



CANCER  
SEMINAR



# CANCER SEMINAR

VOLUME ONE

AUGUST, 1953

NUMBER FOUR

JUAN A. DEL REGATO, M. D., *Editor*

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The CANCER SEMINAR is published annually by the Democrat Publishing Company and edited by the Penrose Cancer Hospital of Colorado Springs, Colorado, J. A. del Regato, M. D., editor. Subscription rate: \$2.00 annually in the U. S., Canada and Mexico. Address all correspondence to the editorial office.

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**T**HE EFFORTS of recent years in the field of cinefluorography have failed to yield a great number of early asymptomatic tumors of the stomach. We must depend on the perspicacity of the clinician and on the early investigation of minor symptoms for the diagnosis of gastric lesions: the gastric analysis and gastroscopic examination are helpful in many instances; the radiosopic and radiographic examination yield a wealth of information which often leads to a remarkably accurate conclusion. Yet, in some cases of gastric lesions all that can be expected from the different examinations is a conclusion as to whether or not a surgical intervention is indicated. Surgical exposure and gross examination may suffice; frozen sections may be helpful but are not always of value. To protect the patient's best interest, unnecessarily large resections should be avoided, but this is not always possible. The after effects of subtotal and total gastrectomies are variously evaluated. Radical surgeons, aware that the alternative is often death, are usually unimpressed by the consequences of resections. Internists, who most often bear the burden of the patient's readjustment,

tend to be conservative and argue that, after all, the results in the cases in which the operation is well indicated do not justify its indiscriminate use in cases which may obey to conservative management.

As in many other instances in the treatment of cancer, a combination of early diagnosis and of radical treatment is the one which can be expected to be successful in gastric cancer. The practical application of this approach may result in radical resections of benign lesions that were thought to be malignant or potentially malignant. In truth, whereas a certain number of patients undergo a difficult period of adjustment following a gastric resection, a number of others appear to have no difficulties whatever; and in the majority of cases time brings about comfort and readjustment, although patients may fail to regain weight.

This Seminar was based on the study of fourteen gastric lesions, graciously contributed by numerous workers. It was immediately noticed that the radiologic interpretation and the formulation of a diagnostic impression on the basis of a single roentgenogram was particularly unfair to the radiologist in the field of gastric lesions, for



the radiosopic evaluation of the case is of primary importance. The usefulness of this exercise has now been widely accepted and many of our radiological colleagues consented to submit their impressions in order to facilitate the exercise. In the end we have all become beneficiaries of these discussions. But the radiologic impressions submitted should not be, in justice, taken as an index of roentgenologic usefulness or accuracy.

Opinions and elaborations on histopathologic diagnoses, submitted by mail by many distinguished authorities, have enriched these CANCER SEMINARS; we feel grateful for their attention and time. Notable differences of opinion are recorded which may show, once again, that the histopathologic diagnosis of tumors is not always clear-cut, that an authoritative opinion is often subjective rather than objective.

Attendance has been increasing at the CANCER SEMINAR. This SEMINAR on Gastric Tumors held at the Broadmoor Hotel on September 6, 1952, was attended by 323 pathologists, radiologists, surgeons and internists who enjoyed

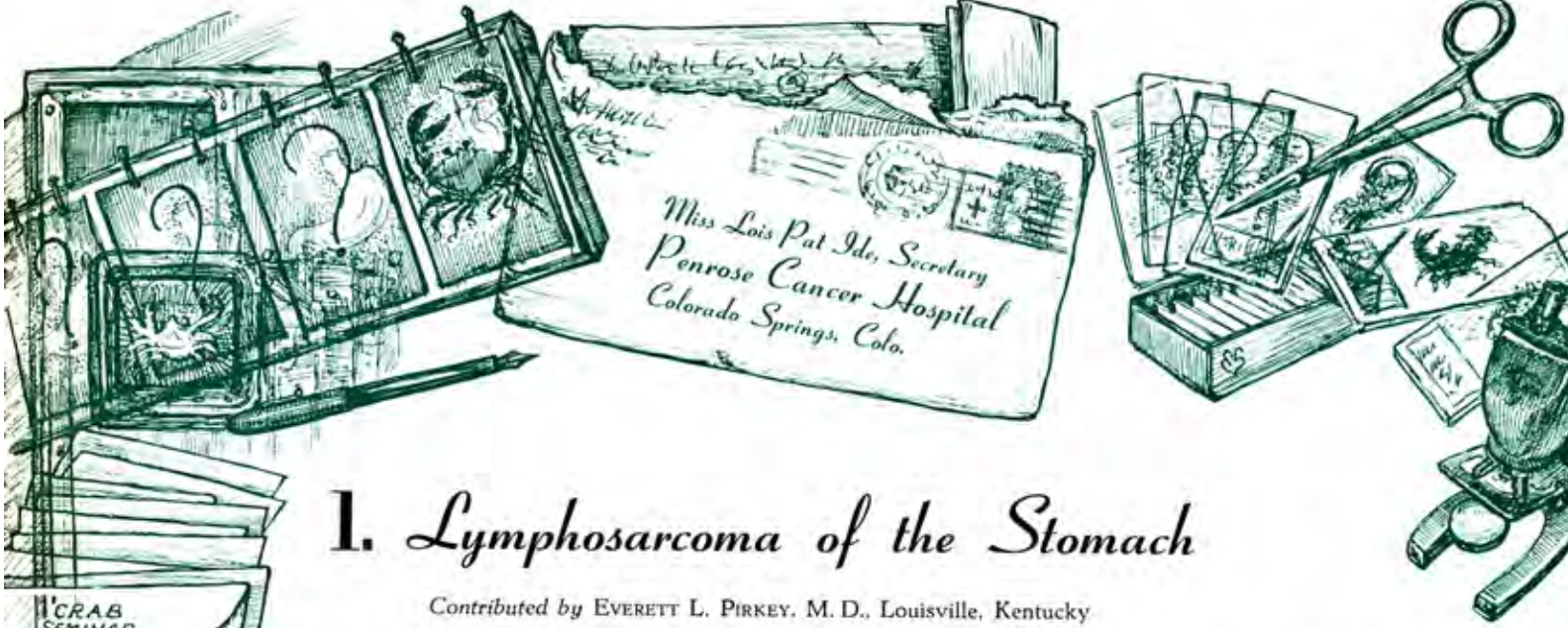
the didactic discussions of Leo G. Rigler, M. D., Professor of Radiology, University of Minnesota and the succinct conclusions of Lauren V. Ackerman, M. D., Professor of Surgical Pathology, Washington University. Six of the cases were also presented in Spanish at the Instituto de Cardiologia, in Mexico City, during the Fourth Inter-American Congress of Radiology on November 4, 1952; the cases were discussed there by Dr. Philip J. Hodes and Dr. L. V. Ackerman. Unfortunately, a recording of the Spanish proceedings was not obtained and for this reason our publication is in part deprived of the additional discussion by other international authorities. Dr. Rigler presented and discussed these cases in Bogota, Colombia, late in November, 1952. Dr. Hodes later discussed six of the cases at Caracas, Venezuela, during a series of lectures in Spanish in April 1953. The idea of a collective radiologic and histologic discussion of problem cases has become established.

J. A. DEL REGATO, M. D.  
Colorado Springs. August, 1953.

Colorado Springs







# I. Lymphosarcoma of the Stomach

Contributed by EVERETT L. PIRKEY, M. D., Louisville, Kentucky

**T**HE PATIENT was a 28-year-old man who, in June, 1948, complained of burning epigastric pains of two months' duration; there were also occasional postprandial precordial pains, eructations, vomiting and loss of 25 pounds in weight. There was a history of bright blood passed per rectum, one year previously, and of right sided cryptorchidism. On physical examination there was epigastric tenderness to palpation to the left of the midline. Roentgenologic examination revealed a filling defect on the diaphragmatic surface of the fundus of the stomach, bordering the esophageal hiatus.

