UNEXPECTED DEATHS IN THE POST-OPERATIVE PERIOD.

BY

A. RENDLE SHORT, M.D., B.S., B.Sc., F.R.C.S.,
SURGEON TO THE BRISTOL ROYAL INFIRMARY, LECTURER IN PHYSIOLOGY
TO THE UNIVERSITY OF BRISTOL;

AND

A. D. FRASER, M.A., B.Sc., M.B., CH.B.,
CLINICAL PATHOLOGIST TO THE BRISTOL ROYAL INFIRMARY, PATHOLOGIST
TO THE BRISTOL EYE HOSPITAL, DEMONSTRATOR IN PATHOLOGY TO
THE UNIVERSITY OF BRISTOL.

THE material on which this study is based is contained in the accompanying tables.

It will be observed that during the ten-year period, and out of a total of about 16,000 operations, there were seven deaths on the table. In our study of deaths in the post-operative period we have excluded cases of cancer, intestinal obstruction, etc., but not when deaths on the table are considered. Of these seven, two were anaesthetic deaths, four must be attributed to the surgical procedure, and the other was moribund from strangulated umbilical hernia, and died after inhaling only a few drops of ether.

Anaesthetic Deaths.—The first was a man of 48, with an appendix abscess complicated by tuberculous peritonitis. He died during the induction stage. The autopsy showed a flabby degenerated myocardium. The second was a woman of 77, with acute intestinal obstruction, who died during induction. The probable cause was cardiac failure. Open ether, with a little chloroform occasionally during the induction stage, is the almost invariable anaesthetic agent used.

Deaths on the Table from the Surgical Procedure.—The first was a lad in a very feeble condition, with a temperature swinging to 103°, suffering from psoas abscess. He died during the operation. The autopsy showed a flabby heart. Another was a man of 43, with a subclavian aneurysm. He died of haemorrhage. The third had traumatic middle meningeal haemorrhage, and died of bleeding and cerebral compression. The fourth was a baby with bronchopneumonia (temperature 100°, pulse 144). An abscess in the groin was opened without an anaesthetic.

DEATHS IN THE POST-OPERATIVE PERIOD.

The table fully bears out what is well known to the profession, but what the public is slow to learn—that the real dangers of an operation are not during, but after. It will be seen that, except in babies under a year, the risks of surgery are very small indeed until the age of 30 in women and 40 in men. If our statistics had included out-patients and throat cases, a few deaths from the tonsil operation might have appeared to detract from this conclusion. Our figures show no deaths from status lymphaticus. Another ancient bugbear that does not appear is entry of air into a vein. Only one death due to air embolism was noted during the period under discussion, and that was a case of cut throat with partial severance of the external jugular vein. Surgery seems to furnish rather more calamities in men than in women, but this is partly due to a slight preponderance of males operated upon, and especially to the prostate deaths in old men.

It will further be observed that the bulk of the deaths followed operation for three conditions—namely, enlarged prostate, gastric or duodenal ulcer, and gall stones or cholecystitis—and here the principal gains are to be hoped for in the future.

A special table is given of what are described as utterly unexpected deaths, eighteen in number. This includes such disasters as the following:

A man, aged 45, who collapsed suddenly on the fourteenth day after operation for hernia, was thought to be bleeding internally; laparotomy was performed, but nothing found. At necropsy he was found to have had a dilated and fatty heart and atheroma of the aorta.

A man, aged 50, died of tuberculous meningitis eight days after orchidectomy for tuberculous testis.

CONSIDERATION OF THE ASSIGNED CAUSES OF DEATH.

It will be observed that the greatest number of post-operative deaths are attributed to pneumonia, bronchitis, or massive pulmonary collapse (27 out of 109). Of these,

7 followed operation for gastric or duodenal ulcer, and 3 were after gall-bladder surgery. As has often been remarked, this shows that there is some special danger of this complication after these as compared with other operative procedures of equal length and severity. How may we account for these cases? In 5 or 6 the notes state that bronchitis was present before operation, and in another, we suspect that an appendix was removed in error when the real diagnosis should have been incipient pneumonia. We have several times given rectal ether instead of an inhaled anaesthetic in bronchitics or phthisics, but have twice seen pneumonia or collapse of the lung follow—fortunately not fatal.

