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GENERAL STAFF MEETING
UNIVERSITY HOSPITALS
UNIVERSITY OF MINNESOTA

CONTENTS

I. CASE REPORT

HYPERTHYROIDISM: (CRISIS): HYPERTENSION. Path. Pearson.

The case is that of a white female, age 50, admitted to the University Hospitals 8-10-31 and died 8-19-31.

Cough (10 mo.)

In November, 1930, began to have a non-productive hacking cough, which persisted all winter. She had no cold at this time.

Hyperthyroidism (9 mo.)

In December, 1930, noted gradual onset of weakness and nervousness. She began to feel warm and perspired freely, especially at night. Hands began to shake at this time.

Cardiac (6 mo.)

In March, 1931, patient's heart began to pound, and she became very dyspneic on exertion. At this time there was some swelling of the ankles.

Digitalis, bromide, iodine (2 mo.)

In July, 1931, patient saw a physician at this time because of nervousness and weakness. Examination showed a tachycardia with some fibrillation, edema, ascites, and chest rales. Patient was given digitalis by mouth, but began to vomit, so this was discontinued, and digitalis was given rectally in tincture of 2 cc. daily. Bromides were also given, also iodin, 10 mg. daily. Edema subsided, pulse rate being down to 112, but patient still had anorexia and some nausea and vomiting.

Anginal syndrome (1 mo.)

In July 20, 1931, patient noted hot flashes, also occasional pains over the heart which would radiate to the left shoulder.

Dysphagia (1 wk.)

August 6, 1931, patient noted a tight feeling in the throat with some difficulty in swallowing.

Hospital

August 10, 1931, Patient admitted to University Hospital. Physical examination showed a well developed and well nourished white female, lying quietly in bed, presenting a rather markedly flushed appearance and quite nervous and restless. There is a moderate pulsation of the neck vessels, moderate diffuse enlargement of the thyroid.

Heart vessels

There were visible cardiac pulsations over the chest. The heart is somewhat enlarged to the left by percussion. Rhythm is totally irregular and rapid. Apical rate 138, pulse rate 120. There were no murmurs. Blood pressure 172/74. Skin was very warm and flushed over entire body, more marked over the face and back. There was a slight tremor of the right hand and slight tremor of the tongue. The patient complained of some weakness and nervousness. Morphine sulphate, gr. 1/4, was given. Pulse to 122. Temperature normal. No eye signs except poor convergence.

August 11, 1931, patient is somewhat restless. Emesis of 50 cc. of light yellowish fluid. Electrocardiogram showed auricular fibrillation. The rate was 160. Luminal, gr. 1, given three times daily. Face was very flushed.

Laboratory

Urine - specific gravity 1025, trace of albumen, many white cells (small clumps of pus), a few red blood cells. Hemoglobin 94%, white blood count 8,350, pmn's 79%, lymphocytes 19%, monocytes 2%. Slight anisocytosis and very slight poikilocytosis. Blood pressure 170/78. Apical pulse 132. Radial pulse 118. Temperature 99.6.

Lugols, luminol

August 12, 1931, patient is still very restless. Face is very flushed. Luminal, gr. 1 is given three times daily. Lugol's solution, 12 drops, three times daily. X-ray examination of the chest - there is slight enlargement of the thyroid with very slight compression and displacement of the trachea to the right. The heart measurements are transverse thoracic 28, Ml. 10.5, Mr. 3.7, total 14.2, longitudinal 16.5, arch 4. There is possibly a very slight enlargement of the heart, although this is doubtful. Basal metabolic rate is +67.

Better

August 13, 1931, patient shows some slight improvement. Pulse is now 110 to 100. Temperature is normal. Blood pressure 140/76.

August 14, 1931, patient feels better. Fluids are forced. Luminal, gr. 1, t.i.d. Lugol's solution, 12 drops, t.i.d. 10 gr. of barbital given. Urine shows 1+ albumen, 15 to 20 white blood cells, 4 to 5 red blood cells. Pulse is now 96. Blood pressure 140/70.

Dyspnoea, abdominal pain

August 15, 1931, pulse taken every two hours, which ranges from 110 to 80. Patient complains of some pain in the abdomen. Barbital, gr. 10, given. Digalen, 4 cc., given. Medical note on this date states that patient is perspiring very profusely, is now somewhat dyspneic. The heart has extrasystoles, and the action is quite poor.

Psychotic

August 17, 1931, patient is now very restless and attempted to get out of bed. Restraints applied. Talks incoherently. Luminal, gr. 1, t.i.d. Lugol's solution, 12 drops, t.i.d. Barbital, gr. 10. Digalen, 4 cc. Morphine sulphate, gr.1/4, given. Patient is given 1 ampoule sodium iodide every twelve hours intravenously with 1,000 cc. of 10% glucose. Hypodermoclysis of 1,000 cc. normal saline given. Pulse 108, temperature 100.

Oxygen

August 18, 1931, respirations are now rapid and shallow. Patient is very restless at times. Intravenous glucose is given. Patient is placed in the oxygen tent. Hypodermoclysis of 1,000 cc. of 5% glucose is given. Sodium iodide, 1 ampoule, given intravenously, times two. At 2:00 P.M., temperature is 103.8 per rectum; pulse 128; respirations 32. Morphine sulphate, gr. 1/6, times two, is given. Tincture of digitalis, 2 cc., given. Barbital, gr. 10, is given. Pulse to 152; temperature to 104. Non-protein nitrogen 22.05.

Exitus

August 19, 1931, patient is unresponsive. Pulse 142. Finger nails and arm are becoming cyanosed. Pulse is somewhat thready. 6:30 A.M., pulse is rapid and thready. Respirations are shallow and labored. 6:50 A.M., caffeine sodium benzoate, gr. 7-1/2, given. 6:55 A.M. patient died.

Autopsy:

The body is that of a well-developed and well-nourished, white female, measuring 159 cm. in length and weighing approximately 144#. Rigor is present. Hypostasis is purplish and posterior. There is no edema, cyanosis nor jaundice. Each pupil measures 4mm. in diameter and are regular. There are puncture wounds in both antecubital spaces. There is an old, right, abdominal incision.

In the opening of the Peritoneal Cavity, it is found that the side of the abdominal wall is about 6 cm. in thickness. The peritoneum is smooth and glistening. The Appendix is absent.

The Pleural Cavities are free from adhesions and contain no fluid. The Pericardial Sac contains a minimal amount of fluid.

The Heart weighs 435 Gm. There is a moderate hypertrophy of the left ventricle. The valve edges are free and normal. There is no evidence of any chronic inflammatory valvular disease. The coronary arteries show a minimal amount of sclerosis. The myocardium appears rather pale. The Root of the Aorta is normal.

The Right Lung weighs 525 Gm., Left 400 Gm. Both show a moderate amount of anthracosis. There is a slight congestion of the lungs at both bases.

The Spleen weighs 200 Gm. The capsule is grayish and wrinkled. On cut surface, the pulp is very soft and red.

The Liver weighs 1700 Gm. and looks quite normal in color. There is a slight amount of cloudy swelling present.

The Gall-bladder and ducts are normal.

The Gastro-Intestinal Tract, Pancreas and Adrenals are normal.

The Right Kidney weighs 225 Gm., Left 250 Gm. The ureters are normal in size. The capsules of the kidneys strip with ease, revealing smooth surfaces. No evidence of infection is found in the kidneys.

The Bladder is normal.

The uterus is very small and opening, the interior is found to be normal. The ovaries and tubes are normal.

The thymie body is next inspected and found to be enlarged, weighing about 50 Gm.

The thyroid gland is next inspected and found to weigh 50 Gm. It is quite red. On cut section, it resembled raw beef. There are no adenomatous areas that could be seen grossly.

Diagnoses:

1. Hyperthyroidism.
2. Hyperthyroid crisis (clinical).
3. Thymic enlargement.
4. Hypertrophy of left ventricle (moderate).
5. Cloudy swelling of the liver and kidneys.
6. Acute splenitis.
7. Congestion of the lungs.
8. Moderate anthracosis of the lungs.
9. Multiple puncture wounds.

Comment:

Hyperthyroid crisis, no attempt at surgical treatment, because of condition, hypertrophy of left ventricle due to coexistent hypertension? (no cardiac failure). Sections of thyroid show slight hyperplasia and hypertrophy. Kidney vessels are negative.

