



Gastrojejunal Ulcer

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COURTESY OF CITIZENS AID SOCIETY

I. OUR GUEST TODAY

Gatewood, M.D., Chicago.

* * * * *

II. ABSTRACT

GASTROJEJUNAL ULCER

Charles E. Rea

Introduction

The treatment of gastric and duodenal ulcer is chiefly a medical problem; only when medical treatment fails to give relief or some complication arises is there an indication for surgical intervention. The most commonly performed surgical procedure for peptic ulcer is gastro-enterostomy and the occurrence of gastrojejunal ulcer after gastro-enterostomy is recognized as one of the most serious surgical complications. For fear of its occurrence, many surgeons have abandoned the operation of gastro-enterostomy and have substituted the more extensive one of gastric resection for peptic ulcer. The indiscriminate use of gastro-enterostomy certainly increases the incidence of this condition. The following is a review of the present day concepts regarding gastrojejunal ulcer with special reference to its pathologic physiology and modern treatment.

Etiology

Most cases of gastrojejunal ulcer occur after gastro-enterostomy for duodenal ulcer; it is relatively uncommon after gastro-enterostomy for gastric ulcer, and almost unknown when the operation is done for carcinoma of the stomach although Judd has reported a case (the length of survival of cases with carcinoma of the stomach is probably a factor).

The causes of gastrojejunal ulcers like those of gastric or duodenal ulcers, is unknown. From the work of Mathews and

Dragstedt, high gastric acidity may be a factor. Graham and Lewis believe the most constant factor in the formation of jejunal ulcer is a gastro-enterostomy performed in a young patient who for a short period of time has suffered from an active non-stenosing duodenal ulcer accompanied by a large amount of free hydrochloric acid in the gastric contents. A jejunal ulcer rarely occurs spontaneously.

The time of occurrence of the lesion varies. Balfour states that in 56.7% the symptoms reappeared within one year after gastro-enterostomy. In one case the post-operative interval was 12 years. The average length of time between the primary operation and that for gastrojejunal ulcer was $4\frac{1}{2}$ years. Wright found 284 of 458 cases (62%) had onset of symptoms within 2 years after the first operation.

Incidence

The frequency with which gastrojejunal ulcer occurs after gastro-enterostomy has been estimated from 1.6% (Walton) to 34% (Lewisohn). Hinton and Church have recently emphasized that a 10-year follow-up period is essential in drawing conclusions. The incidence of gastrojejunal ulcer may vary according to the care which the patient received after operation, the nature of the original lesion, the associated gastric phenomena, the race of the patient, the quality of the surgical technique, the length of follow-up and possibly the presence of foci of infection or other etiological agents (Jordan).

<u>Author</u>	No. cases gastro- enteros- tomy	No. cases gastro- jejunal ulcer	Follow up	% Re- cur- rence
Hinton & Church	79	13	10 yrs.	16.4
Emery & Monroe	480		10 "	9.7
Balfour gastric	100		10 "	0.
duodenal	600		10 "	3.26

Wright summarizes the incidence of

gastrojejunal ulcer after gastro-enterostomy in a collective inquiry of the Fellows of the Association of Surgeons of Great Britain and Ireland.

For duodenal ulcer:

2051 traced cases		
Proved ulcer	85	(4.14%)
Proved and suspected ulcers	176	(8.68%)

For Gastric ulcer:

1382 traced cases		
Proved ulcers	32	(2.32%)
Proved and suspected ulcers	62	(4.48%)

The following table shows the incidence of gastrojejunal ulceration following various operations (Wright):