It is not probable that sepsis, *per se*, gives rise to the bulk of the lung complications. Many of those who died were clean cases; pneumonias rarely followed operations for cellulitis, pyaemia, and abscesses. Several factors must be regarded as possibly acting. The operative procedure on the upper abdomen probably gives rise to reflex inhibition of the diaphragm, which in its turn is followed by collapse of the lung, and that again by infection. Minute emboli carrying germs may be a factor. The anaesthetic plays some part, no doubt, but not so large a one as was until recently supposed. Inhalation of vomit may sometimes occur. The subject has been reviewed within the past year by Featherstone of Birmingham, after study of a considerable volume of statistics. He thinks inhibition of the diaphragm is the principal cause, and the frequency of lung complications after upper abdomen operations is certainly suggestive of this. According to Grégoire, previous gastric lavage and the substitution of local for inhalation anaesthesia reduce the incidence of post-operative pneumonia in gastric cases from 21 to 9 per cent.

And how may we attain the greatest success in avoiding this most dangerous sequel? First, and principally, by the collection of evidence as to the exact cause. Until that is more accurately known very little progress is likely. On our present information the following rules may be laid down:

1. To avoid as far as possible operating on persons with bronchitis, or to operate under local anaesthesia.
2. Careful guarding against inhalation of vomit.
3. As little moving through cold corridors as possible on the way back to bed.
4. The use of novocain or quinine-urea to reduce the inhibition reflex in upper abdomen operations; no drainage tubes just under the liver to impede its descent; no tight binders.
5. After returning to bed to prop the patient up when possible, and coax him to draw deep breaths as soon as conscious.

A striking and rather unusual example of sudden unexpected death falling into this class is the following:

A woman, aged 36, had a trifling incision made, under a general anaesthetic, over a supposed lump in the groin, which proved to be nothing. She seemed well afterwards, and on the fourth day got out of bed to go home. She became cyanosed and stopped breathing. The pulse went on beating for a while, then she died. The *post-mortem* examination showed collapse of the right lung, old-standing bronchitis, and fatty heart.

It seems probable that an examination of the base of the lung would have saved her.

Pulmonary Embolism.

Contrary to the usual opinion, this seems to be a rare cause of sudden post-operative death. It has often been suspected, rarely found. What had been diagnosed as pulmonary embolism generally turned out to be sudden cardiac failure. Only two cases appear in our ten-year series. One of these, occurring on the thirteenth day after operation for salpingo-oophoritis, was typical enough both as to symptoms and *post-mortem* findings. The other, following on the eleventh day after a gastro-jejunostomy, was atypical, and the clot in the pulmonary artery had evidently been present unsuspected for some days before death. A few cases may have been overlooked for lack of an autopsy, but, if so, the symptoms were not those usually associated with this disaster.

It is stated that getting patients up early, or, in default of this, making them move the legs in bed, helps to avert

the thrombosis which determines the embolism. At the Mayo Clinic there were 146 deaths from post-operative pulmonary embolism from 1889 to 1920—that is, about one to every 1,200 operations. It was especially frequent after pelvic surgery (Heard). At the Zürich clinic during the past twenty years, fatal pulmonary embolism occurred in 1.25 per cent. of the operations for uterine myoma (Holzmänn).

Cardiac Failure.

Here we approach the most inscrutable, the most tragic, and probably the least preventable of the causes of death in the post-operative period. There is, of course, room for difference of opinion as to classification, but we have blamed the heart for 11 out of 109 deaths, and in 6 of these the event is tabulated as "totally unexpected," on account of the slowness of the operation or the good progress made heretofore.

A few examples typical of various groups may be given.