II. CASE REPORT

EXOPHTHALMIC GOITER, STAPHYLOCOCCIC SEPTICEMIA (SOURCE UNDETERMINED)

Path. Pearson.

Note: History obtained with difficulty. (Attendants with patient did not know much about details of her illness). Most interesting is hypertensive heart, negative vessels in kidney (seen in 10%), functional not organic signs of insufficiency of aortic valve, typical picture of Graves disease in thyroid gland (microscopic), no evidence of active osteomyelitis, no amyloid, marked enlargement of spleen (infectious?), no passive congestion of liver. Probably best explained as case of exophthalmic goiter (degree of toxicity undetermined), coexistent hypertension (mild failure?), and septicemia (cause of death).

The case is that of a white female, 49 years of age, admitted to the University Hospitals 12-4-31 and died 12-6-31 (2 days).

Lobectomy (3 years ago)

Patient had a lobectomy about two or three years ago at Rochester.

Osteomyelitis

Had several attacks of osteomyelitis. Had blood poisoning about ten years ago, especially in the left leg. Had longitudinal lesions about 1/8 by 1/2 inches which would break down at intervals and then dry up and disappear. 11-20-31 -Patient began to have pain right hip.

Acute respiratory infection

12-1-31 - (about) - Patient caught a cold necessitating her to go to bed. She states that she had no stove at home so became chilled and caught a cold at this time which made her hip worse.

Sore hip

The hip has been quite sore for about a week.

Expectoration - vomiting.

She has raised some greenish sputum, vomited at onset of illness, bowels moved well, no frequency nor dysuria, and no joint pain other than that in right hip.

Hospital

12-4-31 - Admitted to University Hospitals. Physical examination reveals a patient who is roused fairly easily but is very listless most of the time. She appears to be acutely ill. Throat - not inflamed. No cervical adenopathy. Chest - respirations 32, no dullness except over left lower chest (spleen?), breath sounds seem normal.

Hypertension

Heart - slightly enlarged, pulse 130, blood pressure 154/0, systolic murmur at apex and to left of sternum and over the aortic area, diastolic murmur at left of sternum. Abdomen - enlarged spleen palpable in left upper quadrant four fingers below costal margin and almost to midline, no tenderness nor rigidity, no other masses felt. There is slight pain on external rotation of right hip joint, Nothing definite is made out. Skin - multiple excoriations 1/8 by 1/2 inches, especially over the back and some over the legs, arms and chest. Reflexes - knee jerks present, plantar normal; pitting edema over lower part of leg. Progress: Patient was put in Fowler's position. Complains of

severe pain and dyspnea on exertion.

Eye signs - diastolic murmur

12-5-31 - Further examination and medical note: Patient's face is very flushed. Respirations are rapid and about 36 per minute. She is quite restless and does not respond well. Eyes - moderate exophthalmus present; bilateral lid lag; some decreased convergence. Mouth - mucopurulent postnasal discharge. Neck - old thyroidectomy scar; marked pulsations of all peripheral vessels. Lungs - few congestive rales (course) at both bases. Heart - P.M.I. at 5th interspace several centimeters outside the nipple line; no thrill palpable; systolic murmur over apex; systolic and diastolic murmur over aortic area but best heard along left border of sternum; because of marked tachycardia, the murmurs are very short; pulse rate 130; occasional extrasystole; blood pressure 150/30. Abdomen - slight edema over abdominal wall; liver palpable 2 or 3 cm. below costal margin; spleen palpable about 4 cm. below costal margin. Back - pitting edema over lumbar region and extending up chest wall. Skin and extremities - pitting edema of lower part of legs; numerous puckered healed scars, especially over left leg; few scars on right leg and several scattered over the body. Pelvis - cervix, marked lacerations - points down and back - otherwise negative. Marked capillary pulsations, water hammer pulse present.

Laboratory

Urine - specific gravity 1.011, cloud of albumen, few wbc's present. Blood - Hb. 29%, rbc's 2,150,000, wbc's 6,200, L 16%, Pmn's 84%, marked anochromasia, moderate anisocytosis, and slight poikilocytosis. Blood culture - shows pure culture of staphylococci. Congo red test for amyloidosis - very unsatisfactory. Spinal fluid - clear, colorless, pressure 270/300, cells 4, Nonne negative, Noguchi negative.

Fever

12:30 A.M. - pain in back. 2:00 A.M. - temperature 104.8, pulse 140, respirations 44.

Lugols - digitalis

Lugol's solution M xx, three times daily. Tincture digitalis 5 c.c. Face quite flushed. Tincture digitalis 4 c.c. and digitan 2 c.c. (H) every two hours times five. Emesis of 30 c.c. 1000 cc. hypodermoclysis given. 50 c.c. 50% glucose given.

X-ray

of chest and hips - conclusions - probably normal hip joints. Pulmonary congestion. Cardiac enlargement, type undetermined. Possible infarct, right base.

Exitus

12-6-31 - 1:00 A.M. - patient began to cough. Became very cyanotic. Pulse imperceptible. Patient expired.

Autopsy

The body is that of a well-developed and well-nourished, white female, 49 years of age, measuring 153 cm. in length and weighing 140 lbs. Rigor is present. Hypostasis is purplish and posterior. There is edema reaching up to the knees on both sides which seems to be quite brawny. There is a reddish flush over the face and neck. There is no jaundice. The pupils measure 4 mm. each and are regular. There is an old thyroidectomy scar which is healed. There are multiple puckered scars over both legs, especially the left and a few scattered scars over the rest of the body.

There is no evidence of fluid in the Peritoneal Cavity. The peritoneum is normal and glistening. The Appendix is subcecal and free.

The Pleural Cavities contain no fluid and there are no adhesions. There is a moderate amount of anthracosis present. The Pericardial Sac contains a moderate amount of straw-colored fluid.

The Heart weighs 425 grams. No stenosis nor insufficiency of the valves can be found. The valve edges are found to be quite free and normal. The diameter of the aortic ring is 8.0 cm. There is a moderate amount of hypertrophy of the left ventricle. The muscle of the heart is quite firm. The coronary arteries show no sclerosis.

The Right Lung weighs 625 grams, Left 500 grams. There is some congestion at both bases but no evidence of any pneumonia present.

The Spleen weighs 730 grams. It is very soft and friable. In removing the spleen, some of the substance is torn away. On cut section, the pulp is of a typical plum-butter type and scrapes

very easily. There is no evidence of any amyloid infiltration.

The Liver weighs 1325 grams. The substance is quite firm and of a light yellow color. No evidence, grossly, can be seen of any chronic passive congestion.

The Gall-bladder and ducts, Gastro-Intestinal Tract, Pancreas (90 grams), and Adrenals are normal.

The Right Kidney weighs 210 grams, Left 200 grams. The capsules strip easily revealing quite smooth surfaces. On cut section, the substance is somewhat paler than normal and the kidneys are quite firm. The ureters and Bladder are normal.

The spleen, liver, and kidneys are stained grossly for amyloid but none is found.

The uterus is about two times its normal size and contains a few small myomatas which are subserous. There is one moderate sized submucous myoma within the cavity of the uterus itself. The left ovary is cystic and enlarged. There is no evidence of infection of the cervix or endometrium.

The thyroid is removed. The lobe on the right side is found to be quite small and firm. On cut section, there are some areas of fibrosis within the organ.

The hip joint is next approached and no evidence of osteomyelitis can be seen.

Diagnoses:

1. Septicemia (clinical).
2. Exophthalmic goiter.
3. Acute splenitis.
4. Hypertrophy of left ventricle.
5. Peripheral edema.
6. Bilateral pulmonary congestion.
7. Multiple scars.
8. Multiple puncture wounds.

III. CASE REPORT

ADENOMATOUS GOITRE (RETROSTERNAL) WITH HYPERTHYROIDISM, POST-OPERATIVE DEATH.

Path. Randall.

The case is that of a white female, 70 years of age, admitted to the University Hospitals 12-20-29 and discharged 12-23-29 (3 days); readmitted 6-8-31 and discharged 6-9-31 (1 day); readmitted 8-12-31 and discharged 8-23-31 (11 days); readmitted 11-4-31 and died 11-19-31 (15 days). Total stay in Hospitals 30 days.

Thyroid enlarged - 21 yrs.

1910 - Patient first noticed enlargement of the thyroid gland. This apparently gave her no trouble until just a short time previous to her second admission to the University Hospitals.