<u>Operation</u>				<u>Gastrojejunal Ulceration</u>		<u>% of Combined Proved and Suspected Cases</u>
	<u>Males</u>	<u>Females</u>	<u>Traced</u>	<u>Proved at Operation</u>	<u>Clinical Symptoms</u>	
<u>Gastrojejunostomy</u>						
1. Post-gastrojejunostomy						
Duodenal ulcer	2310	424	1730	70 (4.04%)	77	8.49
Gastric ulcer	670	214	507	27 (5.32%)	26	10.45
2. Post-gastrojejunostomy and Entero-anastomosis						
Duodenal ulcer	48	9	33	1 (3.3%)	1	6.6%
Gastric ulcer	29	20	28	0	0	0
3. Anterior gastrojejunostomy						
Duodenal ulcer	103	13	85	6 (7.06%)	2	9.4%
Gastric ulcer	74	41	85	1 (1.2%)	0	0
4. Anterior gastrojejunostomy and Entero-enterostomy						
Duodenal ulcer	42	4	25	6 (24.0%)	1	28.0
Gastric ulcer	21	7	23	1 (4.34%)	0	0
<u>Partial</u>						
1. Anterior Polya						
Duodenal ulcer	34	8	29	0	0	0
Gastric ulcer	178	116	199	1 (0.5%)	1	1.0
2. Anterior Polya and Entero-anastomosis						
Duodenal ulcer	2	0	1	0	0	0
Gastric ulcer	1	3	2	1	0	0
3. Posterior Polya						
Duodenal ulcer	81	25	77	0	2	2.59
Gastric ulcer	267	167	306	0	1	0.3
4. Posterior Polya and Entero-anastomosis						
Duodenal ulcer	0	0	0	0	0	0
Gastric ulcer	0	1	1	1	0	0
5. Billroth #1						
Duodenal ulcer	43	12	38	0	8	21.0
Gastric ulcer	80	37	85	2 (2.4%)	1	3.5
6. Billroth #2						
Duodenal ulcer	3	0	1	1	0	0
Gastric ulcer	15	5	11	0	0	1

The above table can be summarized as follows: gastrojejunal ulcer occurs in 6% of patients after posterior gastro-enterostomy for duodenal ulcer. The adding of entero-enterostomy to posterior gastro-enterostomy did not seem to increase the incidence of secondary ulceration in a small series of cases of duodenal ulcer. Anterior gastro-jejunosomy seems to carry a definitely higher risk, and the combination of anterior gastro-enterostomy and entero-anastomosis is especially harmful in cases of duodenal ulcer.

The incidence of proved secondary ulcer after gastric resection for gastric ulcer is small. Wright, in 622 resection operations for gastric ulcer, found 4 proven cases and 4 suspected cases of secondary ulceration; viz., 0.65% proved and 1.30% combined. In 146 cases of duodenal ulcer, there were 1 proved and 8 suspected cases (0.65% proved cases and 7.5% combined). The notable feature is the high incidence of suspected cases after operation for duodenal ulcer. The highest incidence after resection operation seems to be after operations of Billroth I type.

In most of the reported series, the occurrence of gastrojejunal ulceration is 3.5 to 10 times more frequent in males. The fact that duodenal and gastric ulcers occur more frequently in men has to be considered. The age incidence was chiefly between 30 and 60 years.

The use of clamps, absorbable or non-absorbable sutures seem to have no effect on the occurrence of jejunal ulceration (Wright).

The role of trauma, foci of infection, nervous or emotional states, fatigue, tobacco and alcohol in causing gastro-jejunal ulcer is not clear.

Clinical Views

The incidence of gastrojejunal ulcer after gastro-enterostomy and gastric resection as performed in individual clinics should be considered. Surgeons in most continental European clinics employ gastric resection for peptic ulcer more

often than gastro-enterostomy. The principle is based upon:

1. The physiological premise that acid is probably the chief factor in the causation of primary ulcer.
2. The incidence of jejunal ulcer after more conservative operations, and
3. The importance attached to the associated so-called "gastritis" in duodenal ulcer.

In North America and Great Britain, gastric resection has not as yet gained general favor. In the first place, the necessity of such an operation judged from a physiologic and pathologic standpoint is not at all obvious. It has been shown beyond any doubt that conservative procedures will sufficiently control gastric acidity and other factors in the majority of cases to permit healing to take place and to prevent recurrence of ulceration. In respect to "gastritis", marked gastritis even with multiple acute ulcers or with obstructive duodenal ulcer is rarely seen in this country.

In evaluating the incidence of jejunal ulcer after gastro-enterostomy and gastric resection as performed in various clinics, the following factors have to be considered:

- (1) The personal factor, (2) the questionable difference in ulcer in various countries, (3) the care with which the patient is selected for surgical treatment and treated after operation.

