tissue may, by the inhibitory action of the branches of the recurrent laryngeal nerve, cause dangerous and fatal collapse. All this is done away with by the use of cocaine, which has the still further advantage of greatly reducing the haemorrhage and more clearly defining the growth and diminishing the shock.

The early removal of the tracheotomy tube is a matter of considerable importance, as it enables the patient to cough up secretions much more easily than when the tube is retained. It can easily be replaced, by the nurse if necessary, if sutures have been placed in the trachea, the wound being easily opened by traction on them.

The median position of the tracheotomy opening offers several advantages. After division of the thyroid isthmus the trachea is superficial in this region, so the operation is more easy than low tracheotomy; the tube can readily be reinserted if necessary, and during the operation is sufficiently out of the way not to cause inconvenience. In high tracheotomy the tube is in the way during the operation, and the thyroid isthmus, which has to be retracted when the trachea is opened, may get in the way and cause difficulty and delay in replacing the tube should necessity arise after its removal. In low tracheotomy there is often much difficulty in reinserting the tube owing to the depth at which the trachea lies.

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PRIMARY UNION AFTER OPERATION FOR SUPPURATIVE APPENDICITIS.

BY

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IT is now the practice of many surgeons to close the peritoneum without drainage in cases of abdominal sepsis, such as perforated gastric or duodenal ulcer, pyosalpinx, and appendicitis with localized abscess or general peritonitis, when it has been possible to remove the focus of infection. In such conditions, the root of the trouble having been removed, and as much as possible of the septic material having been swabbed out, the peritoneum is left to deal with what remains; provided that the infecting organism does not belong to one of the more virulent strains of streptococci (when the patient would probably die in any case), and provided also that the patient has not been left till *in extremis*, that membrane seldom betrays the trust reposed in it.

The tissues of the abdominal wall have not the same

capability as the peritoneum of dealing with infective organisms, and as it is almost impossible to prevent contamination of the parietes during the operation for the removal of the septic focus, it usually happens that the wound suppurates and breaks down. Healing is then a very slow process, and a weak scar is likely to result.

Bacillus coli is the usual offender in appendicitis, and signs of mischief do not manifest themselves before the fifth day, when a little local discomfort and a slight rise of temperature give an indication of what is happening. Sometimes there is no evidence of trouble when the clips are taken out on the fifth day; and it may not be till the tenth day, when the supporting stitches are removed, that the edges of the wound fall apart, and a thin offensive pus appears. It is not difficult to clean such a wound; eusol or flavine will make it look quite healthy in a few days, but the slow process of granulation is a serious matter both for the patient and for the hospital. Secondary suture hastens matters in some cases, but is not always successful, and sometimes not advisable. The complete breakdown of the wound may, to some extent, be avoided by inserting at each end a drain reaching down to the fascia. These should not be removed earlier than the fifth day.

It is worth while, however, to attempt more than this, and to endeavour to obtain primary union, first by protecting the wound as well as possible against infection, and secondly, if that fails, as in most cases it will to some extent, to try to destroy the contaminating organisms. Where purulent fluid wells up immediately on opening the wound there is little chance of keeping the wound clean; but in cases of localized abscess it is possible to protect the edges with tetra cloths stitched to the peritoneum, or with the rubber-backed cloths recommended by Bonney, held in place by his special clips. If the abscess is small, the pus may then be mopped out without soiling the wound. Even then it is a difficult matter to keep the protecting cloths in position during the manipulations necessary in performing the operation, and one can never be quite certain that infection has not taken place. It is advisable, therefore, in all cases to disinfect the wound after the peritoneum has been sewn up; and it was in order to find a suitable antiseptic that various chemical agents were tried in the small series of cases tabulated below. The cases were all emergency ones of acute suppurative appendicitis, five having localized abscess and seven having general peritonitis. In all of them the appendix was removed, pus and fluid mopped out as well as possible with dry gauze, and the peritoneum and abdominal wound firmly sewn up. All did well eventually, though with varying success as regards union of the parietal wound, as will be seen.

Eusol was tried first, but appeared to have no effect. *Violet green* seemed to have an inhibitive effect on microbic growth, and delayed the appearance of sepsis till the tenth day, when the whole wound broke down (No. 4). *Iodine* produced a first intention wound in one instance, and only slight failure in another. *Flavine*, 1 in 1,000, gave the best results. It was used in the last seven cases and all healed by primary union except one, where the tissues were soaked with purulent fluid as soon as the peritoneum was opened, and where the operation was long and the patient weak (No. 8). *Bipp* was not used in this series. I have tried it in other similar conditions, with unfavourable results.