1. A man, aged 63, underwent Bassini's operation for hernia; he did well till the seventh day, then showed signs of cardiovascular failure, and died the next day. *Post-mortem* examination showed marked coronary atheroma and myocardial degeneration.

2. A man, aged 58, fell down pulseless whilst crossing the ward nine days after operation for varicocele, and died on the spot after feeble movements of the arms and legs. A dilated left heart was found at necropsy, with flabby muscle and atheromatous coronary arteries.

3. A woman, aged 51, whose gall bladder was drained for cholecystitis without stones, following on repeated attacks of acute cholecystitis with rigors and jaundice. She had a rigor on returning from the theatre. The legs became oedematous on the second day. The temperature never settled to normal; on the seventh day she became collapsed, and later died. At the *post-mortem* examination the liver was swollen and mottled, the ducts dilated and oozing pus, there were stones in the common duct, and patches of ulcerative endocarditis on the aortic valves, which showed ruptures in two places.

The third example can scarcely be called an unexpected death, but the others illustrate how cardiac failure may be either gradual or sudden.

Omitting a few fatalities from endocarditis and pericarditis, we observe that the remaining cardiac deaths include 5 in men, all over 45, and 3 in women. Of the men, 3 followed operation for hernia or varicocele, and one each after gastro-jejunostomy and enlarged prostate. In the first three of these there is no note that any warning of heart weakness had been given. The fourth (the gastric case) did very well for nine days, and then died suddenly. The day before death he vomited without obvious reason and without alteration of the pulse. The next day he suddenly fainted and had "a sort of fit." The pulse disappeared. There was no pain and no vomiting, and no signs of tenderness or rigidity or distension of the abdomen. Finally, the breathing stopped half an hour after the seizure. There was no necropsy. It transpired afterwards that a brother and an aunt and other relatives had also died suddenly, two of them after operations. The fifth patient, who died three days after prostatectomy, had had anginal symptoms, though without signs. The necropsy showed atheroma of the coronary arteries.

Of the women, one was 39, the others older. Two had had attacks of faintness before operation.

Some such patients die probably because an infected area has been stirred up by the surgeon, and a heavy dose of toxin absorbed. In others chloroform may have a share, but probably not ether to any serious extent. The deadly nature of the chloroform-adrenaline combination is or ought to be well known. Several of the cases have occurred just when the patient was getting up again, and the strain has been too much. In a few cases it has seemed possible that post-operative semi-starvation has just turned the scale against them.

How may disaster be averted? In patients over 45 careful inquiry ought to be made into their response to hill-climbing and walking exercise. In cases where there is any ground for suspicion, we should do as little as possible to disturb an infected area, avoid chloroform, feed as well as possible, and exercise special care about getting the patient up again. But the surgeon is apt to be caught in a dilemma when there is some suspicion about the heart, and yet the condition demands intervention. Surgery will always need courage.

Haemorrhage and Shock.

Little need be said under this heading. It is important to realize that catgut knots are apt to be insecure, and it is wise to use a three-cast knot instead of two, and to transfix with a needle if the hold will not be perfectly reliable. In operations on the neck it is well to let the patient cough or vomit just before suturing the skin. If the patient is jaundiced the coagulation time should be taken, and if it is delayed a prophylactic intravenous injection of calcium chloride should be given (10 per cent. in 5 c.cm. doses per 60 kilo body weight, on one, two, or three successive days). If gastro-jejunostomy is being done with clamps we earnestly advocate using an interlocking inner suture line, and taking off the clamps before the conclusion of the inner (through-all-coats) suture line to inspect for bleeding points.

Two of the eight deaths after gastro-jejunostomy succumbed to secondary haemorrhage more than a week after operation. Three were very exsanguinated when operated on, and probably it would have been wiser to let them alone. In one case a patient bled to death after splitting the kidney; it would have been better to remove it (for persistent unilateral idiopathic renal haematuria).