In this country, gastro-enterostomy seems to be the procedure of choice. At the Mayo Clinic, Balfour, in 1936, found 270 cases of jejunal ulcer (139 of which had originally been operated from that clinic) in 8,600 cases of duodenal or gastric ulcer, an incidence of about 3%. At the same clinic, Judd and Hoerner, in 1935, report 251 patients with proved jejunal ulcer in 10,338 cases of gastro-enterostomy for peptic ulcer (2.4%). These authors report only 11 partial gastrectomies as compared with 554 gastro-enterostomies for gastric and duodenal ulcers. They prefer gastro-enterostomy

to gastric resection for peptic ulcer because:

1. They obtain relief of ulcer symptoms in 95% of selected cases treated by gastro-enterostomy while 5 to 20% of cases treated by gastric resection have manifestations of ulcer symptoms. Obviously, however, the more unfavorable type of case is treated by gastric resection.

2. Gastric resection carries an operative mortality 3 to 5 times that of gastro-enterostomy (4.8 to 1.4% respectively in Balfour's series).

Moynihan, in 1932, reported a consecutive series of 1,000 cases of duodenal ulcer treated by gastro-enterostomy with only 1 death. He estimated the incidence of jejunal ulceration in general to be about 4%; in his own series over a 12 year period ending 1926 the actual incidence of secondary ulceration was 1.84%. He believes that gastric resection is not indicated in the majority of cases of peptic ulcer treated surgically.

On the other hand, von Haberer found only about one-third of his patients remained symptom-free after gastro-enterostomy. Louria, in 1928, reports the results of gastric resection for gastric and duodenal ulcer by von Haberer who has performed over 1,500 gastric resections and who uses chiefly Billroth I method or his modification of that method. Of 166 cases of duodenal ulcer operated upon between January 1, 1925 and January 1, 1927, the immediate mortality was 8.4%; 107 cases were traced and the results were classified as excellent in 83, fair in 16 and poor in 6, of which 2 developed gastrojejunal ulcers (slightly less than 2%). No case had been followed more than 4 years.

Similarly, Finsterer in 307 cases of duodenal ulcer treated by Billroth II method or his modification reports 293 cases healed after a period of 3 to 14 years. In this series were 2 proved and a total of 4 cases of suspected gastrojejunal ulcer (less than 1%). In 71 cases where the Billroth I method or von Haberer's modification was used, there were 5 cases of gastrojejunal ulcer

(about 7%). His operative mortality in 566 resections for duodenal ulcer was 3.1%. Gastro-enterostomy has not been performed by Finsterer in the past 10 years for peptic ulcer except on very rare occasions.

Heuer states that the results of 17 authors from various countries show that jejunal ulcer follows gastro-enterostomy in from 0.9 to 6.9% of the cases, the average incidence being 3%. He found that the statistics given by 8 authors showed that recurrent or jejunal ulcer follows partial gastrectomy in from 0.6 to 5% of cases, or an average of 1.9%.

The surprising fact is that if one considers the best results obtained in cases of gastric or duodenal ulcer treated by gastro-enterostomy and gastric resection, there is very little difference in the incidence of gastrojejunal ulcer. Berg, in 1934, went as far as to say that jejunal ulcer occurs practically as often after partial gastrectomy as it does after gastro-enterostomy. Even if this be true, gastro-enterostomy is certainly preferable to gastric resection in regard to operative mortality, and if jejunal ulcer does occur after gastro-enterostomy, it is much more easily and safely dealt with than when it occurs after gastric resection.

Gross Pathology

Most writers believe that the term jejunal ulcer is more correct than "anastomotic" or "gastrojejunal" ulcer as the majority of ulcers begin in the jejunum. The striking feature of jejunal ulcer is its remarkable similarity to duodenal ulcer. There is such parallelism of the lesions in their gross and microscopic appearance, situation, symptomatology and complications that only one conclusion can be drawn; namely, that similar factors are involved in the production of both (Balfour). A jejunal ulcer has the same pathologic characteristics as duodenal ulcers; The lesions vary from small, acute, superficial ulcerations to large, indurated, perforated ulcerations, but the incidence of multiple ulcerations in the

jejunum is much lower than the incidence of multiple duodenal ulcers.

