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THE RESULTS OF GASTROJEJUNOSTOMY

in the treatment of

MALIGNANT AND NON MALIGNANT

lesions of

THE STOMACH.

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THE ULTIMATE RESULTS OF GASTROJEJUNOSTOMY

During a period of some thirteen months, I had the good fortune to be associated with Mr. H.G.Paterson in his gastric work during my term of office as R.M.O. at the London Temperance Hospital. I purpose basing this thesis on the results of his gastric operations as seen by myself and as reported to myself and to Mr. Paterson up to the end of 1910. In addition, I shall include as many other results as I have been able to obtain from the literature of this country and of America.

It will be well to outline briefly the various methods which have been adopted during the last thirty years in the endeavour to cure or at least palliate the malignant and non-malignant diseases to which the stomach is liable. While doing so I have no intention of entering into any discussion on the relative merits or demerits of any given operation, and it is hardly necessary to do so as with few exceptions surgeons are now agreed on the main features of the operations to be performed under various conditions.

Until anaesthesia came to the aid of the surgeon little or no gastric surgery existed although as far back as 1602 a gastrotomy for the removal of a foreign body was successfully performed by Mathen. In 1876 Billroth suggested the removal of the pylorus in cancer and Péan made the first attempt to carry out this idea, but unsuccessfully. In 1881, Czerny obtained the first

success in the operation of pylorectomy. In the same year Wolffler and Billroth within a week of one another performed the first two operations of gastro-enterostomy for short circuiting the stomach contents in cancer of the pylorus. Nine such operations were performed in the succeeding three years and it was not till 1884 that Rydygier operated on a case of pyloric stenosis of benign origin, but of the first 41 cases of gastrojejunostomy only 7 were for non-malignant disease, and out of these 7, 3 died. One was known to be alive and well, 1 year after. One supposed malignant case operated on by Hahn was shown by him 2 years after and there is reason to suppose that he must have been dealing with one of these cases of inflammatory masses surrounding the site of an old ulcer, cases which have been and still are sources of great difficulty in diagnosis even to experienced surgeons. The anterior operation was the only one used in all these cases and the technique went through many stages and paved the way for the more successful posterior operation. Murphy's button probably was the greatest factor in making this operation a success and while now this instrument is practically never used except in the palliative operations on advanced cancer one must not forget that to the knowledge obtained in these operations and to the attempts made to correct its errors we owe practically entirely the success which now can be claimed for the modern operation.

Roux's En Y operations deserves to be mentioned here as it was used in a large number of cases primarily and in a larger number of cases as a secondary operation to overcome the defect found to be caused by the long loop necessary to an anterior operation and which was also the cause of many failures in the early posterior operations with loop. Two other sequelae which were met with in the early cases may be mentioned "vicious circle" and"peptic ulcer." The causes of these two conditions while much discussed were never clearly explained and both seem to have been the result of imperfect technique as they have both disappeared from modern case sheets. Case II illustrates one of the cases of peptic ulcer and also the operative measures for its cure. Eventually an operation was designed by Von Haaker to attach the jejunum to the posterior wall of the stomach. This has also gone through various modifications since its origin and many were the different methods advocated by various surgeons. The consensus of opinion has now more or less definitely fixed on certain rules to which all operations should conform. These may be summarised briefly as follows :-

(1) The opening in the stomach should be as near the greater curvature as possible. (2) The opening in the stomach should be as near as possible to the commencement of the muscular portion of the stomach. (3) The opening in the jejunum should be as close to

the duodenum as will allow of anastomosis without dragging, i.e. no loop. The direction of the incision in the stomach seems to be a point of minor importance and the iso and the antiperistaltic methods are equally interchangeable. The operation of gastrojejunostomy has also been used in combination with complete or partial gastrectomy; with gastro gastrostomy in hourglass stomach; and with pylorectomy and with excision of ulcerated areas. In addition must be mentioned Finney's operation of pyloroplasty used in cases of pyloric stenosis, Loreta's operation and gastroduodenostomy for the same condition.

The various conditions for which these operations have been used at various times have been :-

Malignant disease of pylorus.
Pyloric stenosis (non malignant)
Pyloric spasm result of ulceration of stomach or pylorus.
Duodenal ulcer.
Hourglass stomach.
Congenital stricture of pylorus.
Gastrotaxis.

While one does not wish to take up the extremely optimistic view of Kocher as to the result of gastrojejunostomy, it must be admitted that in properly selected cases the results have been exceedingly good and with the improvements in technique and the more certain diagnosis now possible the operation should show even better results in the future. Kocher says, "Not only can the numerous dangers of ulcerating affections of the stomach

such as haemorrhage perforation transition into cancer be prevented, but the disease and its results may be so rapidly and certainly cured that the medical treatment of obscure cases must be put in the background. The pain in the stomach disappears immediately after the operation. This is the invariable rule. The patient does not require to pay any further attention to nature of his food. The vomiting disappears, the bowels become regular and there is progressive improvement in the process of digestion."

While this may be taken as nearly true in a certain class of case, in no class of case can it be said to be absolutely so. Throughout the literature of this subject may be found histories of cases which repudiate every statement made by Kocher. Haemorrhage, perforation, and the development of cancer have all been known to follow the operation of gastrojejunostomy. While one finds results varying from 60% - nearly 90% of cures in the reports of different surgeons, on closer examination of the cases operated on it is found that the latter figure nearly represents the results in the class of case which should be operated on.