Loss of Weight - Nervous.

Nervous breakdown and lost thirty pounds in weight in 1924 and confined to bed for one month. (Abstractor's note - Was not the goiter the basis of this attack?)

1924 - Patient applied carbolic acid to right side of cheek in treating a toothache. This resulted in the development of a small ulcer which did not heal.

Carcinoma of Right Cheek.

9- -29 - Patient's right eye was swollen and the depth of the lesion was increasing very rapidly. She began to have a crackling and ringing sensation in her right ear. Impairment of hearing began in right ear. Patient was told by a physician that she had carcinoma of the skin and referred her to the University Hospitals.

Hospital - 1st Admission.

12-20-29 - First admission to University Hospitals. Complaints: 1. Lesion on right cheek for five years. 2. Gradual loss of vision in right eye. 3. Crackling sound in right ear; impairment of hearing. Past history: Patient had spinal meningitis at 12 years of age. Frequent temporal headaches and attacks of quinsy. Occasional precordial pain. Palpitation and dyspnea upon exertion; morning cough with considerable sputum. Poor appetite. Nocturia for many years. Gastric discomfort after eating certain foods, such as meats and gravy which was characterized by epigastric pain, belching of gas, nausea, and vomiting which came on at variable times after meals. Bowels regular and move daily. Weight - usual 155 lbs., present 142 lbs. Two brothers died from tuberculosis. One daughter has tuberculosis.

Physical Examination.

Patient is well-developed, obese, 66 years of age, lying quietly in bed. Eyes - no protrusion of eyes. Ears - impairment of hearing of right ear.

Mouth - Upper and lower plates. Right cheek - ulcerative lesion about 1.5 cm. in diameter and about 0.5 cm. in depth having a raised indurated margin and situated in the center. Neck - adenomatous thyroid gland, one large adenoma about 6.0 cm. in size in right lobe, one nodule about 4.0 cm. in left lobe, and one about 2.5 cm. in the isthmus; no adenopathy. Chest - negative. Heart - blood pressure 130/70, no enlargement, heart tones clear. Abdomen - very obese, no tenderness, no rigidity, liver and spleen not palpable, no masses. Reflexes - abdominal absent. Surgical condition: There is an ulcerative lesion in the middle of the r ght cheek. Adenomatous thyroid gland. Impression: Carcinoma of right cheek. Non-toxic adenomatous goiter.

Laboratory.

Blood - Hb. 85%, rbc's 4,510,000, wbc's 6,000, Pmn's 66%, L 34%. Urine - negative sugar and albumen, many wbc's, epithelial cells. Progress - Patient seen in Cancer Dispensary. A lesion of the skin on right side of face. Deep ulcer with indurated margins. Biopsy proved this to be squamous cell carcinoma.

Radium.

Given ethyl chloride, inhalation anaesthesia, and eight implants 1 mc. each inserted around lesion. Total 1056 mch. (Signed by Staff)

Discharge.

12-23-29 - Discharged. Condition good. (Note: No investigations were made referable to patient's goiter at this time).

Out-Patient.

From Jan. 1, 1930 to June 8, 1931, patient has visited the Cancer Dispensary on several occasions. Treated for carcinoma of right cheek.

X-ray.

12-22-30 - X-ray of chest. (Dispensary). Trachea, heart, mediastinum and left diaphragm are normal. There is some pleurisy in the lateral portion of the right diaphragm with thickening of the pleura and partial obliteration of the costophrenic sinus. There is a very slight amount of calcification in the left apex. Both lung fields show some hyperaeration, representing probably an emphysema. There is considerable calcification in the right hilus, and possibly a small amount of it in the left hilus although this is questionable. Conclusions: Diaphragmatic pleurisy and thickened pleura, right. Emphysema. Calcification in right hilus. Minimal calcified tuberculosis, left apex.

Basal Metabolism.

3-3-31 - Dispensary. Basal metabolism rate +37%.

Hyperthyroidism.

4- -31 - Patient was very nervous. Increase in appetite. Perspired freely. Felt weak on moderate exertion. Precordial distress and palpitation most marked upon exertion. No weight loss.

Hospital - 2nd Admission.

6-8-31 - Patient has always been averse to have a thyroidectomy done but was finally persuaded to come to Hospital by a Staff Physician. There has been no tendency for lesion in right cheek to recur. She has had a moderately severe cough, soreness of throat, and some purulent expectoration most marked during last four or five days but this has been present for some time. Examination of thyroid gland showed generalized irregular enlargement with nodules, and cyst-like areas throughout its substance. There was minimal tremor of fingers. No appreciable exophthalmus. Nutrition poor. Pulse seemed somewhat irregular, probably extrasystoles.

Signed Out.

After being definitely instructed for return examination, patient left the Hospital a few minutes after discharge was endorsed by a Staff Physician.

6-9-31 - Nose and throat culture - presence of virulent diphtheria bacilli. Urine - negative. Blood - Hb. 80%, wbc's 4,850, L 36%, E 3%, Pmn's 61%. Weight - 118 lbs. Patient discharged.

Out-Patient.

1931 - (Spring and Summer) - Patient was given medications in Dispensary. Patient thinks this helped her a great deal.

Hospital - 3rd Admission.

8-12-31 - Complaints: Nervousness, trembly feeling, easily excited. During winter of 1930 and spring of 1931, patient had a cough, hoarseness, and sore throat which was diagnosed as chronic bronchitis by a Medical Dispensary Physician. Physical examination: Essentially the same as before except for following addition - - slight arrhythmia, blood pressure 110/54, pulse 108. Laboratory: Urine - negative. Blood - Hb. 78%, rbc's 4,480,000, wbc's 4,550, Pmn's 50%, L 49%, B 1%.

8-15-31 - Basal metabolism rate +37%.

8-16-31 - Laryngoscopic examination: Throat - tonsils submerged, cryptic, and contain caseous deposits. Larynx - normal appearance and movements of cords. (Signed by Surgical Fellow)

Operation.

8-17-31 - Preoperative diagnosis: Adenomatous goiter with hyperthyroidism. Preparation: Iodin and alcohol. Anaesthesia: Local infiltration with novocain. Procedure: Ligation of both upper poles of the thyroid, that is, the superior thyroid vessels. Incision made in the lines of skin cleavage of the neck at the level of the hyoid. The gland was very large and extended very high in the neck. On the left sidethe origin of the superior thyroid artery from the carotid artery was located, and this was approximately at the level of the superior pole of the thyroid gland. On the right side the origin of the artery was not exposed, but the gland extended fully as high as that on the left. Both artery and vein were ligated separately and cut between the ligatures.

Post-Operative.

8-18-31 - Steam inhalation with tincture benzoin compound. Lugol's solution M x, t.i.d. Hypodermoclysis, 1000 cc. saline with 5% glucose. Patient tries to get out of bed. Difficulty in swallowing. Does not talk distinctly. Appears to be very weak. Involuntary urinations. 12 P.M. - Patient got up out of bed.

8-19-31 - Patient is very noisy and restless. Slept for long periods after medications. Much better in morning. Quite cheerful.

8-21-31 - Up and walking. Appetite very good.

Follow-Up.

8-23-31 - During stay, pulse was between 110 and 130. Eats and drinks very well. Patient discharged. (Note: Following the operation, patient became much better. Gained fifteen pounds. Pulse strong.)

Recurrence.

10-1-31 - Recurrence of old trouble. Lost weight, extremely nervous, anorexia, dyspnea, dissatisfied with surroundings, feels that operation is unnecessary.

Hospital - 4th Admission.

11-4-31 - Patient feels that she does not need an operation. Physical examination: Same as before with following addition - no evidence of recurrence of carcinoma of cheek. Thyroid gland - distinctly enlarged, separated into nodules, more hypertrophy of right than left, scars on each side of neck from previous operation; no cervical adenopathy. Heart - ,blood pressure 115/54; not enlarged; pulse 100; slight arrhythmia; no murmurs. Abdomen - negative. Reflexes - normal. Laboratory: Urine - specific gravity 1.014, negative sugar and albumen, moderate wbc's. Blood - Hb. 85%, wbc's 4,300, Pmn's 59%, L 35%, M 4%, E 2%. Basal metabolism rate +45%. Progress: Body temperature 99. Patient nauseated. Advise a recheck of B.M.R. Weight 105 lbs. Pulse 100. Respirations 20. Temperature 99.4. Note by Interne: Patient has lost about twenty-five pounds in weight. Has taken Lugol's continuously. Thyroid enlarged and nodular, right lobe larger than left. Pulse rate rapid, 100 to 110 and somewhat irregular. Impression: Toxic adenoma. Progress:

Pre-Operative.