Lahey believes that 75% of the ulcers are at the anastomotic stoma and 25% in the jejunum proper. Wright found 285 anastomotic ulcers and 99 jejunal ulcers. He believed the proximal angle of the anastomosis to be a favorite site. In true jejunal ulcer, the situation is most common in the efferent loop, being quite rare in the afferent loop.

The complications of jejunal ulcer are hemorrhage, perforation and obstruction. Like duodenal ulcers, they are practically immune to the development of carcinoma. Walton reported hemorrhage in 32 of 79 cases of gastrojejunal ulcer (40%). Perforation occurred in 5% of Wright's series of 155 cases, and in 9% of Lahey's series. Gastrojejunocolic fistula occurs in approximately 10% of the cases (Lahey and Verbrugge).

Physiology

As mentioned above, the cause of gastrojejunal ulcers is unknown but gastric acidity must be an important factor (Mathews and Dragstedt). However, Emery and Monroe found no relation between acidity and the incidence of gastrojejunal ulcer. In Balfour's series of gastrojejunal ulcer, 40% had approximately normal acidity, 40% marked reduction, 20% reduced gastric acidity, and 20% no free hydrochloric acid. Wright estimated the acidity of the stomach content in 138 cases of gastrojejunal ulcer as follows:

Hyperchlorhydria	64 cases
High normal acidity	12 "
Medium normal acidity	27 "
Low normal acidity	27 "
Achlorhydria	8 "

In spite of the above reports, the clinical impression persists that gastrojejunal ulcer is more likely to occur in patients with high gastric acidity, or with an increased amount of gastric secretion. Perhaps, too much attention has been given to the acid content of the gastric juice, not enough to the other constituents and to the neutralizing factors in the upper gastro-intestinal

tract (Jordan). Moreover, before any such statistics have much meaning, it should be verified that it was gastric secretion that was aspirated and that such secretion was obtained under stimulation of histamine.

All investigators (Mann and Williamson; Fauley and Ivy) state that the upper intestinal segments are more resistant to the effect of gastric juice than the lower ones. The nearer the anastomosis is made to the pylorus, the better the result. Von Redwitz and Fuss, and Finney believe that pyloric obstruction is a factor in causing gastro-jejunal ulcer and believe that some plastic operation should always be carried out on a stenotic pylorus before gastrojejunostomy is performed. The experimental work of Mathews and Dragstedt shows that stasis tends to increase the concentration of gastric juice. The value of reflux of bile and pancreatic juice in neutralizing gastric juice is well known (Boldyreff, Paterson, etc.), and this is believed to be the chief physiological action of gastrojejunostomy. Operations employing enteroanastomosis should not be employed in the treatment of ulcers, either primary or secondary, since they expose the jejunal mucosa to unneutralized gastric juice.

It is interesting that Wright reports 51 acute and 77 chronic perforating gastrojejunal ulcers. Acute perforation of a gastric or duodenal ulcer after gastroenterostomy is a rare occurrence. This may be because an increase in intragastric pressure is probably one of the factors necessary for acute perforation, and this pressure never becomes as high after gastro-enterostomy, since the stoma acts as a shunt. To explain acute perforations of gastrojejunal ulcer on the basis of increased intraluminary pressure is difficult unless the jejunum perforates at lower pressure thresholds than the stomach or duodenum. Other factors may be present.

Symptoms and Diagnosis

The symptoms of gastrojejunal ulcer are pain or tenderness, usually in the epigastrium, vomiting, diarrhea, hemor-

rhage, loss of weight, food dyscrasias, etc. The diagnosis should be suspected when a patient who has had a gastric or duodenal ulcer begins to have the same or slightly altered distress after a gastro-enterostomy. Lahey states that when a gastro-enterostomy stoma closes, it is usually due to a jejunal ulcer. In cases of hemorrhage after gastro-jejunosomy, a gastrojejunal ulcer should be considered.