From the operative point of view the stomach must be divided into two portions, the cardiac end and the muscular portion which includes the first 2½" of the duodenum. It is in this second part that 80% of all ulcers originate, and it is in lesions of this part that the operation of gastrojejunostomy does the greatest

good. This part is more or less tubular and is liable to be considerably narrowed by contraction of scars following ulcers and also being muscular in structure is liable to spasms caused by irritation of the fibres. In these two anatomical and pathological factors, we find two strong indications for the operation of gastrojejunostomy. In both classes of case one finds a dilated stomach vainly endeavouring to pass on its contents through a permanently or temporarily stenosed pylorus. It seems that the only feasible method of curing the condition is to supply an outlet elsewhere. On the other hand we find a definite lesion in the cardiac end of the stomach. There is no obstruction to the outflow, there is no dilatation of the stomach, and if an operation is performed, the food continues to pass through its natural outlet, as has been proved over and over again by means of the X rays, and the anastomotic opening becomes wholly or partially occluded. In this class of case then instead of anastomosis, excision of the ulcer should be the operation of choice. Similarly in the atomic stomachs and the neurotic stomachs and in the gastroptoses bad results will always be shown and the cases one has collected fully bear out these facts. It therefore has now become a universal custom not to operate on any stomach which does not show definite signs of a lesion occluding or which on healing and contractions will probably occlude the pyloric part of the gastric mechanism.

To justify surgical intervention in these lesions it may be as well to put forward a few facts and figures as to the results obtained by medical treatment.

Mansell Moullin in 1906 collected all the cases of gastric ulcer treated medically in the London Hospital. They totalled 500, and out of these,

10% died from perforation and peritonitis.
3½% " " haematemesis.
5½% " " other causes directly associated with the condition.

Out of these 500 cases, 214 had been previously treated for the same condition. This is the finding of one large hospital and I think corresponds fairly well to the findings of other institutions. In looking through any list of gastric cases, one is immediately struck by the fact that the majority of the patients have suffered over a long period of time either intermittently or continuously. Does gastrojejunostomy improve on this? I think the figures shown here will abundantly prove that gastrojejunostomy is not only justifiable, but should be the proceeding of choice in all cases which do not yield to medical treatment in a reasonable length of time. Surgeons and others might differ somewhat on the length of time they would call reasonable, but probably a good average would be 1-2 months on milk and fluids followed by 6 months careful regulation of diet. Of course this only refers to non-malignant conditions, and if any suspicion of malignancy is felt then immediate exploration must always be urged.

Before commencing to analyse the appended cases, there is a set of results of gastrojejunostomy investigated by Otto May which will bear comment. These are those of 65 traced cases divided into 4 classes.

A.	Results entirely satisfactory	30.
B.	Considerably improved.	13.
C.	Slight improvement	7.
D.	Practically no improvement	15.

It is the last class which are of the most interest at this point as in investigation one finds a definite reason for failure in nearly every case.

The operation note on each are, as follows :-

No. 1. Contraction along greater curvature near pylorus ? gastric dilatation.
2. Doubtful thickening of pylorus.
3. Nil found.
4. Stomach greatly dilated.
5. " dilated and atomic.
6. Old scar near pylorus.
7. No pyloric obstruction.
8. Scar in Ant. wall. Ulcer adherent to Abd. Wall.
9. ? thickening at pylorus (3 operations later owing to adhesions.
10. Ulcer in Ant. wall near pylorus adhesion-- ---- died.
11. Pylorus and duodenum bound down by adhesions ------ died.
12. Lesser sac full of adhesions jejunum adherent to Transverse colon.
13. Nil abnormal.
14 & 15 No definite lesion.

Of these Nos. 3 & 13, 14 & 15 show nothing abnormal Nos. 10 & 11 died after operation, the only two mortalities in 90 cases.

Nos. 4 & 5 show dilated stomach with no cause.

Nos. 2 & 9 show ? thickening at pylorus.

Nos. 8 & 12 show added adhesions complicating operation.

No 7 note says no pyloric obstructions.

No. 6 was an ant. operation and the loop may be the cause of continued symptoms.

Out of the 7 cases in class C., 3 had no ulcer or definite reason for operation.

Otto May entered into this investigation of cases because he had noticed a large number of gastrojejunostomy cases returning to the wards for further treatment.

At the first glance we might think that only 66% were at all successful, but in excluding the 12 cases which showed no lesions, 43 out of 53 or deducting the death 43 out of 51, or 84% of these who recovered show cure or considerable improvement.

This list of cases is also of extreme interest in that it demonstrates so well the class of case which should not be treated by this operation.

Coming now to the cases whose histories and operation notes are appended, one finds a total of 68 cases divided as follows :-

A. 50 cases benign pyloric lesions.
B. 3 hour glass stomachs.
C. 5 perforated ulcers.
D. 10 malignant cases

Out of the first class (50 cases) 45 have been traced, and it is found that of these 41 are cured. 1 died, two cannot eat meat and one has still discomfort in eating any kind of food. This may possibly be accounted for by the fact that he is alcoholic.

Three of these cases required second operations :

Case II developed peptic ulcer and a short circuit operation was performed, and she is now well.

Case III had a posterior operation performed, symptoms returned and an anterior gastrojejunostomy was substituted, the posterior opening having closed.

Case Vi had a second laparotomy when adhesions were found causing obstruction of small intestine, short circuit was performed and she has since been well.

In Class B. 1 died 2 years later of ? malignant disease of lung, no postmortem was made; the other two are well.

In Class C. 1 died on 14th day after suture only never having been strong enough to have gastrojejunostomy performed; the other 4 recovered and are well.