11-5-31 - General diet . Lugol's solution M x t.i.d.

11-7-31 - Patient up and about. Comfortable.

11-11-31 - Patient complains of severe gastric distress. Sodium bicarbonate gr. x (gr. xx was ordered but patient would only take gr. x.)

11-12-31 - Complains of being very tired. Headache. Feels better now.

11-17-31 - 8:45 P.M. - Lugol's solution M 40. Nembutol gr. 1-1/2. Patient is very irritable. Patient refuses to have

B.M.R. recheck. Wants to go home.

Operation.

11-18-31 - Preoperative diagnosis: Adenoma, spider web; hyperthyroidism. Preparation: Iodin and alcohol. Incision: Collar. Findings: Both lobes diffusely involved with nodular masses. The right lobe was larger than the left. This right lobe was estimated to weigh about 60 grams., and the left probably two-thirds of the right. Procedure; Subtotal lobectomy, right. Very small portion of gland was left on this side, estimated to be about 1 or 2 grams. The trachea was extensively exposed. The muscles were closed with interrupted chromic catgut; the platysma with interrupted plain catgut; the skin with clips. One split Penrose drain was inserted. 6;30 A.M. - Membutal gr.iii. S.S.enema given with good results. 9:50 A.M. - proctoclysis 500 cc. water with 60 M. Lugol's solution. Pulse 100. 10:25 A.M.- Morphine sulphate gr. 1/6 (R). 12:30 P.M. caffeine sodium benzoate gr. v. Pulse 140. 1 P.M. - B.P. 120/80. 2:25 P.M. - Morphine sulphate gr. 1/6 given for restlessness. Slept after medication. Taking proctoclysis slowly. 6:45 P.M. - Amytal gr. v (R). 8 P.M. - 500 c.c. of water added to proctoclysis. 11:30 P.M. Morphine sulphate gr. 1/6 for restlessness. Patient got out of bed during time hypodermic was being fixed. Pulse 160. Respirations 28. Extremely restless. 11:45 P.M. - digalen amp. i.

Post-Operative collapse.

11-19-31 - Continuous proctoclysis. 12 Midnight - persistent restlessness. Temperature 100 (R). Respirations 32. Pulse 160. 12:45 A.M. - 500 cc. urine obtained per catheter. 1:15 A.M. - Amytal gr. v (R). 1:30 A.M. - Sponge bath with alcohol, back rub, etc. 2 A.M. - Resting for short periods. Patient tries to talk but voice is very hoarse. Given small sips of water. 2:30 A.M. - 200 cc. added to proctoclysis. 2:45 A.M. - digalen amp. i. 5 A.M. - Temperature 101.2. Pulse 140. Respirations 28. 5:15 A.M. - Digalen amp. i. Pulse stronger although irregular. Patient taking fluids poorly by mouth. Have to force spoon between lips--will not open mouth voluntarily. Perspires profusely this morning. Becoming quite restless. 5:55 A.M. - Morphine sulphate gr. 1/6 for extreme restlessness. Patient's breathing is dry and raspy. 6:30 A.M. - more quiet. 7 A.M. - couthing occasionally. Has not voided. 9:15 A.M. - sleeping. 9:30 A.M. - 500 c.c. added to proctoclysis. Lugol's 60 M. (R). 11:50 A.M. - Morphine sulphate gr. 1/6 (H). 1 A.M. - Digalen amp. i. Pulse rapid. Seems to have labored breathing. Condition markedly changed. 2:40 P.M. - Pulse became very weak and intermittent. 2:45 P.M. - patient expired.

Autopsy

The body is that of a well-developed and fairly well-nourished, white female, 70 years of age, measuring 159 cm. in length and weighing approximately 130 lbs. There is an old well-healed scar on the right cheek (operation for carcinoma several years ago). There is a recent lower collar incision on the neck; anterior is about 12.0 in length and has been closed with skin clips, no evidence of hemorrhage, contains a small rubber tissue drain in center of incision. Rigor is not present. Hypostasis is purplish and posterior. There is no edema nor jaundice but there is slight cyanosis of the fingernails.

The surface of the Peritoneal Cavity is smooth, moist, and glistening. No increase in fluid. The liver and spleen are not enlarged. The Appendix is long and the tip is adherent to the ileum about 6.0 cm. away from the ileo-cecal valve. The ileum is in turn adherent to the bladder in this region (6;0 cm. away from the ileo-cecal valve) and there is a dense constriction in the ileum at this point. There is no evidence of acute or chronic inflammation in the pelvis.

The surfaces of the Pleural Cavities is smooth, moist, and glistening. No increase in fluid. There is an old, healed adhesion between the visceral and parietal pleurae on the right side. The Pericardial Sac is normal.

The Heart weighs 300 grams. The right ventricle is extremely flabby. There is no evidence of endocardial disease. The myocardium is dark reddish-brown in color. There are no myocardial thrombi. The Root of the Aorta shows slight arteriosclerosis. The coronaries show

moderate coronary sclerosis but no evidence of occlusion.

The Right Lung weighs 220 grams, Left 260 grams. There is no evidence of pulmonary sclerosis nor consolidation. The lungs are crepitant throughout. The smaller bronchioles appear to have a thick exudate which is grayish-pink in color and somewhat purulent. The bronchioles appear somewhat dilated but there is no definite saculation at the tumor point in the pelvis. This condition of the bronchioles is present at the bases of both lungs. There is slight congestion.

The Spleen weighs 200 grams. The surface is smooth, cuts readily, and on section shows the pulp to be firm and malipighian corpuscles and trabeculations to be distinct.

The Liver weighs 1160 grams. The surface is smooth. The capsule is somewhat gray and thickened, cuts readily, and on section shows the lobulations and central vessels to be distinct.

The wall of the Gall-Bladder is somewhat thin and contains numerous cholesterin stones. The common and hepatic ducts are distinctly dilated but contain no stones. The cystic duct is dilated but not as much as the other two ducts mentioned.

The Gastro-Intestinal Tract, Pancreas, and Adrenals are negative.

The Right Kidney weighs 150 grams, Left 190 grams. The kidneys cut readily and on section the capsule is removed with ease, the surface is smooth, the cortex and medulla are distinct, and the glomeruli are injected. In both lower poles of the kidneys, there are large, single, retention cysts. These cysts measure up to 3.0 cm. in diameter.

The Genital Organs are negative.

The Aorta shows marked generalized arteriosclerosis.

Organs of the Neck. The right side of the thyroid gland has been removed. The left side of the thyroid gland is enlarged, the lower pole of which extends below the jugular notch, below the sternum, to the region about the second rib, extending somewhat across the midline, and has distorted the trachea causing some compression of the trachea. It extends up the neck and somewhat posterior. It weighs 195 grams. On section, the thyroid shows numerous nodules. On section, the nodules are distinct and contain a great deal of colloid; numerous calficied areas are noted throughout the thyroid gland which is a fairly typical picture of degenerating adenomatous colloid goiter containing calcification.

Diagnoses:

1. Post-operative thyroidectomy, right.
2. Retrosternal left lobe of thyroid gland.
3. Postoperative hyperthyroidism.
4. Distortion and partial compression of trachea.
5. Chronic bronchitis (bronchiectosis).
6. Coronary sclerosis.
7. Generalized arteriosclerosis.
8. Cholelithiasis and cholecystitis.
9. Constriction of lower end of ileum causing partial obstruction, involving the appendix.
10. Scar on right side of cheek.
11. Recent operative wound on neck.
12. Cyanosis of finger-nails.
13. Cysts in kidneys.

Microscopic sections show adenomatous goitre, showing slight hyperplasia and degeneration, with calcification ; bronchopneumonia and severe hepatitis (focal lymphocytic type); arteries of kidney - negative.

IV. ABSTRACTS

MORBIDITY AND MORTALITY FACTORS IN HYPERTHYROIDISM. Abstr. Randall.

1. Greene and Mora show low incidence of exophthalmic goiter operations in children (2.5%). Identifies it with disease in adults and reports excellent immediate operative results.