The radiological studies are an invaluable aid in verifying the diagnosis. Camp has reported an accuracy of 90% which represents the experience of an unusually capable roentgenologist. He bases his diagnosis upon 4 criteria:

1. The presence of a niche.
2. Persistent deformity at the stoma or the stomach or jejunum in the region of the stoma.
3. The presence of a gastrojejunocolic fistula.
4. Closure of the stoma.

Wright, in a series of 279 gastro-jejunal ulcers radiologically investigated, reported negative findings in 66, doubtful findings in 29, and positive findings in 184 (66%).

A barium enema should always be made in suspected cases of gastrojejunal ulcer to rule out the possibility of gastro-jejunocolic fistula.

Treatment

The treatment of jejunal ulceration, as in the case of gastric or duodenal ulcer, is medical. Surgery should be resorted to only when the ulcer fails to respond to intensive, intelligent medical treatment, when there are recurrent severe hemorrhages, or when some complication as fistula, perforation or closure of the stoma intervenes.

Prophylaxis against secondary ulceration is easier to accomplish than cure. Gastro-enterostomy should be performed in cases of peptic ulcer only for definite indication, as organic pyloric obstruction, perforation, or serious recurrent hemorrhage. Prolonged medical obser-

vation and treatment is essential after operation. The good results after gastroenterostomy certainly warrant its continuation, and when one considers the higher operative mortality for partial gastrectomy even in skilled hands, it is doubtful if it is worth substituting for the average risk of gastrojejunal ulcer after gastroenterostomy. The purpose of gastrectomy is, of course, to reduce gastric acidity. However, as mentioned above, it is unlikely that gastric acidity is the only factor to be considered in the production of ulcers, or that partial gastrectomy impairs the ability of the fundus to secrete acid. Comfort found that only 20% of cases after partial gastrectomy have anacidity. Klein, Ascher and Crohn found that of 197 cases of duodenal ulcer anacidity occurred in only about 50% after partial gastrectomy. The real reason for the lower incidence of gastrojejunal ulcer after partial gastrectomy is obscure.

In the surgical management of gastro-jejunal ulcer after gastroenterostomy, there is one outstanding principle: The disconnection of the anastomosis. Jejunal ulcer can be cured readily in 100% of cases by disconnecting the jejunum from the stomach (Balfour). Balfour divides his cases as follows:

1. Those in which on meticulous exploration of the stomach or duodenum, either no primary lesion is found or the lesion has healed without resulting deformity. In this type, there is obviously no further need of the gastro-jejunosomy. The surgical treatment consists in disconnecting the gastro-jejunal anastomosis with excision of the jejunal ulcer, thus re-establishing the normal continuity of the gastrointestinal tract.

2. Those in which there is a persistent primary lesion as well as a jejunal ulcer. In these cases, an extensive gastric resection is performed, re-establishing the continuity by the Billroth I method. Balfour prefers the Billroth I to the Billroth II method, because while the relief of symptoms is more positive and usually more enduring in Billroth II, and the patient has

already exhibited especial liability to secondary ulceration (Wright's summary).

In certain cases, he performs more conservative procedures as excision of the ulcer and reconstruction of the outlet of the stomach. These are restricted to the cases in which the radical operation is contra-indicated because of the risk; the results of the radical operation are unquestionably better than those in which conservative measures are used.

3. Those in which jejunal ulcer occurs following one or more partial gastrectomies. The treatment consists of excising the jejunal ulcer, disconnecting the jejunum from the stomach, and restoring the gastro-intestinal continuity by reanastomosing the stomach to the first or second portion of the duodenum. The reason for doing this is that when jejunal ulcer recurs after radical surgery, there apparently is such a high susceptibility of the jejunum to ulceration that further anastomosis of the stomach to the jejunum should be avoided.

Balfour reports one series of 89 consecutive cases in which partial gastrectomy was performed for jejunal ulcer without colic fistula. The operative mortality was 3.37% and relief of symptoms occurred in 80%.

It should be emphasized that after the secondary operations, medical treatment should be continued. Failure to do this may mean a bad result in spite of a successful operation.