It will be noted that most of the deaths from shock were after gall-bladder surgery. It is probable that there was some underlying defect in the liver. Other fatalities classified here include an amputation at the hip-joint for tubercle, an abdominal nephrectomy, and an Albee operation on the spine, with aspiration of a psoas abscess.

Late Anaesthetic Deaths.

To what extent anaesthetics contributed to some of the deaths from chest complications is a difficult question to which we have already referred, and we shall shortly consider their relation to liver deaths. A woman, aged 47, operated on for interval appendix, died the next day, with cyanosis and dyspnoea. She appears to have inhaled vomit into the trachea. There was no necropsy.

Renal Deaths.

Fourteen fatalities in our series are attributed to this cause. In 7 cases the operation was a prostatectomy; in 5 others the diagnosis was papilloma of the bladder, vesical calculus, and stricture (three). One patient died of anuria after nephrectomy, on the fifth day; this was a case of pyonephrosis and perinephric abscess. The remaining case was a curious one.

A mentally deficient woman, with incontinence of urine and faeces, had a needle in her thigh, and an attempt to remove it under a local anaesthetic failed; it was therefore taken out under ether. The temperature ran up to 102° that night, and she died the next day in a condition of cyanosis and dyspnoea. At the *post-mortem* examination chronic nephritis and a fatty heart were found.

Deaths from renal bankruptcy in urinary surgery, and especially after prostatectomy, are much less frequent than they were, but it seems probable that further improvement can be obtained. The use of the two-stage operation, and the preliminary testing of the kidneys by the urea concentration test and the estimation of blood urea, as well as the routine examination and measurement of the urine, and it may be of the Rowntree-Geraghty and other tests, enable us to avoid some dangerous pitfalls. We now know that the patient may look and feel in good health, and there may be no cystitis, and yet the kidneys may be on the verge of a final breakdown. On the other hand, they are sometimes surprisingly little affected even in a man who has carried a bladder up to his umbilicus for months. My own practice has been to perform the two-stage operation in all cases in which the urea concentration test is below 1.5 per cent. But this does not avert all danger. Out of our 16 deaths following prostatectomy all but two underwent the two-stage operation, 4 dying after the cystotomy and 10 after the removal of the prostate. Not all these deaths were renal, however.

We believe that even very gravely affected kidneys will improve if they are relieved of back-pressure, and then given plenty of time. In two recent cases in the practice of one of us, men who nearly died after the first stage were left for three months wearing a Pezzer tube, and both did well after the prostatectomy. In a third the

percentage of urea before giving any by the mouth was 0.5, and the administration of 15 grams did not raise it in the least. A Pezzer tube was inserted, and after three months the urea concentration test showed 1.1 per cent. The prostate was removed, and he never gave any anxiety.

Liver and Pancreatic Deaths.

Far too many patients have died, as will be seen from the tables, after gall-bladder surgery, and the deaths have often been somewhat mysterious, and unlike those following other operative procedures. Three such fatalities are classed as of "uncertain" cause. Four were probably due to defects of the liver or pancreas, and five occurred under forty-eight hours, and are attributed to "shock," but it seems likely that there was some underlying hepatic deficiency.

Heyd has been in the habit of removing small pieces of liver for the microscope at gall-bladder operations, and has found that there is often a good deal of cell change, fibrosis, etc. He describes three types of death after operations for cholelithiasis. In the first they die in a few hours in a drowsy state, and the operation may have been an easy and simple one. The second type do well for a couple of days, and then develop vasomotor collapse, and may die, or may be saved by proctoclysis and the administration of salines and glucose. In the third the interval before symptoms occur is longer, about five days, and they die in coma. All these are probably due to liver inadequacy. The liver contributes fibrinogen to the blood, so deaths from uncontrollable oozing may also be assigned to hepatic inefficiency.