In Class D.
5 died within a few months.
1 lived 4 years.
1 died 3 years after, but might have been cured by a second operation.
2 are well after nearly 3 years.
1 with partial gastrectomy Well 3½ years.

In this series Case No. 5 is of great interest as a portion of the growth was taken and microscoped and found to be malignant. No attempt was made to remove growth and ant. gastrojejunostomy was performed, and after 2 9/12 years he is still alive and well.

On taking all the non malignant cases together we find:-

58 cases. 2 died. 53 traced. 48 cured. 3 improved, but not cured.

This shows a percentage of 90 cured and no cases which were not improved. While this may be exceptional it demonstrates that with care in the selection of cases relief may practically be always promised and cure is in 9 cases out of 10 certain. The results are taken from 6 months to 8 years after operation and while the later cases cannot yet be said to be cured the immediate relief is so marked that even if symptoms return later and a second ulcer should develop the results are certainly better than can be obtained by any known medical treatment.

In the malignant cases though the numbers are few it shews what relief may be obtained by a palliative operation, and shews also how a definitely proved cancer seems to become inactive for at least a certain length of time. While on the subject of malignant disease it might be well to consider the question of the so-called ulcer carcinomatosum. Mayo in a series of 180 cases of gastrectomy for cancer found in microscopic section definite evidenceof primary ulceration in 54% of his cases. Bettman & White in a series of cases reported 5 cases which died of cancer, 2 within 6 months and all within 5 years. In about 1100 cases I have collected I find no mention apart from those of Bettman of cancer being proved to have developed on the site of an ulcer later. Until further evidence can be brought forward of cancer developing on a proved benign ulcer, one can say nothing. The question of excision of

ulcer in addition to Gastrojejunostomy rests in great measure upon such a finding and personally one sees no reason to think that such a step is necessary.

Coming now to the question of ulcers in the cardiac portion of the stomach there are a certain number of surgeons who claim that in these cases gastrojejunostomy will do no good as the new opening is not functional as has been proved by X rays. These surgeons advocate excision of ulcer and suture rather than anastomosis. In opposition to this Paterson holds that the operation of gastrojejunostomy has a direct physiological effect on the secretions of the stomach, lessening the acidity and he holds that it is this hyperacidity which causes or predisposes to ulceration. By performing this operation the hyperacidity is reduced and the tendency to ulceration is lessened or lost. Enough work has not been done in the analysis of stomach contents after operation to definitely prove this point and while one know that the mobility of the stomach improves in pyloric stenosis it is difficult to say to what extent the secretion alters. Until Paterson or other workers can bring forward sufficient evidence to prove this point one would be inclined to follow the teaching of Mayo and others and excise such ulcers without gastrojejunostomy, trusting to medical means to overcome the hyperacidity.

The operation of gastrojejunostomy has also been

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employed in cases of congenital hypertrophy of the pylorus. Nicoll of Glasgow has been one of its strongest advocates. The results in these cases have been rather disastrous something like 75% of them dying. One must remember however that nearly all these infants have been practically starved for weeks before operation was considered and were therefore not good subjects. There is no doubt that many of these children can be cured by gastric lavage and with such a large death rate many surgeons advocate this form of treatment rather than gastrojejunostomy. If operative treatment is decided upon there is also the alternative operation of pyloroplasty to be considered and in this class of case it has given very satisfactory results as compared with gastrojejunostomy.

Below I give results of 1022 cases collected from various sources of benign demonstrable lesions treated by gastrojejunostomy. These show 78% cured and 12½% improved a total of 90% showing benefit from the operation. These cases date from the earliestcases in this country and America and thus range up to 15 years history.

BENIGN WITH DEMONSTRABLE LESION

Operator	Cases Traced	Cured	Improved	No Better	Dead since
Mayo 1908	234	189	21	10	14
Dearer	66	44	9	5	8
Moyniham	205	159	5	21	17
Bettman & White (nature of case unspecified)	150	90	60		
Moyniham Duodenal ulcer.	167	146	17	2	
Middlesex Hospital	52	43	4	3	
Paterson from various sources.	116	103	9	2	2
Guys Hospital	32	8		11	13
	1022	782	125	54	54
		78%	12½%	5%	5%

Opposed to these results Mayo reports 50 cases of gastrojejunostomy with no lesion. Of these only 17 were cured, 14 improved and 16 were no better, 3 dying from the operation. Instead of 90% benefited we have only 60% of these showing any improvement.

Such a result combined with those shown in Mayo's series of cases would demonstrate the necessity for care in the selection of cases. No operation should be performed on a stomach which shows no sign of actual lesion calculated to prevent the outflow of the gastric contents.

S U M M A R Y.

From the records here shown I consider that the value of the operation of gastrojejunostomy is amply proved. All that is now necessary is to enumerate the conditions calling for such treatment.

a. Pyloric stenosis of benign origin.
b. Ulcer of pyloric part of stomach.
c. Ulcers of duodenum.
d. Selected early cases of congenital hypertrophic stenosis of the pylorus.
e. Hour glass stomach where a gastro gastrotomy will not restore the lumen of the stomach.
f. Inoperable carcinoma of stomach as a palliative measure.
g. In combination with gastrectomy in operable cases of carcinoma.

In all these cases one can promise an almost certain cure from further trouble, if reasonable care is taken of the general health.

On no account should gastrojejunostomy be performed for atomic dilatation of the stomach, for hyperacidity per se. for gastroptosis for drainage purposes, or for any condition not occluding or likely to occlude the gastric or duodenal lumen.

These indications are of course in some of the classes subject to the proviso made earlier that the conditions do not yield to medical treatment employed over a reasonable length of time.