Roentgenologic Impressions Submitted by Mail	
Lymphosarcoma (Hodgkin's)	53
Carcinoma (primary, metastatic, testicular)	35
Malignant tumor	42
Benign lesion	16

Histopathologic Diagnoses Submitted by Mail	
Lymphosarcoma (Hodgkin's, etc.)	92
Anaplastic carcinoma	29
Chronic inflammation	16
Metastatic carcinoma (testis)	10
Plasmocytoma	2
Can't make up my mind!	1
Others	12

**Dr. Rigler:** Irregular defects in the fundus of the stomach on the diaphragmatic surface, both posterior and anterior, are present. The whole fundus is deformed, apparently rigid and irregular. There appears to be infiltration extending down the posterior wall toward the lesser curvature side, with considerable rigidity of this area as well. I am assuming that these findings are constant. There is some question of a similar process on the anterior wall in the middle third of the stomach, but this is more doubtful.

In all such situations in the fundus it is wise to inflate the stomach with gas and make films in the upright position. In this way, the masses themselves can be made out as positive shadows and a good deal more information as to the nature of the process can thus be obtained. Furthermore, it may be possible in this way to determine definitely whether the stomach wall is rigid.

The defects in the fundus are quite unusual in their character. Despite the age of the patient, I believe that carcinoma of the stomach is the most likely diagnosis. The lesions, however, are distinctly irregular and one would consider the bare possibility of an intramural tumor arising in the fundus, such as a sarcoma with extension into the lumen; most intramural sarcomas are very sharply defined and rounded, even though they are malignant.

The history of cryptorchidism should always lead to the consideration of the possibility of a testicular tumor. These metastasize high in the abdomen but the metastases to the lymph nodes are usually periaortic rather than anterior as is the case in the masses here observed. Furthermore, they rarely infiltrate the stomach in the fashion which is shown here.

**Dr. Rigler's impression:** Unusual TUMOR OF THE FUNDUS OF THE STOMACH, most likely carcinoma.

**Dr. Regato:** A diagnostic impression of primary malignant tumor of the cardia was suggested by Dr. B. R. Kirklin of Rochester, Minnesota, and by Dr. H. Hare of Los Angeles. Dr. Reeves, of Durham, suggested lymphosarcoma.

**Paul C. Swenson, M.D., Philadelphia, Pennsylvania, (by mail):** It should be considered carcinoma until proven otherwise, with the second best bet lymphosarcoma. The radiologist should urge exploration and then be surprised if it turns out to be something else.

**Operative findings:** In June, 1948, a transthoracic subtotal gastrectomy and splenectomy were carried out. A nodular tumor 3.5 cm in diameter was found in the region of the cardia; the rugae were rather pronounced and the mucosa was 1 cm thick. A pouch-like diverticulum was found in the posterior wall, corresponding to a 2 cm mass on the outside of the stomach; on microscopic examination this was found to be ectopic spleen.

**Dr. Ackerman:** The rugae were thrown up into giant folds and cross sections demonstrated that there was increased submucosal tissue. Several sections showed considerable gastritis with the formation of cystic glands and prominent increase of submucosal connective tissue, as well as subserosal fibrosis. However, in some sections there is a rather abrupt change between the gastritis and diffuse replacement of the mucosa by cellular tumor. These tumor cells are growing in sheets and individual cells have prominent nuclei and prominent nucleoli. There is no evidence of acinar formation but remnants of glands can still be seen. This tumor is confined to the mucosa and submucosa. The amount of connective tissue present and its lack of cellularity suggests that this process has been present for some time. This type of lymphosarcoma is rather uncommon and grossly mimics chronic gastritis. I cannot tell from these sections whether the tumor has been completely excised and I would expect that the lymph nodes would not be involved.

**Dr. Ackerman's diagnosis:** LYMPHOSARCOMA.

**Dr. Regato:** A diagnosis of lymphosarcoma was submitted by Dr. C. Auger of Quebec, by Dr. Dorothy Russell of London, and by Dr. Frank Foote of New York. Dr. Hellwig of Halstead and Dr. G. Bennett of Chicago suggested anaplastic carcinoma. Dr. Willis of Leeds concluded that this could be either a pseudo-neoplastic granuloma or a very atypical lymphosarcoma.

**Additional microscopic details:** Several enlarged lymph nodes, 1 to 2 cm in diameter, were found along the greater curvature; they were not found invaded.

**Arthur Purdy Stout, M. D., New York (by mail):** Since the lesion is not clear cut, one is handicapped by not





Fig. 1—Roentgenogram showing filling defect of the fundus of the stomach.

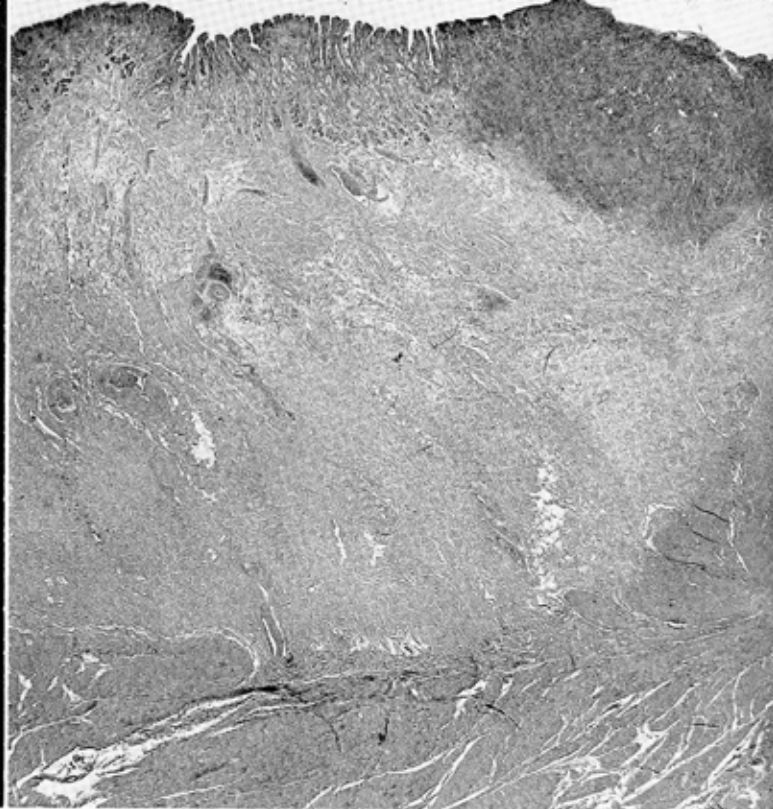


Fig. 2—Low power photomicrograph showing lymphosarcoma of the stomach. Note well demarcated area of obliteration of mucosal margins.

knowing about the rest of the physical examination. If this is assumed to be negative, one must decide if this is a malignant or a benign granulomatous lesion. Plasmocytoma, reticulum and lymphocytic cell sarcoma and carcinoma can be excluded because of the variety of the cells. I would consider Hodgkin's disease a possibility, but could not make the diagnosis because there are no Reed cells. Mycosis fungoides is also a bare possibility but very unlikely unless there are lesions elsewhere. This exhausts the malignant possibilities and leaves us only with the diagnosis of non-specific granuloma which I must make with the reservation that further clinical developments may prove it to be wrong.