In our series 9 out of the 20 deaths followed operation either during an acute febrile attack or within a day or two of one. In such circumstances the liver poisoning would be at its worst. Three cases classed as liver deaths were as follows:

1. A woman, aged 30, underwent cholecystectomy during an attack of biliary colic. The gall bladder was very thick and inflamed, but was not adherent; two small stones were removed. The next day she passed into a very collapsed state, with very feeble pulse, temperature 97°, blood pressure (on eighth day) only 60. There were no abdominal signs. The legs became paralysed, and she died on the eleventh day. This seems to belong to Heyd's second type.

2. A woman, aged 62. Cholecystenterostomy was performed for deep jaundice. A lot of oozing followed the operation. She never recovered from the feeble condition, and died on the seventh day. *Post-mortem* examination showed stones in the gall bladder and bile ducts, chronic fibrotic pancreatitis, and much dilatation of the liver ducts and signs of toxæmia.

3. A woman, aged 59, with acute febrile cholecystitis and jaundice, for which cholecystectomy was performed. She did well at first, but the appetite became poor and the pulse very feeble, and she died on the seventh day. *Post-mortem* examination showed a stone in the ampulla of Vater, dilated bile ducts, and flabby dilated heart.

One case classified as a pancreatic death showed fat necrosis at necropsy. The patient died on the twelfth day after cholecystotomy for a "strawberry" gall bladder. The case was admitted as an urgent one. The liver showed parenchymatous infection. There was pus in the gall bladder, but no stones.

The case returned as a liver death apart from gall-bladder surgery was a girl with tuberculous peritonitis, who at necropsy was found to have advanced hepatic cirrhosis.

How, then, is safety to be obtained in gall-stone cases? Certainly, by doing our utmost to avoid operating on febrile patients, or in the presence of an acute attack of biliary colic (unless done on the first day, before the liver has had time to be poisoned). Much is gained if we can tide the patient over for a fortnight or more. Inasmuch as chloroform and ether are well known to be hepatic poisons, they should be avoided when liver toxæmia is suspected. If we must intervene, let us do as little as possible; if the patient is not jaundiced, it may suffice to drain the gall bladder under local anaesthesia without disturbing adhesions. If jaundice is present, of course more must be done, and the risks in a febrile toxæmic patient are sure to be considerable. With the gall bladder, as with other organs, interval surgery is safe surgery.

The diagnosis of liver toxæmia rests on the following tests: (1) Rosenthal's bromsulphalein test; (2) the laevulose tolerance test; (3) van den Bergh's test for the

detection of latent jaundice. In several recent cases the laevulose test has warned us to wait a little longer before operating on patients who have recently had an acute attack, and the operation findings have shown that the delay was wise.

Other Causes.

The remaining causes of unexpected death in the post-operative period do not call for much remark.

A patient died of peritonitis after cystotomy for enlarged prostate, without any direct leakage, by infection tracking up in the layers of muscle. Two cases developed meningitis: one, a man, after orchidectomy for tuberculous testis; and the other, a child, after removal of the cuboid for talipes (in the latter the meningitis was not verified *post mortem*). Three cases of persistent vomiting after gastro-jejunostomy were presumably due to vicious circle or faulty lie, as there was no evidence of leakage.

As an example of a strange fatality after operation the following may be given:

A woman, aged 53, was sigmoidoscoped, and piles were ligatured under a general anaesthetic. A little bronchitis was present. During the night the pulse dropped to 50, and there was extreme feebleness. She died twenty hours after the operation. At the necropsy no injury to the bowel was found, but it "showed signs of absorption of toxins," and there was "slight peritonitis"; the lungs were congested, and liver and heart showed slight fatty degeneration; there was atheroma of the aorta and right coronary artery, and old pericarditis; the heart muscle was weak. The spleen and kidneys were toxæmic. Death was attributed to peritonitis and heart failure.