Thyroidectomy for Thyrotoxicosis in the Young. 26 cases between ages of 8 and 16 years. Greene, E.J. and Mora, J.M. S.G. and O. 53:375, (Sept.) 1931.

Cases were taken from the service of Dr. Richter.

Material

26 cases in which thyroidectomy was done for thyrotoxicosis as part of a series of 1,200 consecutive toxic goiter patients

who were subjected to operation. (2.5%).

Sex: Girls 22, boys 4. (Almost uniform in all series).

Symptoms: Tachycardia, 92%, nervousness 88%, goitre 84%, exophthalmus 8%, tremor 70%, weight loss 57%, palpitation 30%, left heart enlargement 27%, irritability 23%, weakness and restlessness 19% (like adult).

Blood Pressure: Average preoperative blood pressure 132/65. Postoperative 108/72. Average pulse pressure dropped from 67 to 36.

Basal: Average basal metabolic rate +35 preoperative; -6% postoperative.

Pathology: All glands showed varying degrees of hyperplasia and hypertrophy, microscopically.

Treatment: One stage thyroidectomy was done in all.

Mortality: No deaths.

2. McGraw - attempts to study etiology of juvenile exophthalmic goiter, reports 2 cases, complains of poor follow-ups in children, urges that it be done.

Juvenile Exophthalmic Goiter - McGraw, A.B., G. and O. xlvii, 25, (July) 1928.

Includes all patients under 15 years of age. Refers to work of Dinsmore's (S.G.and O., 172, xlii, 1926, and Hemholz, (J.A.M.A. lxxxvii, 3, 1926. They have reported 46 and 30 cases respectively.

Picture: Age of onset between 6 and 10 years. Average length of time lapsing between onset and the first observation was over one year and a half.

Etiological factors. In review of literature, he finds 62% of the whole series some possible predisposing or etiological factor has been mentioned,(i.e., familial goiter in 20%); a recent attack of acute tonsillitis 13%; measles 13%; pertussis in 10%; scarlet fever 7%; rheumatic fever, pneumonia, diphtheria and malaria each 3%; recent onset of puberty 3%; recent trauma or emotional strain 3%; remote trauma 3%.

Constitution. Relatively speaking, exophthalmic goitre appeared in otherwise healthy, sturdy child in only 25% of cases. Exanthemata and acute upper respiratory infection probably play same predisposing role that they do in various other diseases of later childhood.

Symptoms and physical signs: Four cardinal signs or symptoms of Graves' disease are: Goiter, tachycardia, exophthalmos, and tremor. These may be present in any degree and grouping. Tachycardia is present in from 90 to 95%.

Sequence of cardinal symptoms:

	Goiter	Exophthalmos	Tachycardia	Tremor
1st symptom noticed	9	8	7	3
2nd " "	6	5	5	0
3rd " "	8	4	3	2
4th " "	0	2	4	2

Thyroid enlargement was present in 100%. Exophthalmos 96%, and marked 22%. Digestive symptoms observed in only a few cases. Dyspnea present on exertion 20%. Some nervous or psychic symptom mentioned in 27 of 50 cases.

Conclusions: (1) Juvenile hyperthyroidism is apparently identical in its symptoms, course, and response to treatment, to the adult syndrome known as exophthalmic goiter. (2) Cases of juvenile hyperthyroidism are in the present state of our knowledge, primarily surgical problems, and the sequence of events in their care should be rest, administration of iodine, operation, rest, and observation under surgical supervision. (3) While he doubts that the polar ligation of the superior thyroid arteries is a sufficiently radical procedure to insure a permanent recession of symptoms, he feels that one should be a shade more conservative in the relative amount of thyroid tissue left behind at operation as compared with that left in cases of adult exoph - thalmic goiter. (4) Children should be followed for after effects. Records are very poor in this respect.

3. Nehren - thinks it is about time we really studied end results of surgical treatment of goiter (and other forms of treatment); devises model scheme for such a study, gives summary of 3 months of observation of 100 cases.

Results of Thyroidectomy. Analysis of One Hundred Cases. Nehren, A.N., (from Buffalo Thyroid Clinic). Ann. of Surg. XVIII, 1045, (May) 1931.

Challenge: Thyroidectomy as the best treatment for hyperthyroidism is being challenged in many quarters today and the results claimed for it vary widely, all the way from 18% (Israel Bram: Goitre; Non-surgical Types and Treatment., The MacMillan Company, New York 1924), to 92% (Smith, L.W., Clute, H.M., and Strieder, J.W: S. G. and O., xlvi, 325, March 1928), of cures. Surgery in competent hands with good pre and post-operative treatment is no less dangerous to life than medical treatment, radiation, or no treatment at all. The only question that remains, therefore, is which form of treatment offers the best chance of complete and permanent cure.

Follow-up: Reports 100 consecutive cases and studies immediate results of thyroidectomy for 3 months. Takes all thyroidectomies without separation into types or grades. Pulse, weight, basal metabolism; nervousness and general state of health. Includes most subjective symptoms, such as pressure, shortness of breath, dysphagia, weakness and palpitation. After the first three months there were 6 patients who showed no improvement. 1 died postoperatively. The findings are somewhat as follows:

Results: (1) 100 consecutive thyroidectomies, representing 108 operations examined 3 months after operation, 93% report either satisfactory improvement or complete cure. (2) Percentage is verified to a considerable extent by 3 objective tests as follows: (a) Average pulse rate of 105 before operation was reduced to 87 after, 87% showed a reduction or continuation of normal pulse rate. (b) 67 gained an average of 9 pounds, while 9 lost an average of 6 pounds after, 89% either gained weight or continued normal weight. (c) Average basal metabolic rate of +28 before operation was reduced to an average of +8 after, 84% showed either a reduction or continuance of a normal basal metabolic rate. (3) Taking all factors into consideration he would place the percentage of cures 3 months after thyroidectomy somewhere between 80% and 90%. (4) A study of these cases over a longer period of time may show a recurrence in some, but may also show improvement in some that did not improve in 3 months. (5) With an operative mortality of 1% and a cure of 80 to 90% (in 3 months) thyroidectomy seems to offer the best chance of cure in most cases of goitre.
Note: These cases are to be followed every three months for several years to make a complete check-up as to improvement or cure of such thyroid conditions as necessitate thyroidectomy.

4. Goetsch reports 10-year study of controlled series at Long Island before and after iodine. Blames most of his troubles on indiscriminate use of iodine before operation, stresses clinical not laboratory study of poor operative risks, does not mention unoperated cases.

Mortality in Goitre Operations. Analysis of series of 1755 goitre operations during ten year period, 1920 to 1929 (inclusive). Goetsch, E., Ann. of Surg., xciv, 167, (Aug) 1931.

Material: Factors responsible for 22 deaths from operations in this series are studied. This is the first 10 year period of the Thyroid Clinic at Long Island College Hospital. The work was done by Drs. Emil Goetsch and Arthur Goetsch 5 years before and 5 years after standardized preoperative treatment and preparation with iodine. He does not feel that grouping according to diagnosis or type of operation performed is a great deal of importance but feels that it is more interesting and profitable to discuss the clinical factors of danger in thyroid surgery. Certain ones have remained rather constant. The anaesthetic used was almost entirely gas-oxygen with occasional small amounts of ether. Ethylene was used for a time. Local anaesthesia was used in most of the ligations. The deaths, therefore, are not primarily dependent upon differences in operative technic, preparation of the patient, or anaesthesia, but there are dangerous factors other than those concerned primarily with the operation itself. The post-operative care has become standardized.

Mortality. Out of the 22 deaths, 16 were exophthalmic and 6 were toxic adenoma. (1.25 % operative mortality) in all types of operation, in all degrees of operative toxicity and general clinical severity. Operations were done in 1,553 patients of all types (1.41% operative mortality as to patient), many

of these deaths occurring before use of standardized iodine therapy. He feels however that his mortality rate was no greater in the days before the iodine treatment than it has been since. Before the introduction of iodine treatment, he used carefull operative procedures according to the toxicity of the patient (more ligations and partial resections). Now, with the use of iodine, bilateral resections have become the rule and ligation and partial resections are rare. Believes that now our difficulty arises from the incorrect use of iodine. This has contributed to mortality in several instances.

Pre-Operative and Operative: Of 22 deaths, 16 were exophthalmic.