*Malcolm B. Dockerty, M.D.,* Rochester, Minnesota (by mail): My feeling is that this represents a lymphosarcoma, while my associate, Dr. Dahlin, tends to throw the lesion into an inflammatory category. I was particularly impressed by the sharp delineation of the lesion and the close packing of the cells. I am certain that mistakes are made on both sides of this diagnostic issue.

*C. L. Pierre Masson, M.D.,* Montreal, Canada (by mail): This is probably a reticulum-cell sarcoma but I have seen similar tumors with cellular inclusions that could be stained with mucicarmine thus permitting their classification as anaplastic carcinomas.

*Peter Russo, M.D.,* Oklahoma City, Oklahoma: I wondered why, with such an extensive lesion, there was no narrowing of the esophagus.

*Dr. Rigler:* Lesions of the fundus are notoriously symptomless, for a long period of time until they get around the esophageal orifice. There did seem to be some rigidity of the gastric wall in the region of the esophageal orifice but nothing bulky in that area; I am not surprised that there was no dysphagia nor would I have been surprised if there were varying symptoms, as was the case here.

*Christian A. Hellwig, M.D.,* Wichita, Kansas: I would like to ask Dr. Ackerman what practical tests, or not too difficult staining measures, has the pathologist to differentiate between anaplastic carcinoma and reticulum cell sarcoma? I personally have the greatest difficulties especially in neck tumors to diagnose them and even the silver stain does not help me always.

*Dr. Ackerman:* It is very difficult to differentiate under certain circumstances between a reticulum-cell sarcoma and a carcinoma. Let us say that you have a lymph node completely replaced by tumor and that under the low power it forms solid sheets of undifferentiated cells; if it is a carcinoma from mucin secreting cells, stains for mucin would be of no value because of the lack of differentiation. I find that reticulum stains for reticulum cell sarcoma are of no value. The only thing that I have found to be of value in some of those cases is to take various sections and if I find nests of tumor cells growing between connective tissue bundles, then I can suggest that this might be a carcinoma. I discussed this problem with Dr. Stout and Dr. Willis and they find themselves similarly frustrated. In this particular case, I think that we have more evidence for lymphosarcoma.

*Maurice Horwitz, M.D.,* Beverly Hills, California: I would like to know whether Dr. Ackerman in making the diagnosis of Hodgkin's disease necessarily must have the presence of eosinophils. Our pathologist will not make the diagnosis unless he has eosinophils.

*Dr. Ackerman:* The eosinophil is a very ubiquitous cell, it occurs under many circumstances. The presence of eosinophils comforts me slightly but does not make the diagnosis of Hodgkin's disease. If I have eosinophils, fibrosis, etc., without Reed-Sternberg cells, I would not make the diagnosis of Hodgkin's disease.

*Eugene Bricker, M.D.,* St. Louis, Missouri: It is of interest to me that eminent pathologists have pointed towards the possibility of this being an inflammatory lesion. I wonder how much help the surgeon might expect in the operating room in making a decision in how to approach this lesion. The surgeon may be thrown back into the old fashion position of having to make a decision on his own on the gross impressions alone.

*Dr. Ackerman:* In a situation like this the pathologist should be peering over Dr. Bricker's shoulder as I so often do. We have on several occasions faced the problem of whether or not the lesion at hand was a lymphoma or a carcinoma. Obviously it would not be too difficult a problem if the patient with lymphosarcoma had large nodes on which the diagnosis could be made on frozen section, but



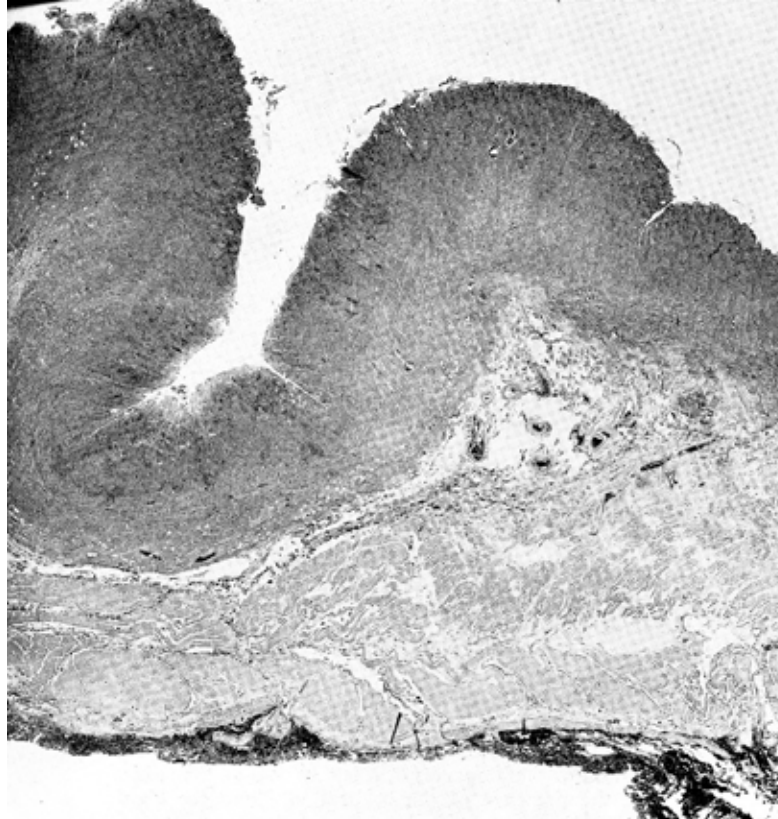


Fig. 3—Low power photomicrograph of lymphosarcoma of the stomach showing giant rugae.

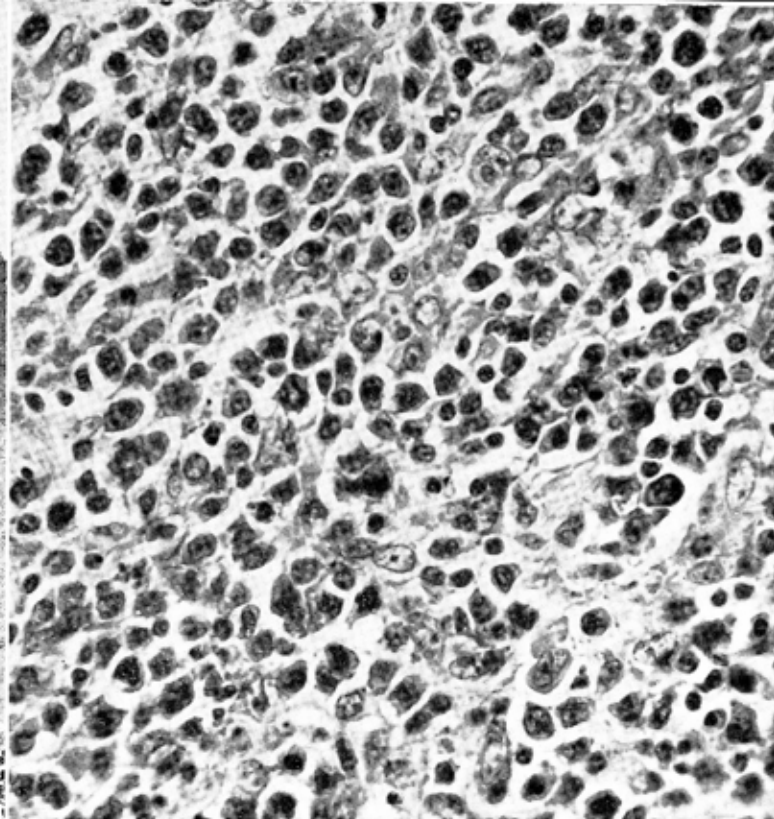


Fig. 4 — Photomicrograph of lymphosarcoma showing well defined nuclei and rather prominent nucleoli; there are scattered inflammatory cells.

we don't think that we can diagnose everything on frozen sections. We feel that a frozen section permits us to say that a lesion is malignant or that it is benign but sometimes it leaves us unable to say. And we don't hesitate, as Dr. Bricker knows, to say that we don't know. I think that this would have been an extremely difficult case. We would attempt to make the diagnosis, but if we couldn't make it, Dr. Bricker would be indeed in that old fashion situation.