This thesis is not written to advocate the surgical treatment as opposed to medical, but merely to show that where medical means have failed the surgeon should

be called in to effect an anastomosis. After the operation the physician has still his part to play in the restoration of the secretory mechanism of the stomach to its normal level. The operation merely makes it possible for such treatment to be efficacious, and that it is efficacious, one trusts that this paper has already demonstrated.

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CLASS A.

PYLORIC LESIONS.

A. PYLORIC.

Case I. J.W. aet. 51. male. operation Nov. 1902.

HISTORY.

6 weeks vomiting occurring every 3 days; 10 - 12 times in 9 hours. Pain relieved by vomiting; very constipated; losing flesh; vomit dark in colour; no haematemesis;

Stomach dilated; tenderness and ill defined resistance in pyloric region.

Free HCl. present. No lactic acid.

OPERATION. adhesions found round pylorus and duodenum. (probably result of pyloric ulcer.

Ant. gastrojejunostomy with loop.

Seen Feb.1911. well.

Case II. H.J. female. aet 47. operation Aug. 1902.

HISTORY.

2 years indigestion; vomiting for 12 months; getting worse; lost 3 stone in 2 years. Stomach dilated; visible peristalsis; succussion splash.

Free H.Cl. No lactic acid. Residual food drawn off in large quantities.

OPERATION. Lump size of orange in pyloric region, no adhesions. (inflammatory mass round old ulcer).

Ant. Gastrojejunostomy. (Holstead).

Aug. 1907. Peptic ulcer developed; Resection of position of jejunum involved; proximal portion anastomised to stomach and distal portion anastomised to proximal portion.

Seen Feb. 1911. Quite well.

Case III. J.F. female operation, July 1903.

HISTORY.

5 years losing flesh; severe pain and vomiting at intervals; vomiting sour; brown, sometimes 3 pints in quantity. No haematemesis; had 15 months gastric lavage Stomach dilated; colon dilated; hard fixed tender lump a little to left of middle line and below ensiform cartilage.

Free H.Cl. present.

OPERATION. Pyloric ulcer found with inflammatory mass. Posterior Gastrojejumostomy which subsequently closed and anterior Gastrojejunostomy was performed.

Well. Feb. 1911

Case IV. J.R. male. aet. 54. Operation. December 1904.

HISTORY.

? lead colic 10 years; 4 years vomiting gradually getting more frequent up to 2 or 3 times a week; no pain; vomiting usually occurs at night; lost 5 stone in 6 years.

Stomach dilated; succussion splash present.

Free H.Cl. present.

OPERATION. Large inflammatory mass round pylorus with pyloric obstruction.

Ant. Gastrojejunostomy.

Well. Feb. 1910.

Case V. A.O. female. aet. 40. Operation. March 1904.

HISTORY.

6 years ago haematemesis, pain after food. 2 years ago similar attack. 1 year ago treated in medical wards, but on going out was only able to take milk.

OPERATION. Pyloric ulcer found.

Gastrojejunostomy performed.

Feb. 11. well.

Case VI. E.W. female. Operation. Dec. 1905.

HISTORY.

3 years ago treated for "chronic gastric ulcer"; since then he has occasional attacks of vomiting and pain sometimes after food. Worse the last few weeks; no melaena; no haematemesis; wasted, stomach dilated; recti rigid above umbilicus; on washing out only half amount returned.

No free H.Cl.

OPERATION. numerous adhesions pylorus to liver and also cardiac end of stomach also adherent.

Gastrojejunostomy performed.

In Dec. 1909 laparotomy performed and adhesions found causing obstruction of small intestine; short circuit performed.

Well. Feb. 1911.

Case VII. E.K. male. aet. 58. Operation March 1906.

HISTORY.

4 months ago pain one hour after food, vomiting ½ hour later; attack lasted 10 days. Got better. Next month fresh attack lasting up to present. No haematemesis. Wasting.

Stomach distended; succussion splash; tenderness above and to right of umbilicus. Free H.Cl. present.

OPERATION. Gastrojejunostomy. Pyloric stenosis.

Well. Feb. 1911.

Case VIII. C.H. male. aet. 52. Operation. June 1906.

HISTORY.

Twice in hospital for "duodenal ulcer"; 3 weeks ago pain 1 hour after food; vomiting occasionally 1½ hours after breakfast; this occurs 2 or 3 times a week; lost weight; hunger pain.

Stomach dilated; succussion splash; tenderness in epigastrium.

Test Meal. Total Acidity 40.

Free H.Cl. present.

Very little residue 10 hours after meal.

OPERATION. Thickened pylorus old scar on peritoneal surface.

Post Gastrojejunostomy. No loop.

Well 2 years later.

No later report.

Case IX. W.P. male. aet 68. Operation. Nov. 1906.

HISTORY.

3 years "distension of stomach"; eructation of gas; no pain; no haematemesis; constipated.

Stomach in distention with C.O2 came 3 inches below umbilicus; no succussion to splash.

Test Meal. Total Acidity 84. Free H.Cl. present.

OPERATION. Pylorus stenosed ? old ulcer.

Gastrojejunostomy done.

Seen Feb. 1911. Well.

Case X. M.O. male. aet. 30. Operation. 1906.

HISTORY.

"Gastric ulcer" 8 years; sick once a week; no relation to food; profuse haematemesis; pain.

Stomach, no tenderness, no dilation.

Test Meal. Stomach empty.

Total Acidity 110. Free H.Cl. present.

OPERATION. Gastrojejunostomy. No ulcer. (multiple erosions).