Type of operation for exophthalmic goitre.	Deaths.	Previous preparatory operations.
Ligation of single artery	4	None.
Ligation of two arteries	2	Case 1 -- Ligation both superior thyroid arteries. Case 2 - Resection attempted.
Resection unilateral	4	3 had preparatory ligation. 1 partial resection previously done elsewhere.
Resection bilateral.	6	None. Case 5 - Ligation of right & left superior thyroid arteries (2 stages). Case 6 - Ligation both superior thyroid arteries.

6 deaths were adenomatous goitre.

Type of operation for adenomatous Goitre.	Deaths	Previous Preparatory operations.
Resection unilateral	2	None.- Case 1. Case 2 - 2 partial unilateral resections done elsewhere.
Resection bilateral	4	None.

The factors responsible for the 22 fatal outcomes in the order of their importance.

Crisis - iodine: (1) Post-operative hyperthyroidism with secondary cardiac failure, 8 cases or 36%. Of these 6 were exophthalmic and 2 toxic adenomatous goitre. The cause of death in this group is to be distinguished from that due to primary cardiac failure (unassociated with post-operative hyperthyroid crisis) and resulting from severe myocardial damage and detericration from prolonged hyperthyroidism. It is seen that the fatal outcome is not directly related to the type of operation for fatalities occurred after ligation, unilateral and bilateral resections, etc. He attributes mortality primarily to indiscriminate use of iodine. "After prolonged use of iodine, particularly in small doses, the patient may appear reasonably calm, the pulse may be only moderately accelerated, and the basal metabolic rate may or may not be so high as to act as a warning. The general condition of the patient and the metabolic rate are relatively little influenced in such instances by preoperative intensive treatment with iodine, since the thyroid gland, at such times, is refractive to further iodine medication. As a consequence, the surgeon may obtain a feeling of false security and be surprised to witness a severe post-operative reaction. Such iodine exacerbation is difficult to control. The usual measures of rest, further iodine treatment, or even ligation, are of limited use." Of the 8 cases in this group 7 were attributed to this indiscriminate use of ioding. One fatality could have been avoided if preoperative iodine had been given. Iodine has no place in the medical treatment of exophthalmic or adenomatous goitre. In many instances iodine given presumably to effect a medical cure merely converts the inactive case into an active one, the active case into a desperate one and thus renders the operative procedure exceedingly dangerous. If the thyroid gland becomes refractive, with or without iodine, operation is commonly fraught with danger. Suggests giving sedative treatment 2 to 6 months or longer depending upon the circumstances. Iodine can then be given with satisfactory benefit and the operation becomes relatively safe. Iodine

should be given solely to prepare the patient for operation.

Basal rate: If the patient has received no iodine, the basal metabolic rate is invaluable. But, if patient has been given iodine indiscriminately, the danger signals are often obscured and the outward calm of the patient may give the operator a feeling of false security. Notwithstanding the favorable basal metabolic rates, taken in such cases, fatalities ensued regardless of whether a ligation or additional iodine had or had not been administered intensively before operation. Stresses point that preoperative iodine treatment does not protect iodized patient in any way comparable to the protection afforded the patient not previously so treated. A high metabolic rate in a patient previously iodized may either not fall at all or decrease only slightly after further intensive treatment.

Primary cardiac failure. 4 deaths. Duration of hyperthyroidism was 3, 5, 15, and 29 years respectively. (No adenomatous goitres). Principal preoperative manifestations were referable to a badly damaged heart showing in the severer cases a complete breakdown, with dilation, fibrillation, pulmonary congestion, cyanosis, ascites and general anasarca. 3 had indiscriminate iodine therapy. Deaths were not due to operation performed. One did not have iodine at all and died from ligation. In 2 the hyperthyroidism was fairly severe and in 2 it was not severe at all at the time of operation. The deaths occurred -- 1 in 48 hours (bilateral resection), 2 in five days, and in 1, five months following operation. He attributes these deaths as referable solely to the status of the circulatory system. One should refuse to operate in these instances and not attempt the impossible. Whether treated medically or by operation, the result in either event would have been disastrous.

Pneumonia: 3 deaths, 2 lobar and 1 bronchopneumonia. Uniformly in these, there was a poor previous history, referable to the cardio-respiratory system. The first gave a history of serious respiratory difficulty due to pressure. The second a history of chronic bronchitis and tuberculosis. The third arteriosclerosis, hemiplegia, diabetes, and myocardial insufficiency. The only reason they were operated at all was to give them a slight hope of improvement.

Embolism: 3 deaths, all women, aged 27, 47 and 48. All were active exophthalmics. One followed only ligagation, one followed right sided resection. In all these there had been serious cardiac damage preceding very marked hyperthyroidism. (Brain, leg, pulmonary).

Others: Tetany. 1 case. (Simple injury and not removal of parathyroid). Tracheal obstruction - respiratory failure. 1 case. Accidental death following injection of commercial dextrose U.S.U. 5 per cent. solution. 1 case. Death due to respiratory failure. Upon investigation it was found that dextrose U.S.P. had by mistake been used instead of dextrose C.P. Needless to say, the dextrose should always be C.P. quality. Wound infection with secondary bronchopneumonia. 1 case.

Conclusions: (1) Iodine, when administered as a preoperative measure only, is a valuable factor in reducing mortality. (2) Iodine when administered other than as a preoperative measure, increases danger of operation and renders further intensive preoperative treatment relatively ineffectual. (3) Indiscriminate treatment with iodine may obscure fundamental seriousness of an underlying hyperthyroidism and may thus fail to warn the surgeon of a possible postoperative hyperthyroid crisis. (4) Iodine thus administered may also cause acute exacerbation of symptoms, a condition which is most difficult to control and which yields poorly to the well-known measures of rest, sedatives, further intensive use of iodine and stage operations. (5) Danger signals are unusually acute hyperthyroidism or a prolonged period of hyperthyroidism, which has been present for years and which has reduced the vitality of the patient to a very low level; extreme cardiac damage with fibrillation and decompensation; unfavorable history or findings referable to the respiratory system and such special factors as prolonged tracheal compression and recurrent nerve palsy. (6) Incidental bad prognostic signs are extreme asthenia and loss of weight of 20 to 50 pounds; vomiting and diarrhea; unusually high basal metabolic rate; irrationalism, weakness and de-

bility. (7) Factors safeguarding the mortality are --

Refusal to operate in the presence of even the mildest respiratory infection;

Proper preparation of the patient;

Adapting the type and extent of operation to tolerance of the patient;

Carefully conducted operation with the idea of brevity;

Proper regard for rapid pulse rate;

Avoidance of trauma to the recurrent nerves, parathyroid glands and trachea;

Complete control of hemorrhage.

Further factors of safety are a well-conducted gas or local anaesthesia and detailed post-operative care.

5. Pemberton does not believe piece of tissue left behind after standard operation is responsible for recurrence, mentions causal factors in surgical mortality, gives mortality figures for the Mayo Clinic for 1929 and discusses management of poor surgical risk.

Recurring Exophthalmic Goitre: Its relation to the Amount of Tissue Preserved in Operation on the Thyroid Gland. Pemberton, J. de J., Proceed. of the Staff Meetings of the Mayo Clinic, v, 46 (Feb. 19) 1930.

General Statement: One of the commonest errors into which many surgeons fall is the belief that recurrence of hyperthyroidism is always directly attributable to inadequate surgical treatment. This has led them to advocate and practice needlessly radical surgery, exacting, as it inevitably must, a higher toll of avoidable complications.

Recurrence Studied: The incidence of recurrence of hyperthyroidism involves certainly not more than 5%, and probably less, of all the patients on whom conservative double resection of the thyroid gland has been successfully performed. Since 1913, the following standard operation has been advocated - bilateral resection with removal of the isthmus; an amount of glandular tissue was preserved on either side of the trachea that was equivalent to 1/6 to 2/3 of the amount of tissue in a lobe of normal size. A study of 100 consecutive operations on patients with recurrent hyperthyroidism and exophthalmic goiter in whom previous operation on the thyroid gland has been done revealed that the average interval of time between the primary operation and the onset of recurring symptoms was five and one-half years and the longest interval twenty-one years. (They did not state the shortest interval).