*John J. Andujar, M.D., Fort Worth, Texas:* I would like to ask Dr. Ackerman whether the four-year history of the patient remaining well will cause him to alter his opinion and join Rupert Willis and Arthur P. Stout, or will he cling to the diagnosis of lymphosarcoma?

*Dr. Ackerman:* It is not unusual for lymphosarcoma of the stomach to have a long clinical history, with hemorrhages or signs that suggest ulcer; long survivals after either surgery or radiotherapy, are not unusual. Long survivals without treatment have also been observed.

*Dr. Rigler:* Dr. Ackerman has, of course, indicated the fallibility of the pathologists very effectively. Not infrequently we have a patient who is treated with radiation therapy who stays well for ten years, then the pathologist looks at the slide again and he says, "No, that was a mistake, it wasn't a malignant lesion." We have had the feeling that localized primary lymphosarcoma of the stomach is also amenable to cure by surgery.

*Eugene Bricker, M.D., St. Louis, Missouri:* In large lesions of this sort and in this location, total gastrectomy should be done. I think I would be doing a total gastrectomy with removal of half the pancreas and spleen and all the lymph nodes around the pylorus of the stomach. In my opinion, it is most important to have the exact diagnosis, if possible, before operation, since there is a possibility that the case is actually inoperable. In such instances, I think that much better palliation might be obtained by irradiation. It is not unusual for the surgeon to embark upon a total gastrectomy, for an advanced lesion of this sort, and find involvement of lymph nodes around the celiac axis or the superior mesenteric artery which makes the lesion actually inoperable; but these facts may have been impossible to identify before the operation was started.

*H. Mason Morfit, M.D., Denver, Colorado:* If we are sure of dealing with a lymphosarcoma, I feel very strongly

that a total gastrectomy should not be done. I think it is well to emphasize that there is abundant evidence now available for us to be able to state unequivocally that lymphosarcoma can be a disease of unicentric origin. A primary lymphosarcoma of the stomach is one such example; origin in the tonsils is another. Perhaps this patient had an excellent chance of cure if treated by irradiation therapy as well as if the lesion were completely excised.

*Frank B. McGlone, M.D., Denver, Colorado:* A patient with total gastrectomy is a pretty difficult patient to handle postoperatively and the mortality rate is exceptionally high. It is hard to talk the surgeons into closing up without doing something more than a biopsy, but, assuming that you could, would it not be best to take a biopsy and study the sections carefully before definite therapy is instituted?

*Dr. Ackerman:* I would agree that there is a difference between having all of your stomach out and having most of it out, but I am not necessarily willing to make a definite diagnosis after I have taken a section from the transected stomach.

*Mark Wheelock, M.D., Chicago, Illinois:* I once looked over about 3500 frozen sections done in Dr. Warren's laboratories and hospitals in a 10-year period prior to the war. I was surprised at the rather high degree of accuracy in the diagnosis of frozen section as compared with paraffin sections of various lymphomatous entities. We have approximately 80 or 85 cases of unicentric lymphosarcoma on record; we have several of the stomach, a large number of them of the thyroid and in the breast, and one of the testis. It is surprising how frequent they occur in the orbit. Recently we had some in the vulva, and of course everyone is familiar with the lymphosarcomas in the rectum.

*Editor's Note:* This patient was last seen in good health in February 1953. He had no complaints and was reported to be able to eat solid foods without difficulty. He has gained from 134 to 154 pounds and roentgenologic examination did not reveal any abnormality.

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 Snoddy, W. T.: Primary Lymphosarcoma of the Stomach. *Gastroenterology* 20:537-553, 1952.





## 2. Reticulum Cell Sarcoma of the Stomach

Contributed by PHILIP J. HODES, M.D., Philadelphia, Pennsylvania

**T**HE PATIENT was a 68-year-old woman, who, in May, 1951, complained of severe, though intermittent, pain in the right upper abdominal quadrant, of six months' duration; there were also anorexia and slight loss of weight. On physical examination, tenderness was elicited by palpation of the gall bladder region. Roentgenologic examination revealed two negative shadows of the greater curvature of the stomach and of the fundic area.

Roentgenologic Impressions Submitted by Mail	Histopathologic Diagnoses Submitted by Mail
Lymphosarcoma (Hodgkin's) .....	Reticulum-cell sarcoma .. 110
Carcinoma of the stomach .. 46	Anaplastic carcinoma .. 18
Extragastric cancer .. 12	Malignant carcinoid .. 6
Benign lesion .. 33	Leukemia .. 4
Hodes' disease .. 1	Others .. 10
Others .. 5	

*Dr. Rigler:* Multiple calcified gallstones in the right upper quadrant are shown. There is a defect on the greater curvature side of the stomach near the antrum which is moderately well defined. A somewhat striated shadow of barium suggesting some ulceration within it can be made out within the area of the defect. There is another area of narrowing in the middle third of the stomach, but the overlapping jejunum makes it difficult to determine whether this is of significance. I believe it is a peristaltic wave. The fundus of the stomach is markedly deformed. It is difficult to determine, however, from this one film whether this is a true lesion or simply due to compression from the distended splenic flexure of the colon which is present. I am inclined to believe the latter is the case. The antrum of the stomach appears somewhat rigid. This is difficult to determine from the examination of one film alone. Repeated examination would be necessary in order to make certain that the walls

Fig. 1—Roentgenogram showing well defined defect on the greater curvature of stomach.

are rigid and infiltrated. I believe, however, that in the region of the defect on the greater curvature side that the walls contiguous to it are distinctly infiltrated. The small bowel appears to be normal, a typical peristaltic wave being seen in the duodenum.

By far the most likely diagnosis is a carcinoma with a bulky tumor, possibly originating from a polyp in the antrum of the stomach and infiltration beyond it. The tumor may well be ulcerative.

A striking feature of the case is the sharp demarcation of the tumor and its somewhat rounded character, which is somewhat unusual for carcinoma. This might lead to the consideration of the diagnosis of a leiomyoma of the stomach wall, but the presence of the infiltration along the greater curvature, and the unusual character of the ulceration suggest that this is a malignant lesion and one which is mucosal in origin.

I am inclined to doubt that there is any real lesion in the fundus, but this could not be excluded without further studies by filling the fundus more effectively, and by observation in the upright position with gas in the fundus itself.

*Dr. Rigler's impression:* CARCINOMA OF THE GREATER CURVATURE with ulceration and infiltration of the gastric wall.

*Dr. Regato:* A diagnosis of lymphosarcoma of the stomach was suggested by Dr. C. Priviteri of Buffalo and Dr. H. Hauser, of Cleveland.

*Paul C. Swenson, M.D., Philadelphia, Pennsylvania (by mail):* Some say that fluoroscopy is 85 per cent of the diagnosis of gastro-intestinal lesions. I think they are wrong. I believe it is 97 per cent! I love games, and I am as willing to play them as my friend Rigler, although not half as

Fig. 2—Low-power photomicrograph of area of ulceration showing tumor penetration between bundles of muscularis mucosae.





smart. Dr. Rigler, no doubt, knows more about gastrointestinal work than anybody west of the Alleghenys. This is a Philadelphia case. So God help us! It should be a lymphosarcoma or an intramural carcinoma.