Well. Feb. 1910.

Case XI. G.R. aet. 33. male. Operation. April 1907.

HISTORY.

For 1 year pain after food localized to right of middle line above umbilicus; lost flesh; improved for a time; 4 months ago vomiting returned, no pain; vomit green and bitter.

Stomach; no tenderness, no dilation; freely movable lump to right of umbilicus and above it.

Test Meal. Total Acidity 70.

No free H.Cl. Lactic Acid present.

OPERATION. Gumma of pylorus liver adherent.

Gastrojejunostomy performed.

Well. July 1910. Perfect health.

Case XII. A.D. male. Operation. May 1907.

HISTORY.

Pain after food relieved by vomiting, getting worse; large quantity of material returned in vomit; losing weight.

Stomach dilated; succussion splash. Thickening and resistance felt to right of middle line.

Test Meal. Total Acidity 91. Free H.Cl. present.

OPERATION. Pyloric obstruction; syphilitic perihepatitis. Post Gastrojejunostomy. Untraced.

Case XIII. M.C. aet. 32. female. Operation Sept. 1907.

HISTORY.

Anaemic at 16. 3 attacks of "gastric ulcer". During last 18 months pains in stomach passing through to back; occasional vomiting; some haematemesis; pain never worse after food, sometimes better.

Stomach dilated; succussion splash; no tenderness.

Test Meal. T.A. 94. Free H.Cl.

OPERATION. "Gastric ulcer" found. (From history most likely in pyloric region).

Post Gastrojejunostomy performed.

Perfect health. 1911.

Case XIV. E.S. female. aet. Operation Aug. 1907.

HISTORY.

4 years ago laporotomy pefformed; "gastric ulcer", found also adhesions which were broken down. Present illness 5 weeks pain in right abdomen; vomiting and diarrhoea.

Stomach; slightly dilated, nothing palpable.

Test Meal. Total Acidity 72. Free H.Cl. present.

OPERATION. Stomach found dilated; old chronic gastric ulcer.

Post Gastrojejunostomy performed.

Feb. 1910. Well.

Case XV. S.L. female. aet. Operation Nov. 1907.

HISTORY

of stomach trouble for 7 years with pain and vomiting sometimes at intervals of several months. No haematemesis. Last 7 weeks much worse pain every day, vomiting once a week a pint at a time; night pain; pain usually directly after food, sometimes relieved by food.

Test Meal. T.A. 73. Free H.Cl. normal.

OPERATION. Pyloric ulcer causing stenosis.

Post Gastrojejunostomy performed.

Feb. 1910. Well.

Case XVI. C.W. aet. 37. female. Operation. Nov. 1907.

HISTORY.

For 3 months pain directly after food; vomiting several times daily. Since she has been on milk diet vomiting once or twice weekly. Lost flesh. Pain wakes her at night. Sour eructations.

Stomach dilated; marked peristalsis.

Test Meal. 375 c.c. recovered after 1 hour.

Total Acidity 105. Free H.Cl. normal.

OPERATION. Ulcer close to pylorus.

Post Gastrojejunostomy; no loop.

Feb. 1911. Well.

Case XVII. D.V. male. Operation Feb. 1904.

HISTORY.

4 years pain in stomach vomiting and haematemesis occasionally acid eructations; wakened at night by pain; lost flesh.

Stomach; nothing abnormal to be seen or felt.

Test Meal. 22 ozs. recovered.

Total Acidity Free H.Cl. normal.

OPERATION. Duodenum ulcer found in first part.

Post Gastrojejunostomy performed; no loop.

Feb. 1911. Well, but can't eat meat.

Case XVIII. G.C. aet. 54. male. Operation. Feb. 1908.

HISTORY.

5 years ago pain in left Hypochondrium ½ hour after food, followed by water brash and vomiting; getting worse; lost 2 stone in 2 years. Treated with diet, lavage etc.

Stomach dilated; lower border level of umbilicus; tenderness below ensiform.

Test Meal. Stomach empty 12 hours after food.

Total Acidity 100.

Free H.Cl. slightly increased.

OPERATION. Duodenal ulcer and old gastric ulcer found.

Post Gastrojejunostomy performed.

Well. (policeman).

Case XIX. J.T. 25. male Operation March 1908.

HISTORY.

3 years pain before meals. after taking small quantity felt very full. 12 months ago burning pain in stomach, no relation to food; no vomiting.
Slight tenderness over McBurney's point.

Test Meal: Total Acidity 105

Free H.Cl. increased.

OPERATION. Appendix thickened and bulbous - removed.
Ulcer found just beyond pylorus.
Post Gastrojejunostomy performed.

Feb. 11. Has occasional Indigestion and flatulence, no pain; declares himself well. Slightly alcoholic.

Case XX. E.T. 25 Male Operation June 1908.

HISTORY.

9 months pain in abdomen after food. eructations of gas and sour fluid; some vomiting and haematemesis.
Stomach level of umbilicus, succussion splash.

Test Meal. stomach empty 12 hours after food.

T.A. 96 Free H.Cl present.

OPERATION. Duodenal ulcer found with dilated stomach
Post Gastrojejunostomy performed.
Well Feb. 11.

Case XXI. J.S. aet 40 Operation June 1908.

HISTORY.

Period of pain in stomach with vomiting after meals gradually getting worse in last 18 months; lost 1½ stones.

OPERATION. Chronic duodenal ulcer with adhesions to and thickening of pancreas.

Post Gastrojejunostomy.

Feb. 11. No stomach symptoms (has ventral hernia)

Case XXII C. Le M. aet 42 male. Operated July 1908

HISTORY.