Summary

1. Most cases of gastrojejunal ulcer occur after gastroenterostomy for duodenal ulcer, the incidence being about 6% (Wright).

2. The time of occurrence of the lesion varies, but about half the cases appear within the first year after operation.

3. Most cases of gastrojejunal ulceration occur in men, and the age incidence lies chiefly between 30 to 60 years.

4. There is a similarity between

jejunal and duodenal ulcers in their gross and microscopic appearance, situation, symptomatology and complications. About 75% of the ulcers are at the anastomotic stoma and 25 % in the jejunum proper.

5. The pathologic physiology involved is reviewed.

6. It is debatable whether it is better to perform a partial gastrectomy for peptic ulcer with its low incidence of secondary jejunal ulceration and higher operative mortality or gastroenterostomy with its higher incidence of gastrojejunal ulcer but lower operative death rate.

7. The criteria for radiological diagnosis are given. As high as 90% accurate diagnosis of jejunal ulcer has been made by radiological methods.

8. Treatment is primarily medical; surgery is resorted to only for complications. The indications and present day methods of surgical treatment are outlined. After surgical treatment, medical regime must still be continued.

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III. CASE REPORT

GASTROJEJUNAL ULCER

..., white male, 45 years of age, admitted to University of Minnesota Hospitals 3-5-35 and discharged 3-11-35 (6 days); readmitted 4-18-35 and discharged 5-30-35 (42 days); readmitted 9-23-35 and discharged 10-2-35 (9 days); readmitted 12-12-35 and discharged 2-5-36 (24 days). Total stay - 81 days.

Onset

1914, 1915 - Epigastric distress began.

1916 - Appendectomy.

Diagnosis

1918 - Gastro-enterostomy for pyloric obstruction due to chronic duodenal ulcer. Noted melena one month later. Had melena 2 or 3 times a year from this time until 1924.

Hemorrhage

1924 - Eight year period of bloody stools.

1932 - Again had melena.

Ulcer?

2- -35 - Severe hemorrhage causing weakness. Epigastric distress coming on shortly after meals, located in the epigastrium and radiating into the back (relieved by soda). No vomiting or hematemesis. No pus or mucus in stool.

No diarrhea except when a child (had possible acute catarrhal jaundice). Occasionally has gaseous feeling around heart. No dyspnea, chills or fever.

Admitted

4-18-35 - Physical examination: negative. Quite high strung, nervous type. Appendectomy and gastro-enterostomy scars. Abdomen - negative. Rectal - slight hypertrophy of prostate. Clinical impression: chronic duodenal ulcer with possible ulcer of gastrojejunal stoma; hypertrophy of prostate.

Laboratory

Blood and urine - negative. Stool - occult blood present. Gastric analysis - free hydrochloric acid up to as high as 70 degrees total free hydrochloric. Urea nitrogen and blood chlorides - within normal limits. Gastro-intestinal study - well-functioning gastro-enterostomy, an old duodenal ulcer, and possible gastrojejunal ulcer.

Operation

4-20-35 - Gastric resection.

Complication

4-27-35 - Eviscerated. Penrose drain inserted. Wound taped. Convalescence uneventful. Gastro-intestinal study - well functioning anastomosis.

Readmitted

9-23-35 - Did not feel well since previous discharge. Worried about himself. Had a ventral hernia which gave trouble on doing heavy work. Few days before readmission had sharp pain in epigastrium. Began to pass dark red blood in stool, which continued up to time of readmission. Physical examination: Sweating and slightly pale. Very nervous about everything. Teeth and head ache. Diastasis in operative site. No rigidity or tenderness. Rectal - some blood on withdrawn finger. Clinical impression: possible recurrent ulcer of the anastomotic stoma.

Laboratory

Blood and urine - essentially negative. Hemoglobin 70%. Gastro-intestinal study (9-23-35) - no evidence of gastrojejunal ulcer.

Neurological examination - diagnosis of psychoneurosis made. Nothing wrong with teeth.

Discharged

10-2-35 - Advised to return in 6 weeks for repair of ventral hernia.

Readmitted

12-12-35 - Complaints: Pain along left side of face and very severe headache.