No.	Sex.	Age.	Lesion.	Anti-septic.	Result.	Days in Hospital.
1	M.	39	Perforated appendix, general peritonitis	Eusol	Infected, broke down	57
2	M.	32	Ditto	Iodine	Slight infection	23
3	M.	14	Localized abscess	Flavine	Slight infection	22
4	F.	65	Perforation, general peritonitis	Violet green	Infected, broke down	43
5	M.	18	Gangrene, general peritonitis	Iodine	Primary union	17
6	M.	17	Localized abscess	Flavine	Primary union	19
7	F.	12	Ditto	Flavine	Primary union	12
8	F.	34	Gangrene, general peritonitis	Flavine	Infected, broke down	58
9	F.	38	Extensive peritonitis	Flavine	Primary union	14
10	M.	8	Localized abscess	Flavine	Primary union	13
11	M.	25	General peritonitis	Flavine	Primary union	18
12	F.	60	Localized abscess	Flavine	Primary union	17

Flavine should be very thoroughly swabbed into every corner of the wound, which should then be flooded with it, and afterwards gently dried out. It is not advisable to run saline into the abdomen, either to wash out the peritoneum or for absorption. In the former case the wound will become hopelessly saturated, and in the latter there is likely to be leakage through the peritoneal suture, with consequent infection of the parietes, especially as the patient has to assume the Fowler position. Saline should of course be given freely by the rectum for the first twenty-four hours.

OSTEITIS OF THE TEMPORAL BONE WITH MENINGITIS.

BY

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The following case is of interest on account of its complicated nature, for, in addition to osteitis of the temporal bone and meningitis, extradural abscess and lateral sinus thrombosis were also present. The satisfactory result would appear to be due largely to the use of bipp.

Florence G., aged 11, was admitted under Dr. Porter Parkinson to the London Temperance Hospital on November 10th, 1922. For the previous week she had complained of earache (right), but latterly rather of general headache and pain behind the eyes. On November 5th there had been a slight discharge from the right ear. On and after November 7th she had vomited daily. Since November 9th her arms and legs had twitched occasionally. On admission the temperature was 103°, pulse 114, respirations 20. The child was drowsy and complained of pain behind the eyes. There were no physical signs of disease in chest or abdomen. Edges of both optic discs indefinite and "fuzzy." Veins dilated. Otherwise cranial nerves normal; no facial paresis; no demonstrable deafness. There was some rigidity of neck. Kernig's sign and tache cérébrale present. The knee-jerks were normal, as also was the flexor plantar response on both sides. There was a slight inoffensive watery discharge from a small central perforation in the membrana tympani of the right ear and tenderness over the mastoid, chiefly at the tip; no oedema. There was no thickening in the neck over the jugular. Dr. Porter Parkinson agreed with me that there were no physical signs to warrant operation.

November 11th: Lumbar puncture: cerebro-spinal fluid under pressure and turbid. Pathologist's report (Dr. Sanguinetti): Many polymorphonuclear pus cells, but no organisms seen. Culture sterile.

November 17th: The patient was less drowsy. The temperature had fallen on November 15th to 98.8°, which had been the average temperature ever since. Tenderness over right mastoid, and slight puffiness behind angle of right jaw. Head rigidity and tache cérébrale still present. No paralysis, anaesthesia, or other focal signs.

November 21st: The temperature shot up to 104° without rigor or convulsion. Obvious puffiness over the right mastoid. Optic neuritis on both sides, more marked on the right. The right pupil was larger than the left. At 6 a.m. the temperature was 104°, pulse 128, respirations 28. It was decided that operation must be deferred no longer; and the patient was transferred to my care by Dr. Porter Parkinson.

Operation.

The operation was done under general anaesthesia (Dr. Hirsch). Preliminary lumbar puncture yielded findings similar to those of November 11th. The antrum was now opened, but neither pus nor necrotic cells were found. On exposing the sigmoid sinus an extradural abscess was encountered overlying a black non-pulsating thrombosed sinus. Pus also exuded in small globules from the cut edge of the bone itself. Bone was freely cut away backwards, exposing the lateral sinus until healthy sinus wall was reached, and no pus exuded from the bone. The thrombosed sinus was sausage-shaped, two and a half inches long, and quite black and inelastic.

A pack of ribbon-gauze was placed between bone and dura behind to control bleeding, and the whole length of the thrombosed sinus slit open and clot evacuated. The wound was packed with gauze. The bony "bridge" was not touched. The dura (excepting the outer wall of the lateral sinus) was not opened to examine the brain. The internal jugular vein was not tied, the neck not being interfered with at all.

The patient endured these procedures fairly well. Immediately after operation the temperature fell to 99°.

Subsequent Progress.

November 24th: The temperature has remained low—98° to 99.6°. Wound re-dressed with gauze soaked in bipp, under short general anaesthesia. The sinus bled, but only from about one-sixth of the length of the original incision.

November 29th: Wound re-dressed under general anaesthesia, cleaned with hydrogen peroxide, saline, and spirit, and repacked with bipp gauze. No bleeding from the sinus, which was almost completely covered by healthy granulation tissue. Lumbar