8 years ago pain in stomach above umbilicus; similar attach 2 years later; treated for gastritis with lavage; sickness improved, pain continued; lost weight; no haematemesis.

Stomach dilated.

Test Meal. 12 ozs. in stomach after 12 hours.

T.A. 85. Free H.Cl. present.

OPERATION. Old ulcer of stomach near pylorus with constriction of duodenum.

Post gastrojejunostomy performed.

Feb. 11. Well

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Case XXIII. D. Q. aet 53 male. Operation August 1908.

HISTORY.

2 years history abdominal pain no relation to food no vomiting but pain relieved by forcing vomit; flatulence; no melaena; no haematemesis; pain goes from right to left hypochondrium.

Stomach slight rigidity epigastrium. On deep palpation small tender lump felt freely movable between umbilicus and ziphisternum.

OPERATION. Ulcer on lesser curvature with inflammatory thickening round it fixing to post abdominal wall.

Post Gastrojejunostomy performed.

Feb. 11. No stomach trouble. ?T.B. of lung.

Case XXIV. E.B. aet male Operation September 1908

HISTORY.

2 years pain in abdomen 2 hours after food; no sickness, no melaena, tenderness in epigastrium.

Treated in hospital for gastric ulcer for 14 weeks. No permanent relief.

Stomach. Tenderness on press. Midway between umbilicus and ziphisternum.

OPERATION. Gastric ulcer 1" x 1½" ant wall and lesser curvature. Pylorus patent; duodenum indurated and adherent to pancreas; inflammatory glands in gastro colic omentum.

Post Gastrojejunostomy performed.

Feb. 1910 Well.

Case XXV. A.L.B. 42 female. Operation April 1908.

HISTORY.

Indigestion 17 years treated in hospital. Has since had pain and vomiting. Haematemesis. persistent melaena.

OPERATION. Duodenal ulcer and gall bladder full of stone.

Post gastrojejunostomy and cholecystotomy.

Well Feb. 11

Case XXVI E.J. female Operation July 1908.

HISTORY

Of indigestion for indefinite period; 1 year vomiting and pain after food. haematemesis.

Test Meal

T.A. 75.

Free H.Cl. normal.

OPERATION. Duodenal ulcer bound down to pancreas posteriorly and pylorus constricted.

Ant. Gastrojejunostomy performed.

Feb. 10. Perfect health.

Case XXVII. A.W. aet 30. female. March 1909.

HISTORY.

7 years ago severe pain in stomach with sickness and vomiting 10 minutes after food; several attacks since. During last 6 months, severe pain and vomiting 2 hours after food. no haematemesis; lost weight.

Test Meal. T.A. 44.

Free H.Cl. absent.

OPERATION. Pyloric ulcer found; numerous adhesions ant Gastrojejunostomy performed. Hourglass stomach.

Untraced

Case XXVIII. F.S. aet 43. male January 1909.

HISTORY.

"Always" suffered from indigestion. For 5 years pain ½hour after food with pain and vomiting; no haematemesis; melaena marked.

Test Meal. Total Acidity 103

Free H.Cl. diminished.

OPERATION. Scar of ulcer in distal side of pylorus no adhesions.

Post Gastrojejunostomy.

Well Feb. 11.

Case XXIX G.C. aet 38 Operation February 1909.

HISTORY.

5 years indigestion 3 days ago haematemesis. For 2 years pain 1-1½ hours after food, lasting until next meal. Acid eructations.

Test Meal. 4 ozs. in stomach 10 hrs. after food

T.A. 88.

Free H.Cl. increased.

OPERATION. Duodenal ulcer and adhesions.

Post Gastrojejunostomy.

Feb. 1911 Well.

Case XXX! C.C. aet 28 male Operation February 1909.

HISTORY.

18 months ago pain in stomach with sour eructations ½ hour after food; 12 months ago sickness haematemesis and melaena. Hospital treatment with relief on two occasions.

Test Meal. 3 ozs. in stomach 10hrs. after food.

T.A. 100

OPERATION. Thickening round old scar on duodenal side of pylorus.

Post Gastrojejunostomy.

Feb. 1911. Well

Case XXXI. R.J.J. aet 40. male Operation May 1909.

HISTORY.

5 years pain 2 hours after food, relieved by vomiting but not by food. Treated for ulcer in hospital haematemesis during this period. Increase in pain and vomiting in last 4 months, night pain; haematemesis again 3 months ago.

Stomach. Localized pain and tenderness to right and above umbilicus; no apparent dilatation.

Test Meal. Total Acidity. 80

Free H.Cl. increased.

OPERATION. Ulcer on duodenal side of pylorus

Post Gastrojejunostomy.

Well. Feb. 1911.

Case XXXII. J.R. Operation 1909.

HISTORY.

None

OPERATION. Large indurated mass in neighborhood of pylorus almost cartilaginous in consistency probably gastric ulcer with inflammatory thickening.

OPERATION. Post Gastrojejunostomy.

Well Feb. 11.

Case XXXIV. D.S. male. 44 Operation June 1910.

HISTORY

3-4 years indigestion with occasional vomitting lasting 2-3 weeks. For last 18 months pain 1½ hours after food lasting 3-4 hours, cramping pains starting in right epigastrium running thro to right side, night pain; constipation; no haematemesis or melaena. Pyorrhoea alveolaris. Lost 10 lbs. in 6 months. Stomach. Recti prominent especially on right side some tenderness and rigidity.

Test Meal. Stomach empty after 10 hours.

T.A. 92.