X-ray

Skull plates - show extreme dilatation of dyploic veins on left side of skull. Possibility of brain tumor considered. Gastro-intestinal study - gastric resection with well-functioning anastomosis.

Admitted to Neurology service

12-12-35 - Definite diagnosis of brain tumor cannot be made. Complains of pain in epigastrium. Passes dark tarry stools.

Transferred to surgical service

Placed on medical regime for bleeding ulcer. Blood transfusion given. Hemoglobin rose from 58 to 77%. Condition satisfactory for abdominal exploration. Gastrojejunal ulcer found. Jejunal resection performed where the loop of jejunum empties into stomach from side end anastomosis. Ventral hernia repaired. Uneventful convalescence. Gastro-intestinal study - shows condition described above.

Discharged - 2-5-36.

Seen from time to time in Out-Patient Department. Still complains of headache.

There still is no definite evidence of brain tumor. Gastro-intestinal study (3-5-36) - shows no evidence of stasis in stomach. Both stoma are open. Complains of headache, pain in left upper jaw, and pain on defecation.

Gastroscopic examination

(3-6-36) - no evidence of ulceration of stomach; gastrojejunostomy well-functioning. Hemoglobin (3-21-36) - 83%. No gaseous distress at this time. Only complaint is loss of pep. Headaches are about the same.

IV. CASE REPORT

GASTROJEJUNAL ULCER

-, white male, 48 years of age, admitted to University of Minnesota Hospitals 10-13-32 and discharged 11-5-32 (23 days).

Operation

9- -22 - Gastro-enterostomy for perforated duodenal ulcer. Previous to this time, had classical symptoms of duodenal ulcer of 5 years' duration. Since gastro-enterostomy, felt well for 2 years but followed strict adherence to diet.

Pain

Since 1924 - Had considerable pain in midepigastrium and lower abdomen. Onset of pain usually at 10 A.M. and 3 P.M., being relieved by soda or food. Followed ulcer diet as well as possible although had eaten more than he should at times in an attempt to maintain his strength to carry on his work. No hematemesis or melena.

Upset

9- -32 - Developed diarrhea. Stools usually soft and watery. Considerable amount of gas which had a definite fecal odor. Undigestible foods, such as tomato skins, passed through the rectum about 8 hours after eating. Weight loss

of 20 lbs. in 6 weeks.

Admitted

10-13-32 - Physical examination: well developed but poorly nourished, white male. Blood pressure 120/70. Abdomen - scar above umbilicus; incisional hernia; slight tenderness in right upper quadrant; no masses. Rectal - negative. Clinical impressions: old duodenal ulcer, gastrojejunal ulcer, possible gastrojejunal colic fistula.

Laboratory

Blood and urine - negative. Gastric analysis - 19 to 53° free hydrochloric acid. X-ray - shows a well-functioning gastro-enterostomy, 20% retention in stomach. Barium enema - shows gastrocolic fistula.

Operation

10-22-32 - Gastrocolic fistula taken down. Jejunostomy performed. Old gastro-enterostomy undone and new gastro-enterostomy performed. Uneventful convalescence.

Discharged

11-5-32 - Advised to return to Out-Patient Department for check-up.

Follow-up

3-23-33 - Stated that he "never felt better in his life" and gained several pounds. No symptoms whatsoever. Advised to wear a belt for his incisional hernia.

V. LAST WEEK

Date: April 2, 1936

Place: Recreation Room,
Nurses' Hall

Time: 12:45 - 1:42

Program: Movie: Zealand, the
Hidden Paradise.
Fever Therapy in Syphilis.

Present: 161

Discussion: F. Lynch
Paul O'Leary
H. Michelson
J. C. McKinley
H. S. Diehl

VI. MOVIE

Title: Finer Points

Released by: Vitaphone

VII. GIRL

Born to Dr. and Mrs. Robert Radl, a daughter, Mary Kathleen, weight 7 lbs. 5 oz., on April 3rd, at 5:03 A.M.

Heartiest congratulations and best wishes. The stork is so busy these days that we are going to leave a larger space each week to record the momentous events.