Conclusion: Any assumption that the most frequent cause of recurrence is due to inadequate surgery must wholly disregard the fact that there may be recurrence of the stimulus or stimuli which caused the disease originally. Just what this is, or where it resides, is still only a matter of speculation. It cannot be denied that there are predisposing etiologic factors, such as: (1) emotional stresses resulting from shock, fright, worry, overwork, and inteense living; (2) infections, and (3) possibly the increased normal physiologic activities of adolescence, pregnancy, etc. Moreover, iodine deficiency and constitutional nervous status may be predisposing factors. Certainly it is of prime importance in the prevention of recurrence that these factors be taken into consideration and elimimted as far as possible.

Causal Factors in the Surgical Mortality of Exophthalmic Goitre. Pemberton, J., New York State J. of Med. 28:256-261 (March 1) 1928.

Formerly the most baffling problem in the treatment of exophthalmic goitre was the frequent postoperative hyperthyroid crisis. Frequently coma and death from ten to twenty-four hours occurred and autopsy did not reveal anatomic cause for death.

Factors: Factors in surgical mortality in exophthalmic goitre may be listed as follows: (1) Accidents often the result of technical error. (2) Acute postoperative crisis. (3) Debility of patient most frequently due to long standing hyperthyroidism. a. Recent crisis. b. Long duration resulting in visceral degenerative changes.

In undertaking an operation on an exophthalmic goitre patient, the operator should (1) obtain confidence of patient, (2) local anaesthetic preferred, (3) one should take care to avoid the recurrent laryngeal nerve and establish hemostasis. The pre and post-operative care of the patient is essential.

Report of Surgical Procedures on the Thyroid Gland for 1929, Pemberton, J. de J. **Proceed.** of Mayo Clinic, v, 82, (Mar. 19) 1930.

Tabulation
Results of Operation

Mortality

	Cases	Cases	Per Cent	Operations
Exophthalmic goitre	915	4	0.44 . . .	Partial resection, 921; two-stage thyroidectomy, 9; ligation, 1; and hotwater injection 3.
Adenomatous goitre without hyperthyroidism	441		. . .	Subtotal thyroidectomy, 441.
Adenomatous goitre with hyperthyroidism.	330	8	2.42 . . .	Subtotal thyroidectomy, 330.
Carcinoma	28		. . .	Subtotal thyroidectomy, 20; and biopsy, 8.
Total	1714	12	0.70	

Note: Highest rate in toxic adenoma. No mention of unoperated cases.

Goiter. Management of the Poor Surgical Risk. Pemberton, J. de J. Arch. of Surg. 20, 591-603 (Apr.) 1930.

Before and after iodine: Iodine has placed the surgery of the thyroid gland on a sound basis similar to that of other branches of general surgery, whereby in all but a small group of complicated cases the surgeon can confidently predict that if the operation is done expeditiously and without technical mishaps, the patient will easily endure the operation. Iodine has reduced the possibility of postoperative reaction. Ligations and operations performed in stages were formerly used. In only 30% of the cases before the advent of iodine the surgeon felt reasonably assured of the safety of primary subtotal thyroidectomy. Before the period of iodine it was hard to separate the good risks from the bad. Analyzes cases from Jan. 1, 1925 to Dec. 31, 1928 inclusive, with the idea of determining the influence on the mortality rate of age, duration of disease and severity of hyperthyroidism as measured by the basal metabolic rate. 5,081 patients were operated on for exophthalmic goiter and 2,171 for adenomatous goiter with hyperthyroidism. 46 of the former died, mortality 0.9% and 29 of the latter died, mortality 1.3%.

Duration - age factors: In early cases of exophthalmic goiter, there is usually only one additional operative hazard, the severity of hyperthyroidism. In the late case, there are two, the severity of the hyperthyroidism and the presence of visceral degeneration. As iodine will largely control the danger incident to severity, it has eliminated the only additional surgical hazard in the early case, whereas, it has removed only one of the hazards in the late case. It is apparent, then, that the longer the patient has the disease before submitting to surgical procedures, the greater the operative hazard. However, there is a definite trend year by year for the patient with exophthalmic goiter to seek operation sooner, and this is the most hopeful sign in the solution of the goiter problem. The duration of hyperthyroidism in the adenomatous goiter has an equally significant influence on the mortality rate. With the exception of the group of patients less than 20 years of age, the advance of years beyond 40 is an increasing factor of significance in the surgical mortality rate in cases of exophthalmic

goiter. It would appear that the resistance to the disease in the young is definitely less than after full maturity. This fact has long been recognized, and for the young a longer period of preoperative preparation has been urged. A greater mortality rate occurred in patients of advanced age. Age played a more important part in the adenomatous goiter than the exophthalmic.

Basal Metabolic Rate: A considerably larger percentage of deaths occurred if the basal metabolic rate was more than +50, and the higher the rate above +75 the greater the operative hazard. It is seen that the effect of iodine was greatest on the patients with a moderate or low basal metabolic rate. The influence of the basal metabolic rate on the surgical hazard in the cases of adenomatous goiter with hyperthyroidism is similar to that in cases of exophthalmic goiter.

Surgical Hazard: (1) The development of an overwhelming postoperative hyperthyroid crisis: (2) the debility of the patient resulting from intensity of the disease or long continued hyperthyroidism: and (3) increased technical difficulties occasionally met with in huge obstructive goiters. Operative risks are graded on the basis of 1, 2, 3 and 4. It is evident that although it is not possible to foretell which patient will not survive the operation, it is possible from a clinical estimate of the hazard to select a small group (19%) from which 81%) of the mortality will be derived.

Treatment: Treatment of the patient with poor operative risk. Preoperative treatment: Iodine, diet high in calories, and adequate rest are essential in the proper preparation for operation of all patients with exophthalmic goiter. In those patients with cardiac disease the question comes up of whether to give digitalis or not. Digitalis has only been given occasionally, to patients with cardiac decompensation when rest alone has failed to restore compensation. The results have fully justified this policy. Deaths cannot be attributed to failure to give digitalis. Operative treatment: He has found that infiltration with procaine hydrochloride supplemented by nitrous oxide and oxygen is the most satisfactory anaesthesia. Ligations: Very few indications at the present time. Postoperative Treatment: The most frequent postoperative complications are obstructive dyspnea, acute hyperthyroid reaction, pulmonary edema and infections. Points out the use of the oxygen chamber for cyanosis.

Summary: (1) There has been a decrease in the mortality rate from 4.1 to 0.9%. (2) The duration and severity of the hyperthyroidism, as measured by the height of the basal metabolic rate and the age of the patient, are significant influences in the surgical hazard of all patients with toxic goiter. (3) Visceral degeneration and intercurrent diseases are factors affecting the mortality rate. (4) Success of operative treatment of the patient who is a poor risk is largely dependent on the avoidance of prolonged general anaesthesia and of technical errors. (5) The indications for the employment of ligation and lobectomy are limited.

6. Lahey points out delay in diagnosis of "apathetic hyperthyroidism" (with apologies for another addition to goiter terminology) stresses poor surgical risk of this type, gives figures on malignant changes in adenomata; comments on blood supply of intrathoracic nodules, places hyperthyroidism in secondary role in heart failure, quotes his mortality figures (very low), shows means of avoiding crises, treats heart failure surgically, mentions other complications.

Apathetic Thyroidism. Lahey, F.H., Ann. of Surg. XCIII, 1026-1031 (May) 1931.

Definition: All signs of activation which are seen in hyperthyroidism are negative in apathetic or non-activated type of hyperthyroidism.

Activated Hyperthyroidism.

1. Middle aged and youthful.
2. Exophthalmos or obvious stare.
3. Glands of greater than normal size.
4. Pulse high, full and bounding.
5. Apex impulse striking and forceful.
6. Rapid motion.
7. Moist, soft skin.
8. Basal metabolic rate 50 to 100.
9. Short duration of disease.
10. Die in distinct over-activation.

Apathetic Hyperthyroidism

1. Middle aged and past middle age.
2. No exophthalmos and litt,e if any, stare.
3. Small, firm glands without striking increase in size.
4. Low pulse, varying from 100-120.
5. Unimpressive apex impulse.
6. Reposed and apathetic.
7. Dry, firm, cool skin.
8. B.M.R. 40 and downward to 20, and occasionally under.
9. Aged appearance, appear older than usual age.
10. Die in stage of distinct apathy, progressive into coma.

Comment: The apathetic thyroidism is more or less atypical. Because of this, it may be overlooked because of its lack of obviousness. All patients with unexplained weight loss, unexplained tachycardia, unexplained myasthenia, should be investigated by careful clinical investigation and careful metabolic studies as to the presence of a possible apathetic type of thyroidism, regardless of the absence of any of the typical signs of hyperthyroidism.