**Operative findings:** In October, 1951, a subtotal gastrectomy was carried out. The distal half of the stomach was found infiltrated by hard growth appearing grossly as a carcinoma. The tumor occupied an area 14 by 7 cm. The mucosa was 1 cm thick in some places.

**Dr. Ackerman:** This tumor shows a large area of ulceration with denudation of the mucosa. The base of the ulcer is made of tumor cells which diffusely replace the submucosa and extend into the inner muscular layer. Surrounding this tumor there is a pronounced desmoplastic reaction. Individual tumor cells all appear similar in pattern, all have large prominent nuclei and prominent nucleoli. I do not believe that epithelial mucin stain or reticulin stain would be helpful in identifying the tumor. I think that microscopically it is a classical example of a reticulum cell type.

The evolution of lymphosarcoma of the stomach may be long. In our series of 34 cases the radiographic diagnosis was not made in a single instance. Grossly we have suspected it when the lesions have been superficial and multiple; the presence of an ulcer with infiltration around its margin more closely simulates a carcinoma. It is possible that some of Steiner's five survivals, or what he called the blue-cell type, might have represented lymphosarcoma.

In this case there was evidence of ulcer formation and frequently patients with lymphosarcoma of the stomach have symptoms suggesting a peptic ulcer. These symptoms may be of long duration. Not too rarely, perforation may occur and on a few occasions we have seen rather massive bleeding.

**Dr. Ackerman's diagnosis:** LYMPHOSARCOMA (reticulum-cell type).

**Dr. Regato:** A diagnosis of lymphosarcoma was also submitted by Dr. J. B. McNaught of Denver and by Dr. Leo Lowbeer of Tulsa. Dr. M. Polak of Buenos Aires requested silver stains of frozen sections in order to be certain of the diagnosis of reticulum-cell sarcoma.

**Arthur P. Stout, M.D.,** New York, New York: (by mail): I assume that there are multiple lesions in this stomach which involve the mucous membrane and destroy it and which also appear in multiple solitary nodular form in the muscularis. The cells composing the lesion are relatively uniform, appear chiefly as units without evidence of epithelial differentiation, and are probably reticuloblasts. I believe therefore this is a reticulum-cell lymphosarcoma of the stomach which may be either primary or secondary. I shall not be surprised if there are evidences of involvement of other parts of the body. On a haematoxylin-eosin stain alone the diagnosis of lymphosarcoma of the stomach is never absolute because carcinoma may imitate it.

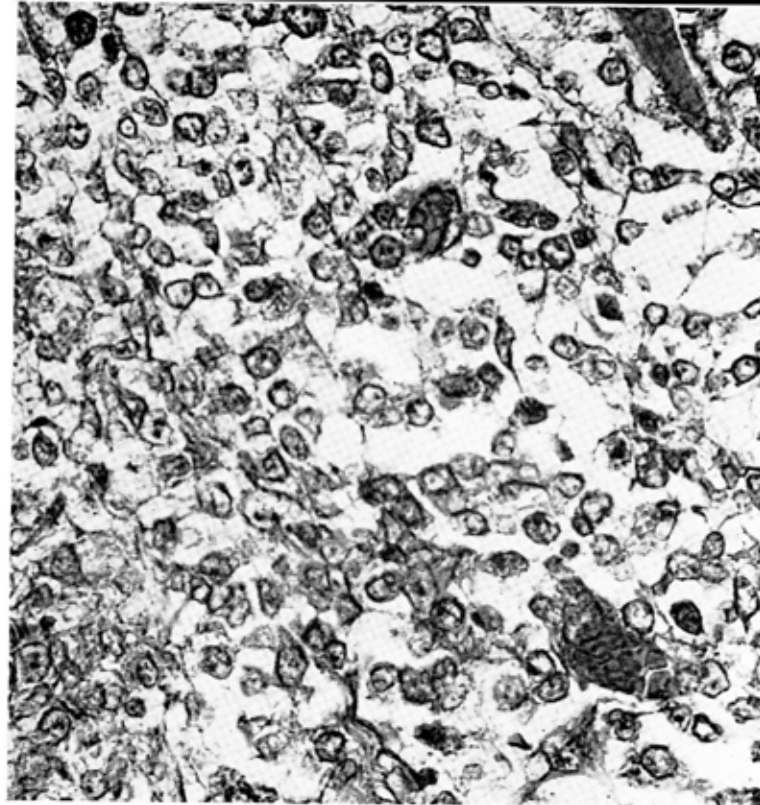
**Malcolm B. Dockerty, M.D.,** Rochester, Minnesota (by mail): This is a definite lymphosarcoma of the large round or reticulum-cell type. Some might favor the diagnosis of small-cell or blue-cell carcinoma. Having seen at least two such cases cured by irradiation I give lymphosarcoma as my first choice in doubtful cases.

**Additional microscopic details:** Forty-eight enlarged lymph nodes were found along the greater curvature and of these twenty-one were metastatic. Thirty-four nodes were studied along the lesser curvature: none were invaded.

**Dr. Rigler:** I note that surgeons and pathologists in the presence of the gross appearance of this tumor would tend to consider it as carcinoma.

**Dr. Ackerman:** This patient had multiple node involvement; should he have any form of postoperative irradiation and if so, would it do any good?

**Eugene Bricker, M.D.,** St. Louis, Missouri: My own feeling would be not to irradiate unless the surgeon felt that involved nodes were left behind; if not I would watch the patient for any evidence of recurrence before irradiation. Is



**Fig. 3—Photomicrograph of lymphosarcoma of the stomach with well defined nuclei and prominent nucleoli.**

there justification in treating a lymphosarcoma of the cardia of the stomach differently than a carcinoma of the cardia of the stomach?

**H. Mason Morfit, M.D.,** Denver Colorado: In preference to subjecting the patient to a total gastrectomy, I would rely on radiation therapy in a case of lymphosarcoma.

**John J. Modlin, M.D.,** Columbia, Missouri: If lymph nodes were involved I would recommend postoperative roentgentherapy.

**Leo Lowbeer, M.D.,** Tulsa, Oklahoma: Would Dr. Ackerman elaborate a little more on his previous statement about the value of reticulum stains? What he said about its lack of dependability may be true for the average paraffin section; is it also true for a good section not more than 4 microns? If in such sections reticulum fibers are found between cells, would one not be inclined towards the diagnosis of a sarcoma? If one would find no reticulum fibers between cells but tumor cell groups surrounded by reticulum, would one not consider the diagnosis of carcinoma?

**Dr. Ackerman:** Well, I've stained a great number of slides for reticulum and I have become rather disheartened about the results. In undifferentiated tumors when you need it much, it is of no value. In inoperable tumors perhaps a better differential diagnosis is obtained through the response to irradiation. I must confess that, under certain instances, I cannot make that differential diagnosis.

**Emeric I. Dobos, M.D.,** Denver, Colorado: I note the tendency to disregard the diagnosis of carcinoma in the presence of a lesion which shows multicentric manifestations. Just as the predominant belief is that of multicentric origin for lymphosarcomas, the theory of the unicentric origin of carcinoma has been favored since the days of Cohnheim. It was Willis who first pointed out the "filled origin" of tumors and their spread not only by proliferation but by progressive conversion of new areas. A recent paper (Collins and Gall) went over this subject in detail. The authors found several cases of unquestioned multicentric carcinomas of the stomach; in many more cases the heterogenesis of the tumors suggested the possibility of coalescent areas of different origin.