VIII. GOSSIP

The Minnesota State Medical Association meets in Rochester on May 4th, 5th and 6th. Among the speakers will be Leon Asher (Switzerland), Willis Manges (Philadelphia), Olin West (Chicago), Elliott P. Joslin (Boston), F. Sauerbruch (Germany), F. A. Collier (Ann Arbor), Donald Guthrie (Sayre, Pa.) and Fred Smith (Iowa City). The mornings will be devoted to demonstration clinics in all branches of Medicine by the Mayo Clinic staff. Papers by state members will also be a prominent feature.....
..Drs. Eklund and Reimann's work on "Amyloid Disease" is made the basis for an editorial in the Journal of the American Medical Association April 4th, 1936.....According to the Minnesota Daily, all prospective medical students must interview Drs. Diehl, McQuarrie, Henrici, Bell and Creevy. The technique of admitting students to the Medical School is always a live topic at the

Annual Dean's Meeting. In one of our better eastern schools, all sons of alumni are admitted, no matter what their scholastic ability. The painful plucking later on is the responsibility of the departments. In another school, all prospective students are automatically excluded if they have studied a certain course partially related to Medicine....
....As a final exercise at the Annual Meeting of the Minnesota State Medical Association, the question and answer court will convene. Questions submitted by the membership are answered by other members of the association. As a general rule, some twenty men are selected to answer the questions. Some of the questions submitted are most difficult to answer as they often involve some strong personal feelings. Most of the questions are excellent and the replies equally so.....One of the features of the annual meetings of the Minnesota State Funeral Director's Association is an embalmer's clinic on a body which has been subjected to a routine postmortem examination. Admission to the clinic is limited to members only. The postmortem examination is conducted in front of the same group which observes the technique of embalming. Following the clinic, there is an open discussion of reasons for the examination and complaints about the manner of doing these examinations in some institutions. Most of the difficulty arises with pathologists who will not cooperate with a minimum approved procedure and physicians who conduct their own examinations. The majority of our embalmers are cooperative and understand very well our attitude in the matter. The clinics are well arranged and the crowds vary from 500 to 1500 members. Clinics have also been held in adjoining states during the past year, including the Wisconsin meeting at Eau Claire. In June, the Illinois group will conduct their clinic at the State Fair Grounds at Springfield.....Dr. Gatewood, our guest today, is here through the courtesy of the St. Paul Surgical Society where he will deliver the annual address this evening. We greatly appreciate this opportunity to have him as our guest, and thank both Dr. Gatewood and the St. Paul Surgical Society,.....The average life of a milk bottle is 20 days. The loss results through breakage and

failure to return bottles. There is increasing interest in a better milk supply. We now have pasteurized certified milk and special regulations on the manner of capping the bottles. There is some question as to the bacteriological efficiency of the cap on the ordinary pasteurized milk bottle.....The Radio Committee of the University is very much interested in the possibility of broadcasting regular class sessions. It is felt that in the prospective audience there are from 25 to 50,000 persons who would be interested in such programs. So many enthusiastic letters have been received from the convocation broadcast that the committee believes that an extension of this activity would be helpful. Some day, we may be confronted with a man with a microphone who will hook it on our lapel as we start to lecture. It might also have a good effect on teaching if we knew the taxpayers were listening (?)......One of the students in a public health course asked to give the common name in the South for fat pork startled everyone by calling it "salt peter".....Today is Comptroller William T. Middlebrook's birthday. This mighty little man of university finance is busy receiving congratulations from his friends.The weekly radio program of the Minnesota State Medical Association entered its ninth year of broadcasting this week. The program was started the first week in April, 1928. It is the oldest sustaining feature from Station WCCO and is heard by listeners in Minnesota, Wisconsin, Michigan, Canada, North and South Dakota, Montana, Iowa, Nebraska and Illinois. The interest in a special disease topic is greatest in those suffering with that disease. The audience is thought to be in the neighborhood of a million each week, and naturally has a considerable "special interest" in each subject.....The staff programs this quarter started in "on high" last week. With the subjects already planned for the balance of the year, we have every reason to believe that the record will hold up.....Adios..