Any of these cases that are submitted to subtotal thyroidectomy may be restored to health and relatively normal capacity. Patients with thyroidism of this atypical apathetic type die unexpectedly giving few or no warning signs as to the impending fatality in their course upon the operating table. Some unexpected fatalities occur after subtotal thyroidectomy, in spite of the fact that their course on the operating table was anything but a disturbing one. One should look to the preoperative history of the patient and recognition of existence of this apathetic type of thyroidism to protect against too early and too much surgery, rather than those striking danger signals of high pulse rates, high basal rates, high pulse pressure, and recent and excessive activation and intensification of the thyroidism which so characteristically accompany the typical patient with the activated type of hyperthyroidism and warn one of its dangers. The particular danger signals in the patient with the non-activated type of apathetic thyroidism are marked weight loss, usually gradual and over a long period of time, in contradistinction to the rapid and extreme loss which characterizes activated thyroidism; the existence of the apathetic thyroidism for a long period of time, usually over a year; and an increase in apathy which characterizes the disease. In this type of case two-stage operation may well be done with six week intervals in between.

The Management of Goitre. Lahey, F.H., J. of Indiana State Med. Ass'n. 23, 117-122 (Mar. 15) 1930.

Malignancy: 94% of carcinomas of the thyroid arise in discrete faetal adenomata. Of 1,484 adenomatous goitres removed, 92 were malignant (microscopically). Therefore, one should remove all adenomatous goitres.

Intrathoracic: Practically all intrathoracic goitres are adenomatous. The intrathoracic portion always gets its blood supply from above and if this portion is not removed the piece left behind degenerates and may cause a very severe mediastinitis. Due to this fact condition becomes almost hopeless. The patient usually dies. Therefore, one should leave no fragments behind and should pack the cavity to prevent mediastinitis.

Secondary cardiac: Any patient who has hyperthyroidism with cardiac decompensation becomes a very possible candidate for surgery and has a good chance of fully regaining cardiac compensation to a degree of being able to earn a living. Cardiac decompensation due to thyroidism is due to thyroidism superimposed upon a heart which is already damaged or abnormal.

Deductions from 6,700 goitre operations. Lahey, F.H. New Eng. J. or Med. 200:909 - 916 (May 2) 1929.

Selection: Preoperative use of iodine has practically eliminated pole ligation. The mortality of exophthalmic goitres has diminished to a very low figure in spite of the fact that many cases have been accepted and none rejected for operation except where vomiting and delirium are present. Delirious patients have all been kept in hospital and when they have recovered from their acute crisis are operated upon within 2 weeks of their crisis and this had not been attended with

any mortality.

Mortality: 1927. 6 deaths in 954 operated patients in 1118 thyroid operations. Total patient mortality .6%. Of this group, 560 were toxic goitres and 5 of the 6 deaths occurred in this group. Mortality in toxic group is .9%.

1928. 3 deaths in 1,068 patients and 1,223 operations. Mortality .28%. Of these 618 were toxic goitres in which there was 1 death, mortality of .16%.

Crises: There are fewer cases of acute thyroid crisis seen. It should be stressed that if lives are to be saved from crises, the impending onset of the condition must be recognized as an emergency and the institution of preventive measures, such as fluids, glucose, iodine and morphine immiediately started. If emergency measures are delayed until patients are already in crises, they may die in spite of all measures.

Patients with increasing thyroid toxicity are always in immediate danger of passing suddenly into severe and fatal thyroid crisis. The addition of a severe infection, gastric upset resulting in vomiting, an acute abdominal condition, or merely the inexplainable increasing toxicity which not infrequently occurs without any complications may convert a patient with moderate toxicity in 2 or 3 days into one with severe thyroid crisis with delirium, vomiting, diarrhea and death in spite of all corrective measures.

Heart failure: The removal of thyroid toxicity by subtotal thyroidectomy in the thyro-cardiac cases (patients with heart failure complicated by hyperthyroidism) gave startling gratifying results. Of 200 such cases, there were but 3 deaths. He now urges that there are no thyro-cardiac cases that are too sick or too decompensated to be submitted to partial thyroidectomy. Many of times these patients regain their compensation in a few days after hyperthyroidism is removed and in 2 or 3 weeks are able to walk out of the hospital. So frequently has this occurred that he feels that decompensation associated with hyperthyroidism is of a different character than cardiac failure purely of cardiac origin. This failure seems to be due to extracardiac burden of superimposed hyperthyroidism on a previously damaged heart. Every effort should be made to decrease the decompensation preoperatively.

Diabetes, Tuberculosis, Tetany: The diabetic with hyperthyroidism is a serious problem. The "eat themselves" (Joslin). Thyroid surgery should be done as soon as hyperthyroidism is diagnosed in these cases. Operative mortality 4%. Urges subtotal thyroidectomy when hyperthyroidism complicates pulmonary tuberculosis. This should be done under local anaesthesia. No mortality in a small group of cases.

Of 6,700 thyroid operations, he has had only 3 cases of complete and persisting tetany.

No permanent bilateral abductor paralyses. He occasionally has seen unilateral paralysis particularly in large intrathoracic types and in recurrent hyperthyroidism.

One should make sure that both recurrent laryngeal nerves are functioning before operation (competent nose and throat consultants).

Impressions:

1. Thyroidectomy for hyperthyroidism in the young makes up 2.5% of all operations. Ratio is 5 girls to 1 boy. Symptomatology essentially the same as in adults. One-stage thyroidectomy may be done in all. More thorough follow-up is indicated in this young group.

2. Results of cure from thyroidectomy range from 18% to 82%?

3. It is advisable to follow-up all cases after thyroidectomy in order to make a correct estimate of our results. This should be done at regular stated intervals (3 months?).

4. The clinical features of each case of hyperthyroidism should be studied and understood before attempting operation.

5. The preoperative, operative, and postoperative care have been fairly well standardized since the advent of iodine.

6. Mortality from thyroidectomy in hyperthyroidism is quoted as 1.3%, 1.25% and .28%. The highest rate appears to be in the toxic adenomas.

7. The longer the patient has the disease the greater the operative hazard.

8. The resistance of patients under 30 years is less than after full maturity. Use longer preoperative preparation.

9. There is a higher mortality in those of advanced years (toxic adenoma).

10. Higher percentage of deaths in persons with high basal metabolic rate.

11. Mortality factors from thyroidectomies are: crises, cardiac failure, and complications.

12. Any type of physical disorder may change a patient with a toxic thyroid into a dangerous or fatal crisis.

13. Iodine should be used primarily as a preoperative measure. Its indiscriminate use may be harmful.

14. Hyperthyroidism complicated by cardiac failure is best treated by subtotal thyroidectomy. Same procedure advised when complicated by diabetes, and pulmonary tuberculosis.

15. Prevent delay in the diagnosis of apathetic type of hyperthyroidism. Care should be taken not to do too much (two-stage is preferred).

16. Hyperthyroidism recurs in 5% of thyroidectomies for exophthalmic goitre. It is not generally attributable to inadequate surgical removal.

Visitors to the office of Richard E. Scammon, Dean of Biological Sciences, have noted the following message, recently hung on the wall of the outer office.

"I think this will be found no matter of words that, when men combine together for any common object, they are obliged, as a matter of course, in order to secure the advantages accruing from united action, to sacrifice many of their private opinions and wishes, and to drop the minor differences which exist between man and man.

Compromise, in a large sense of the word, is the first principle of combination; and any one who insists on enjoying his rights to the full, and his opinions without toleration for his neighbors, will soon have all things to himself and no one to share them with him.

But most true as this confessedly is, still there is an obvious limit to these compromises, however necessary they be; there should be no sacrifice of the main object of the combination in the concessions that are mutually made.

When, then, a number of persons come forward, not as politicians, not as diplomatists, lawyers, traders or speculators, but with the one object of advancing Knowledge, much we may allow them to sacrifice,--ambition, reputation, leisure, comfort, party-interest; one thing they may not sacrifice--Knowledge itself."

John Henry, Cardinal Newman in:
The Idea of a University, 1852.

"Our appreciation for your interest and support"

MERRY CHRISTMAS and HAPPY NEW YEAR

Next Meeting - January 7, 1932.