Free H.Cl. much increased.

OPERATION. Adhesions round 1st part of duodenum pylorus well marked off from this by a constriction. Post Gastrojejunostomy, no loop.

Well Feb. 11. Can't eat meat.

Case XXXV. H.G. aet 46. male Operation August 31 '10

HISTORY.

Pain and vomiting 5 years ago was well up to 1908 since which has been unwell on and off. For last 3 months has been incapacitated from work by pain and vomiting occurring 1 hour after food. Pain relieved by vomiting; no haematemesis; no melaena.
Abdomen flaccid, slight tenderness under ribs just to right of ziphisternum.

OPERATION.

Duodenal ulcer just beyond pylorus.
Post Gastrojejunostomy.
Well Feb. 11.

Case XXXVI J.S. aet 32 male Operation July 1910

HISTORY.

16 years indigestion attacks increasing in severity and frequency. Pain in epigastrium 1½ hours after food, lasting 1 hour; rarely vomits; water brash frequent relieving pain; no haematemesis or melaena.
OPERATION. Ulcer ½" to duodenal side of pylorus duodenum pouched.
Post Gastrojejunostomy.
Well Feb. 11.

Case XXXVII. W.G. aet 31. June 28 1910.

HISTORY.

12 years chronic dyspepsia, pain 2 hours after food very flatulent and eructations and occasional vomiting night pains recently.

Stomach dilated tenderness in epigastrium.

Test Meal. T.A.

Free H.Cl. normal

OPERATION. Duodenal ulcer 1st Portion of duodenum

Post Gastrojejunostomy, no loop appendectomy.

Died haemorrhage 24 hours later.

Case XXXVIII. W.D. aet 30 male Operation June 1910.

HISTORY.

8 or 9 weeks pain at irregular intervals after food, pain relieved by vomiting, constant feeling of distention; 3½ years ago similar condition which passed off.

OPERATION. Stomach dilated, duodenal ulcer on posterior wall.

Post Gastrojejunostomy, no loop

Not traced.

Case XXXIX. W.B. 34 male Operation April 1910

HISTORY.

Indigestion on and off for 2 years, attacks last 2-3 weeks, well between except for discomfort. Pain comes on immediately after food, relieved only by vomiting, night pain, haematemesis. Pain now continuous and passing through to back.

OPERATION. Duodenal ulcer of 1st part; inflammatory mass size of walnut.

Post Gastrojejunostomy, no loop.

Perfect Health.

Case XL. W.C. male Operation 1909

HISTORY.

Pain in stomach vomiting; haematemesis 2 years ago treated in medical wards for a month; sickness 1.1½ hours after food

OPERATION. Saddle shaped ulcer felt and seen on duodenal side of pylorus; another ulcer in cardiac end of stomach, with adhesions to omentum.

Post Gastrojejunostomy.

Feb. 11. Well

10 other cases of benign origin where no history is to be found have been traced after 3 - 6 years and have all been found to have no recurrence and to be in good health.

CLASS B.

CASES OF HOURGLASS CONSTRICTIONS.

B. HOURGLASS.

Case I. E.G. female. aet 43. June '05.

HISTORY.

Of pain and indigestion almost continuous, worse after food.

Stomach tender, dilated, succussion splash., peristalsis visible.

Test Meal - tonic of H.Cl. Lactic A. present.

OPERATION.

Hourglass stomach with 2 constrictions, gastroplasty and gastrojejunostomy.

Well Feb. 11.

Case II. E.S. female. aet. Jan. '08.

HISTORY.

5 years indigestion with pain and vomiting; worse for 2 months; dark coloured vomit; anaemic.

Stomach dilated, succussion splash

T.A. 72. Free H.Cl. nil.

OPERATION

Gastric ulcer adherent to Ant. Abdomen Wall hour glass constriction.

Ant Gastrojejunostomy.

Died 2 years later? Malignant disease of lung. No. P.M.

B. HOURGLASS

Case III. A.H. 42. Operation Feb. '08.

HISTORY.

2 years indigestion 1-2 hours after food. haematemesis 3 years ago & 2 months ago; vomiting worse lately; lost weight; melaena.

Test Meal stomach empty 12 hrs. after food.

T.A. 66. Free H.Cl diminished.

OPERATION

Hour glass Stomach due to contraction of scar of old ulcer.

Post Gastrojejunostomy.

Well Feb. 11

CLASS C.

P E R F O R A T E D.

C. PERFORATED.

Case I. M.J. aet. 20. Operation 1903

HISTORY.

Of gastric ulcer treated for some weeks before admission sudden pain, sickness and collapse.

OPERATION.

Duodenal ulcer in post wall found perforated; gas and purulent fluid in peritoneum.

Gastrojejunostomy performed.

Well 1908.

Case II. H.P. aet 26. Male. Operation 1903.

HISTORY.

3 weeks pain in epigastrium after food, pain passing through to back, lasts an hour, vomited once, haematemesis 1 pint on day of admission.

OPERATION.

Perforated gastric ulcer.
suture and gastrojejunostomy performed.

Well Feb. 11.

C. PERFORATED.

Case III. C.B. 34 male Operation Dec. 1909.

HISTORY.

2 years pain ½hr. after food; vague abdominal pain for 2 weeks. 5 days constipation. 2 days ago seized with violent pain in returning from work. Vomited next day. Abdomen distended tender, fluid? in right iliac fossa; liver dulness almost lost; recti rigid.

OPERATION.

Perforated duodenal ulcer and perforated jejunal ulcer about 18" from flexure.
Suture only. gastrojejunostomy deferred owing to condition of patient. Stitches later broke down, discharge of bile and stomach contents.