The tables refer to cases during the ten years 1915 to 1924 at the Bristol Royal Infirmary, under six surgeons; also, the private practice of one of us (A. R. S.) during the same period. They include all deaths on the operating table, from whatever cause; all deaths occurring within fourteen days of operation, amongst in-patients in the surgical wards, or in a nursing home or private house, except those specifically excluded. Many of the deaths were therefore not entirely unexpected. For instance, all deaths following operation for enlarged prostate, gastric or duodenal ulcer, and gall stones are included. The cases excluded comprise out-patients; eye, ear, nose, throat, and gynaecological cases, except when operated on by a general surgeon; big accident cases; cases of cancer, intestinal obstruction, strangulated hernia, peritonitis, osteomyelitis, septicaemia, pyaemia, cellulitis, carbuncle, diabetic gangrene, myelocoele, cerebral tumour, and exophthalmic goitre. Two or three deaths due to a technical error in the operation are also excluded.

The total operations in the period numbered about 16,000.

Classification by Cause of Death.

Cause of Death.	Peptic Ulcer.	Prostate.	Gall Bladder.	Unclassed.	Totals.
Pneumonia or empyema...	7	3	3	14	27
Pulmonary embolism ...	1	—	—	1	2
Cardiac... ..	1	2	2	6	11
Haemorrhage	8	—	1	3	12
Shock	2	2	5	3	12
Late anaesthetic deaths...	—	—	—	1	1
Renal	—	7	—	7	14
Liver	—	—	3	1	4
Pancreatic	—	—	1	—	1
Ileus or peritonitis...	2	1	2	3	8
Meningitis	—	—	—	2	2
Sepsis	—	1	—	3	4
Vomiting	3	—	—	—	3
Uncertain	2	—	3	3	8
Totals	26	16	20	47	109

Deaths in the Series.

On the operating table	7
During post-operative period	109
Total	116

Age and Sex.

	Under 1.	1-10.	10-20.	20-30.	30-40.	40-50.	50-60.	60-70.	70-.
Males ...	2	2	4	1	2	16	13	12	10
Females ...	5	1	2	2	9	6	15	8	3
Total ...	7	3	6	3	11	22	28	20	13

Total males, 62; total females, 51.

Totally Unexpected Deaths.

Cardiac ...	6
Pneumonia ...	3
Pulmonary embolism ...	2
Late anaesthetic ...	1
Ileus ...	1
Strangulation after hernia operation ...	1
Meningitis ...	2
Renal ...	1
Sepsis ...	1

Total ... 18

We are greatly indebted to our surgical colleagues, past and present, for their kind permission to use their notes of cases; also to Dr. Dorothy Staley for clerical assistance.

LITERATURE.

Heard: *New Orleans Med. and Surg. Journ.*, 1924, 451.
 Holzmänn: *Schweiz. med. Woch.*, 1924, liv, 569.
 Featherstone: *Brit. Journ. Surg.*, 1925, xii, 487.
 Gregoire: *Bull. et Mém. Soc. Nat. de Chir.*, 1924, i, 830.
 Heyd: *Surg., Gynecol. and Obstet.*, 1924, xxxix, 66.

NASAL INFECTION IN CHILDREN.

AN ANALYSIS OF 85 CASES TREATED BY AUTOGENOUS VACCINE.

BY

LEONARD MACKEY, M.D., M.R.C.P.,

PHYSICIAN, QUEEN'S HOSPITAL, BIRMINGHAM.

In response to the suggestion of a medical colleague specially interested in diseases of children, I turned up the records of all the children (85) who had been brought to consult me between 1915 and 1925, whose illnesses I attributed to nasal infections, and for whom I had prepared autogenous vaccines.

I then wrote to each child's medical attendant and asked: What was the result of the vaccine treatment? and Did the administration of the vaccine upset the child?

I received answers from all. In eighty-three cases the inoculations caused no inconvenience and the full course was administered; in one case the reactions were so severe that the vaccine was discontinued, and in one case the vaccine was stopped because the child got whooping-cough. The therapeutic effect of the treatment appears later, and is so satisfactory that some analysis of the cases cannot fail to be of some scientific and clinical interest.