**Mark Wheelock, M.D.,** Chicago, Illinois: I must admit that I made a diagnosis of undifferentiated carcinoma. I was quite sure that probably we were going to have positive proof presented of lymph node involvement by carcinoma.



We have a little difficulty in having a diagnosis of lymphosarcoma accepted by the surgeon and sometimes by other pathologists, when the mucosa alone appears involved. Would Dr. Ackerman elaborate on that point?

*Dr. Ackerman:* I agree that cancer in many organs has a multicentric origin. I see no reason why we should be surprised if we find lymphosarcoma still restricted to the mucosa. There is no reason why lymphosarcoma could not remain confined to the mucosa even for a considerable period of time and just spread to involve rather wide areas either unicentrically or multicentrically.

*Lester O. Crago, M.D., Denver, Colorado:* I would like to make a point on total gastric resections from the standpoint of the internist. He sees the patients after the surgeon does the total gastric resections and he finds that the patients do not do well. For that reason, when we cannot differentiate between a benign and a malignant gastric lesion in the cardia of the stomach and when a total gastric resection must be done, we are inclined to wait rather than subject the patient to a total gastric resection and its bad results.

*Alexis E. Lubchenco, M.D., Denver, Colorado:* Do we have any evidence of the relative curative merits of surgery and roentgentherapy? I would like to ask Dr. Ackerman if a segment of his stomach was removed and showed lymphosarcoma in it, would he be willing to wait for a recurrence or would he want postoperative radiotherapy?

*Dr. Ackerman:* If I had a lymphosarcoma of the stomach I would be completely irrational. But if I had a patient with lymphosarcoma of the stomach who was operated and had no lymph nodes involved, I would do nothing further. From the standpoint of cures of lymphosarcoma, Dr. Snoddy reviewed the literature on that subject: there were about 50 cases that had survived more than five years; about half of them were treated by surgery and half of them were treated by irradiation. You have to take into con-

sideration the biologic nature of lymphosarcoma of the stomach which might develop for some years with no treatment at all. So there are no results in the literature which will stand severe scrutiny.

*Dr. Regato:* There is evidence that cases of lymphosarcoma of the stomach that have been inadequately excised or incompletely excised and have received postoperative radiotherapy have been controlled. That is what gives us a certain amount of strength in recommending radiotherapy exclusively if the diagnosis of lymphosarcoma was made before the stomach was removed, which is seldom the case.

*Dr. Leo Lowbeer, M.D., Tulsa, Oklahoma:* We have recently observed a patient who, five years ago, had lymph nodes removed from the inguinal region and a diagnosis of lymphosarcoma was made. Five years later this patient underwent an operation for hernia. At this time the anesthesiologist observed a certain obstacle when he tried to put the tube into the larynx, due to a tumor in the epiglottis; biopsy of the epiglottic lesion and also of the lymph nodes, which had remained in the inguinal region, unmistakably showed lymphosarcoma.

*Dr. Ackerman:* When a lymphosarcoma is found in an organ it seems to have a longer evolution than when you find it in the lymph nodes, although exceptions to that also occur. There is a biologic normal life history which the surgeon and the radiotherapist must take into consideration when they are giving themselves credit for something.

*Subsequent history:* In April, 1952, the patient was apparently well. In June, 1952, the patient expired with extensive pulmonary metastases. Autopsy was not done.

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## 3. Chronic Hypertrophic Gastritis with Adenomatous Heterotopia

Contributed by STANLEY K. KURLAND, M. D., and GERALD S. MARESH, M. D.,

Denver, Colorado

**T**HE PATIENT was a 60-year-old man who in June, 1952, gave a history of hypertension and of congestive heart failure of three years' duration; he complained of postprandial and nocturnal epigastric pain of two years' duration. For the last three months there had been nausea and occasional hematemesis. He was pale and presented ankle edema; hemoglobin was 11.5 grams per cent and the electrocardiogram showed left ventricular strain. Roentgenologic examination revealed distortion of mucosal patterns and a filling defect on the pyloric end of the stomach through which the peristaltic waves did not pass; there was pyloric obstruction and a gastric residue after five hours.

Roentgenologic Impressions Submitted by Mail	Histopathologic Diagnoses Submitted by Mail
Carcinoma of the stomach 82	Carcinoma (early superficial, in situ) 55
Gastritis (with ulcer) 46	Ectopic (pancreatic, duodenal) tissue 46
Benign obstructive lesion 21	Polyp 24
Extrinsic tumor 6	Hamartoma 14
Others 10	Others 11

*Dr. Rigler:* There is enlargement of the folds of mucous membrane in the proximal third of the stomach and distinc-

tive radiation of these folds toward a point near the lesser curvature, slightly above the region of the incisura angularis. This suggests a large ulcer at this point, but the single film submitted does not demonstrate the ulcer itself. The characteristic radiation, however, is strongly in favor of a benign gastric ulcer, but the visualization of the ulcer itself is insufficient to make a definite diagnosis of benignity or malignancy.

The distal third of the stomach shows a marked defect with obstruction. Such contractions can occur associated with ulcers high in the stomach, or with a duodenal ulcer. From this one film alone it would be impossible to say that this is really due to a tumor in the antrum rather than a simple contraction either with total gastropasm or a hypertrophic stenosis. There is, however, shown just proximal to the pylorus an irregular area suggesting a large ulcer at this point with infiltration about it. On the basis of this film alone I can only speculate that there might be a malignant ulcer in the prepyloric area, as well as a benign ulcer higher in the stomach.

The failure of the duodenum to be displaced suggests that this is more of an illusory mass in the antrum of the





Fig. 1—Roentgenogram showing distortion of mucosal pattern and filling defect of the pyloric end of the stomach.

stomach rather than a true one of the size apparently depicted by the defect. This would tend to bear out the theory that this is simply spasm or thickened muscle secondary to ulcer elsewhere with probably swollen mucosa as well, rather than a true tumor.

Another possibility presents itself, that is, a sarcoma of the antrum of the stomach which might well explain the very sharp definition of the upper margin of the defect in the antrum and the overhanging edges. But, it is difficult to believe that a sarcoma of this size would not cause some displacement of the contiguous duodenum and it would not explain the apparent ulceration.

There is little in the history to offer any clues to anything other than the type of lesion described. One other possibility must be considered and that is a lymphoblastoma with a lesion in the antrum of the stomach and the enlarged folds above with radiation due to submucosal lymphomatous infiltration.

Dr. Rigler's impressions: (1) BENIGN GASTRIC ULCER in the middle third of the stomach with marked gastro-spasm and swollen mucosa in the antrum secondary to it. (2) CARCINOMA OF THE ANTRUM with ulceration. (3) LYMPHOBLASTOMA.

Dr. Regato: Dr. Russell Morgan of Baltimore suggested a pre-pyloric ulceration and commented that he does not attempt to differentiate between benign and malignant in this region. Dr. J. A. Campbell, of Indianapolis submitted an impression of antral gastritis.

Philip J. Hodes, M.D., Philadelphia, Pennsylvania (by mail): The constriction of the gastric antrum may be due to disordered gastric motor function secondary to lesions in the proximal portion of the stomach or duodenum as well as antral lesions. Disordered gastric motor function of reflex origin usually is more sharply defined than is the constriction in this case. This area of constriction is somewhat irregular which suggests that the cause for the disordered gastric motor function lies within the deformed segment. One has the impression that there may be an ulcer on the lesser curvature of the antrum.