Died 14th day. Inanition.

Case IV. E.G. aet 35 Operation Sep. 20 1910.

HISTORY.

Indigestion for 3 years treated in hospital; pain in epigastrium sometimes relieved by food, always by vomiting haematemesis; 3 hours before admission sudden pain collapse vomiting large quantities of bile stained fluid.

OPERATION.

Perforated gastric ulcer close to pylorus, suture and ant. gastjejunostomy.

Feb. 11. Well.

C. PERFORATED.

Case V. T. H. 25 July 20 1910.

HISTORY

2 months pain 1 hour after meals; no vomiting; sudden pain while at work; collapse and vomiting.

OPERATION

Perforated duodenal ulcer in 2nd Part posteriorly Post Gastrojejunostomy and suture.

Well. Feb. 11.

CLASS D.

M A L I G N A N T

D. MALIGNANT.

Case I. G. H. aet 61. male. Jan. 1906.

HISTORY.

As boy attack of pain and vomiting and again between 20-30. Treated for "gall stones"; at 52 had ? Tubercular ulcer of tongue.

7 months ago began to vomit usually at night; little pain; acidity and gas; lost 2st. 2lb. in 3 months.

OPERATION.

Malignant disease found

Pylorectomy and partial gastrectomy performed with gastrojejunostomy.

Died Dec. 1909 (nearly 4 years).

Case II. G.W. Male. aet 55. August 1905.

HISTORY.

Pain, vomiting haematemesis, relieved by treatment 3 months ago, but symptoms returned.

Stomach dilated; succussion splash; residual fluid in large quantity.

Test Meal. No free H.Cl. lactic A present T.A. 75.

OPERATION.

Irremovable carcinoma.

Gastrojejunostomy done.

Died Dec. 1905.

D. MALIGNANT.

Case III. E.S. 43 female. Operation 1905.

HISTORY.

Incomplete; discomfort retching and vomiting. Stomach, lump in epigastrium not freely movable. stomach dilated, succussion splash, peristalsis visible

OPERATION

Pyloric tumor found with glands.
Partial gastrectomy, and gastrojejunostomy.

AFTER HISTORY.

Well for 3 years then lump appeared in abdomen, general obstruction with faecal ulcer which perforated. Death. P.M. secondary growth was removable but no attempt was made to do in life.

Case IV. E.S. female Oct. 1907.

HISTORY.

Dyspepsia for some time, lately pain in stomach independent of food; vomiting; no blood; losing weight.

OPERATION.

Pyloric obstruction by malignant growth.
Partial gastrectomy and gastrojejunostomy.

Feb. 11 Well.

D. MALIGNANT.

Case V. J. E. aet 52. April 1908.

HISTORY

7 weeks vomiting no relation to taking food.
constant severe pain; worse after food.
Stomach dilated ¾" below umbilicus.

Test Meal. 2pts. 6 ozs. drawn off 12 hrs after food.

No free H. Cl. T.A. 40 No Lactic A.

OPERATION.

Carcinoma of pylorus found and small nodule near cardiac end. Microscope confirmed diagnosis.
Ant. Gastrojejunostomy.

Well Feb. 11.

Case VI. C.A.M. aet 65 April 1908.

HISTORY.

"Gastritis" 2 years ago. 2 months later similar attack; pain ½hr. after food; sickness and vomiting going on ever since; has lost weight.
Stomach, tenderness below left costal margin, rounded mass to be felt.

OPERATION.

Carcinoma of pylorus.
Ant. Gastrojejunostomy performed.

Well Dec. 10

D. MALIGNANT.

Case Vii. H.W. aet 60 male Operation Sep. 1908.

HISTORY.

12 months loss of appetite, pain in epigastrium after meals, losing weight, daily vomiting, haematemesis once.

Stomach tenderness and resistance between umbilicus and ziphisternum; no tumor.

OPERATION.

Hard thick lump at pylorus with glands in lesser curvature. Malignant.

Gastrojejunostomy performed.

Died 4 months later.

Case Viii M.C. female. aet 27. Operation 1909.

HISTORY

2 months pain and vomiting 1½-1hr. after food; no haematemesis; slight loss of weight.

Stomach left rectus rigid hard painful lump below and to right of umbilicus.

OPERATION.

Stomach enormously distended large mass of growth found around pylorus and enlarged glands on lesser curvature section shows no malignancy but appearances were those of malignant disease.

Ant Gastrojejunostomy.

Dying Ascites.

D. MALIGNANT.

Case IX. A.W. male. Operation June 1908.

HISTORY.

6 months pain in stomach with eructations; no vomiting losing flesh rapidly; for few weeks pain has come on 1-2 hrs. after meals; very flatulent; no previous history of gastric trouble.

Tumor to be felt in epigastrium movable with respiration

OPERATION.

Large mass at pylorus adherent to pancreas and liver. irremovable.

Ant Gastrojejunostomy.

Died Jan. 1909.

Case X. C.P. 64 January 1910.

HISTORY.

Pain in Stomach 7 months severe enough to double him up; at first in epigastrium later all over abdomen comes on directly after food, lasts 1hr. Vomited $\frac{1}{2}$pt. of blood; no history of previous trouble.

Test Meal. 25 c.c. found after 12 hours.

140 c.c. recovered after 1hr.

T.A. 36. No free H Cl.

OPERATION

Malignant growth involving large part of stomach and pancreas; glands affected, adhesions to Ant. Abdomen wall.

Ant Gastrojejunostomy.

Died Aug. 4.