The average age of the children was 8 years. The following table shows the complaint for which I was consulted, and the result as reported recently by the medical attendant.

Complaints.	Cured.	Much Improved.	Little or no Improvement.
Asthma ...	1	1	0
Bronchitis and asthma ...	5	7	0
Chronic bronchitis ...	11	2	2
Chronic bronchitis and nasal catarrh ...	12	6	1
Chronic nasal catarrh ...	17	11	2
Recurrent pyrexial attacks ...	3	0	0
Recurrent pneumonia ...	2	0	0
Total ...	51	27	5

Naturally every child was brought to me by the father or mother, whose anxiety centred either on the poorness of the child's general health, the fear that "consumption" would

develop, or the inability of the child to attend school. These children for the most part had had prolonged medical treatment, had failed to benefit from a change at the sea, and the tonsils and adenoids had been removed.

When the vaccine was begun all other treatment ceased. In every case the vaccine was given every week for twelve or fourteen weeks.

The bacteriological findings were as follows:

Pneumococcus ...	73 cases
B. influenzae ...	31 "
Friedländer's bacillus ...	17 "
Staphylococcus aureus ...	11 "
M. catarrhalis ...	9 "
Streptococcus ...	6 "
Streptococcus pyogenes ...	2 "
Bordet's bacillus ...	1 case.

From these figures it will be seen that although the pneumococcus was present in nearly all cases, in most instances one of the other germs was present also. No notice was taken and no record kept of diphtheroid bacilli, hard colonies of chromogenic diplococci, or any other germs which were regarded as unimportant.

The vaccines were usually made from primary cultures or first subcultures, sterilized by heat. Their strength varied with the ages of the children. In a child of 8 the initial dose was about five million and the final dose fifty million of each germ employed.

The cultures were made from nasal swabs on plates of blood agar and pepsinized blood influenza medium. *Never more than five minutes was allowed to elapse between the taking of the swabs and the inoculation of the media.*

In some cases sputum was available, but added nothing to the bacteriological findings from the nasal cultures. The cultures were usually so profuse as to leave no doubt as to the reality of the infection.

My own belief is that the infection in such cases lies in one or more of the nasal sinuses, and the results confirm the opinion, which I have held for many years and expressed in the JOURNAL on more than one occasion in the past, that not only in nasal catarrh, but also in chronic bronchitis, certain types of asthma, and some cases of unexplained pyrexia, the cause must be sought in the nasal passages. That one should have been so fortunate as to get satisfactory results in over 90 per cent. of cases which had defied other forms of treatment is the excuse offered for publishing these notes.

THE DIAGNOSIS OF TUBAL ABORTION AND RUPTURE.

BY

J. S. M. CONNELL, F.R.C.S.ED.,

GYNAECOLOGICAL AND OBSTETRIC OFFICER, DUDLEY ROAD HOSPITAL, BIRMINGHAM.

TEACHERS of gynaecology and obstetrics are compelled to be somewhat dogmatic when lecturing to undergraduates; and even by the bedside they have to try to impress the student's mind with a fairly definite picture of the various types of pelvic lesions with which he is expected to deal in after-life. I think most young graduates feel that whatever else they do not know, they are not going to fail to diagnose the classical case of tubal abortion or rupture. The history that one or two regular menstrual periods have been missed; the sudden onset of pain in either iliac region, with extreme tenderness and rigidity of the abdominal muscles; the slight loss per vaginam; the rapid pulse; the pallor of the patient; and the discovery of a fluctuant mass in the posterior fornix—when all these are present there is no difficulty in coming to a quick and correct diagnosis.

This picture, however, is seldom seen, and many cases have come under my care where the diagnosis has not been made or has been made very late. When the case has been diagnosed early the prognosis is very good, but becomes rapidly worse the longer the patient continues to bleed—for two reasons: first, the drainage of blood, apart from the primary risk of death by syncope, exhausts the haemopoietic tissues, and postpones the re-establishment of an efficient blood supply; secondly, the continued