Having nothing but localized antral distortion to go on, and being ever suspicious of cancer particularly in gastric

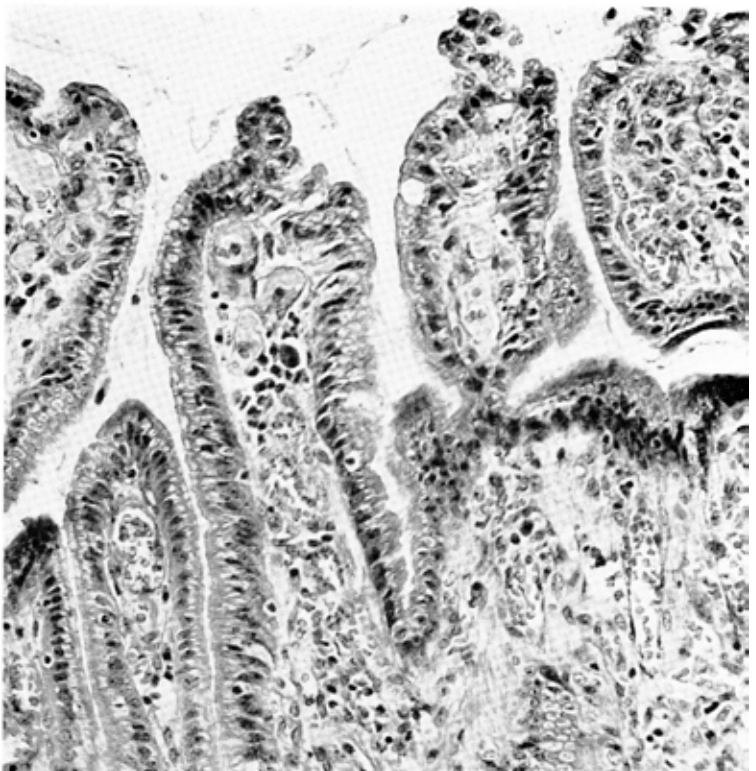


Fig. 2—Low-power photomicrograph of chronic gastritis; note cystic glands.

lesions in the antrum, one would have to consider this patient as having an ulcer in the antrum which was probably malignant. I have been fooled before in cases just like this where I considered that the patient had a malignant ulcer but the ulceration proved to be benign. Whenever this happens I say to myself, "Thank God he did not have cancer." And I try to do better the next time.

Hymer Friedell, M.D., Cleveland, Ohio (by mail): I would like to offer my general opinion, which applies particularly to this case, that the radiologist is more often confronted with the problem of deciding whether the patient should be explored rather than the specific histologic character of the lesion.

Fig. 3—Photomicrograph of serrated margin of villi in chronic gastritis. There is exceedingly prominent vascularization emphasizing the possibility of hemorrhage.





*Operative findings:* In June 1952, a partial gastric resection was done. The mucosa was markedly thickened but the wall was elastic in consistency and there were several enlarged lymph nodes along the greater curvature.

*Dr. Ackerman:* Microscopically there is prominent proliferation of the mucosal epithelium. In some instances there appears to be duct-like spaces lined by columnar epithelium. The surface towards the lumen of the stomach shows a somewhat serrated appearance. There are small crypts present which lead to rather deep indentation of the mucosa. These crypts contain masses of polymorphonuclear leukocytes. Near the surface there is prominence of vascularization which might be the source of bleeding. Individual cells shown no changes which I could call carcinoma.

The diagnosis of gastritis depends primarily on the epithelial alterations. These epithelial alterations consist of de-differentiation of normal epithelium which resembles the intestinal type. Also there will be cystic dilatation of the glands, and the specific cells of the stomach disappear. There are other additional changes, such as increased submucosal fibrous tissue, infiltration of cells in the submucosa such as plasma cells, lymphocytes and mononuclears, and a great predominance of lymphoid tissue. The prominence of lymphoid tissue should not be confused with a lymphosarcoma.

The hypertrophic type of gastritis is relatively infrequent and under 100 cases have been reported in which there was pathologic verification. If you include the verified and non-verified in Bartlett's review, there have been 163 instances. There may be a very distressing symptomatology associated with the lesion, hemorrhage and even obstruction can occur. Subtotal gastric resection can be justified.

*Dr. Ackerman's diagnosis:* CHRONIC GASTRITIS of the hypertrophic type.

*Dr. Regato:* Dr. M. B. Dockerty of Rochester, Minnesota, and Dr. Frank W. Foote, of New York, also submitted a diagnosis of hypertrophic gastritis. Dr. R. Willis of Leeds, concluded to benign cystic adenosis. Dr. J. Engelbreth-Holm of Copenhagen made a diagnosis of dystopic gastric mucosa in gastric wall (hamartoma?).

*Arthur P. Stout, M.D., New York, N. Y. (by mail):* The lesions shown in the section submitted are first heterotopias of mucus glands and Brunner's glands in the submucosa forming separate nodules and cysts, and second an adenomatous proliferation of the mucosa forming a sort of sessile adenomatosis but no polyps. There is no evidence of malignancy and the muscularis is unaffected. I suppose there must be other lesions elsewhere, for it is very hard for me to understand how benign lesions such as these could cause complete interruption of the peristaltic waves. I have seen an adenomatosis of the gastric mucosa similar to this in the vicinity of carcinomas of the stomach.

*Pierre Masson, M.D., Montreal, Canada (by mail):* This is not a tumor but a complex malformation, consisting of a penetration of glandular tubules (pyloric or Brunnerian in type) into the submucosa; this anomaly is accompanied by hyperplasia of the muscularis mucosa and local telangiectasias, the whole being covered by hypertrophic mucosa.

*William B. Dublin, M.D., Denver, Colorado:* Can we hear some defense from those who made a diagnosis of carcinoma?

*James B. McNaught, M.D., Denver, Colorado:* I am betting that the man has a malignant tumor and I am sticking by my guns.

*Theodore T. Bronk, M.D., Buffalo, New York:* I would like to make a comment about the glands found in the submucosa which I think were rather important here. They were not neoplastic; they had a hyperplastic appearance and in addition I was also impressed with a vascular hyperplasia. I thought that perhaps it would fit into the category of hamartoma where you have the normal structures present with hyperplastic elements but not necessarily neoplastic.

*Carl N. Ekman, M.D., Camp Carson, Colorado:* I was wondering if it was against the rules of this game to use the gastroscope. I haven't heard it even mentioned in the discussion. It seems to me this would be a particularly good case to have used it.

*Frank B. McGlone, M.D., Denver, Colorado:* I think that gastroscopy would have been of great benefit if the roentgenologic findings had been verified gastroscopically. We could have been able to tell whether that antrum was thickened and infiltrated or was capable of having peristalsis down to a normal looking pylorus. I think if gastroscopy had been done, we might have saved this patient an operation as this patient was obviously a poor surgical risk. I think that gastroscopically we may have seen flexible velvety appearing folds without any evidence of mucosal infiltration or necrosis of the mucosa and that would have been very important clinical information. With a diffuse lesion of this sort, gastroscopy can be of great help.

*Dr. Ackerman:* Dr. Benedict and several others have been working with an operating gastroscope which permits removing a little wisp of tissue from the wall of the stomach. Dr. Benedict sent me some of these sections and there were several cases which showed unequivocal carcinoma or lymphosarcoma. In some of the cases, it would advance the diagnosis, and then better treatment plans could be made. If the diagnosis was chronic gastritis, that would be sound information which with gastroscopic visualization would lend considerable weight to that diagnosis although we would not, of course, of necessity rule out the presence of a malignant tumor. Dr. Benedict says that he has not had any trouble and others make similar statements. Possibly there are dangers, but they would be small and would be outweighed by the information obtained which is very useful.

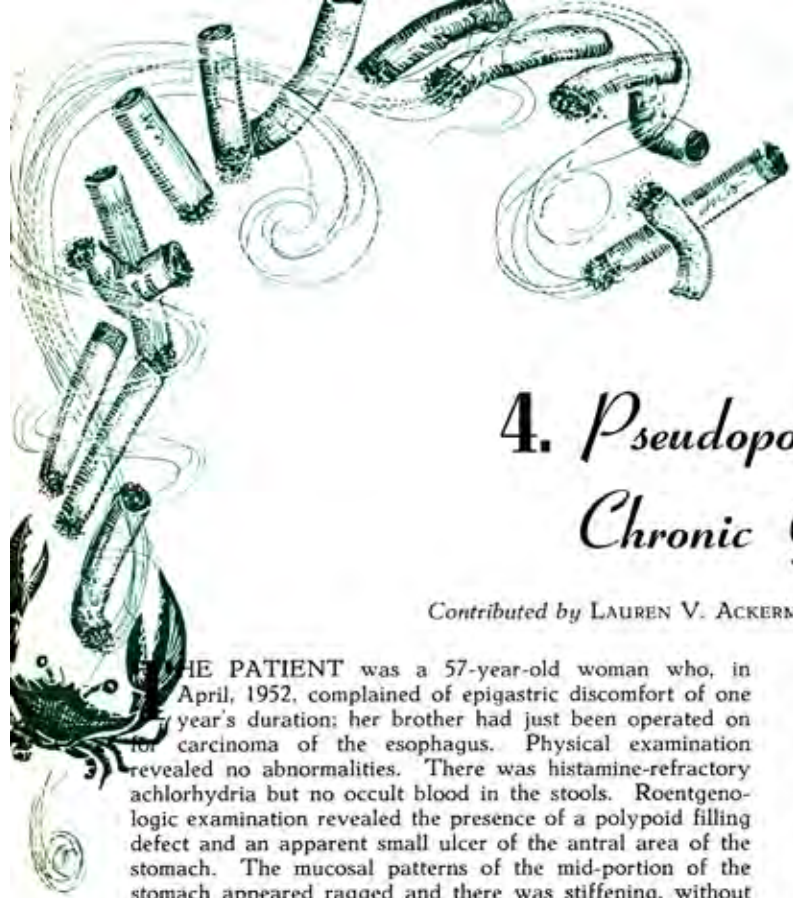
*Subsequent history:* In January 1953 the patient suffered from pain in the chest; he presented a ventral hernia but had no gastrointestinal complaints.

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## 4. Pseudopolyposis with Chronic Gastritis

Contributed by LAUREN V. ACKERMAN, M.D., Saint Louis, Missouri

THE PATIENT was a 57-year-old woman who, in April, 1952, complained of epigastric discomfort of one year's duration; her brother had just been operated on for carcinoma of the esophagus. Physical examination revealed no abnormalities. There was histamine-refractory achlorhydria but no occult blood in the stools. Roentgenologic examination revealed the presence of a polypoid filling defect and an apparent small ulcer of the antral area of the stomach. The mucosal patterns of the mid-portion of the stomach appeared ragged and there was stiffening, without shortening of the lesser curvature; there was a 20 per cent gastric residue after three hours.

### Roentgenologic Impressions Submitted by Mail

Carcinoma of the stomach	73
Lymphosarcoma	21
Other malignant tumors	18
Gastritis (with polyps, with ulcer)	62
Others	12

### Histopathologic Diagnoses Submitted by Mail

Gastritis (atrophic, chronic)	115
Superficial carcinoma	23
Nothing	1
Where are the polyps?	1
Others	15

*Dr. Rigler:* There appears to be a filling defect on the greater curvature near the pyloric third of the stomach and extending into the middle third. This, however, is not clearly defined and there is a serious question as to whether this is really a filling defect or simply the result of the position of the patient since a good deal of gas can be made out in this very area. The greater curvature, however, appears ragged and irregular and the margin of the mucosa around the filling defect is rather sharply defined. Along the margins the mucosa is greatly enlarged, presenting almost the appearance of polypoid tumors.

It is difficult to analyze the nature of this process from one film made in this position. Films in the upright position and in the oblique view would need to be made in order to elucidate the exact changes in the gastric wall as well as within the lumen.

Based upon this one film alone, however, one would conclude that there is a large tumor in the middle of the stomach with some masses extending beyond it toward the lesser curvative side. The appearance is not typical of carcinoma and I would suggest a lymphoblastoma, or possibly a sarcoma because of the character of the filling defect. It is necessary to assume that this is really a filling defect rather than the effect of position with gas accumulation which it could possibly be.

A small niche well over toward the antrum of the stomach is present. This is so far removed from the remaining tumor as to again suggest the possibility of some diffuse infiltrating process, such as a lymphoblastoma, rather than a carcinoma.

*Dr. Rigler's impression:* Questionable defect in stomach, possibly LYMPHOBLASTOMA, SARCOMA or CARCINOMA.

*Dr. Regato:* Dr. Robert P. Ball of Baton Rouge submitted his impression of peptic ulcer with severe gastritis. Dr. Cash King of Memphis also suggested hypertrophic gastritis with ulcer. Dr. Paul C. Swenson of Philadelphia commented that no one in his right mind would try to guess what is wrong, but that, if anything, the patient has antral gastritis.

*Operative findings:* In June, 1952, a subtotal gastrectomy was done. Several small, raised, uniform polypoid formations, not more than 1.5 cm in diameter were found along the lesser curvature.

*Dr. Ackerman:* Grossly there was patchy piling up of the mucosa and small uniform polyps were seen. As the gross pathology demonstrated, these polypi were rather small, uniform in appearance. In true polyposis this would be unusual. Microscopically on the surfaces of these lesions there was evidence of inflammation and no true polyps were formed. This is the type of lesion which may bleed vigorously (Welch) and for that reason subtotal gastrectomy is recommended. I am unable to say whether this lesion is pre-malignant although some observers have found that such lesions can undergo transition to cancer.

*Dr. Ackerman's diagnosis:* PSEUDOPOLYPOSIS WITH CHRONIC GASTRITIS.

*Dr. Regato:* Dr. Granville A. Bennett of Chicago and Dr. Rupert A. Willis of Leeds submitted a diagnosis of chronic atrophic gastritis.

*Arthur P. Stout, M.D.,* New York, New York (by mail): The section submitted seems to me to come from the proximal half of the stomach, possibly near the antral area. The mucosa is intact but unusually thin for secreting mucosa and the interstitial tissues are filled with lymphocytes. The rest of the coats show no unusual features which I can recognize. I see no tumor or ulcer. Conceivably the patient might have pernicious anemia since there is such a marked atrophic gastritis.

*Charles B. Mitchell, M.D.,* Sioux Falls, South Dakota: I would like to ask Dr. Ackerman if he examined the slides under oil and if he did notice any small round eosinophilic bodies?

*Dr. Ackerman:* I didn't look at it under oil. I am greatly worried about histoplasmosis because I come from the center of that area where Dr. Pinkerton did a lot of this work though I have not seen much histoplasmosis myself.

*Leo Lowbeer, M.D.,* Tulsa, Oklahoma: Would you call this a follicular gastritis?

*Dr. Ackerman:* I think the microscopic diagnosis of gastritis hinges more on the epithelial alterations with de-differentiation of the specific cells and with the formation of





Fig. 1—Roentgenogram showing filling defect of the greater curvature at the pyloric third of the stomach.

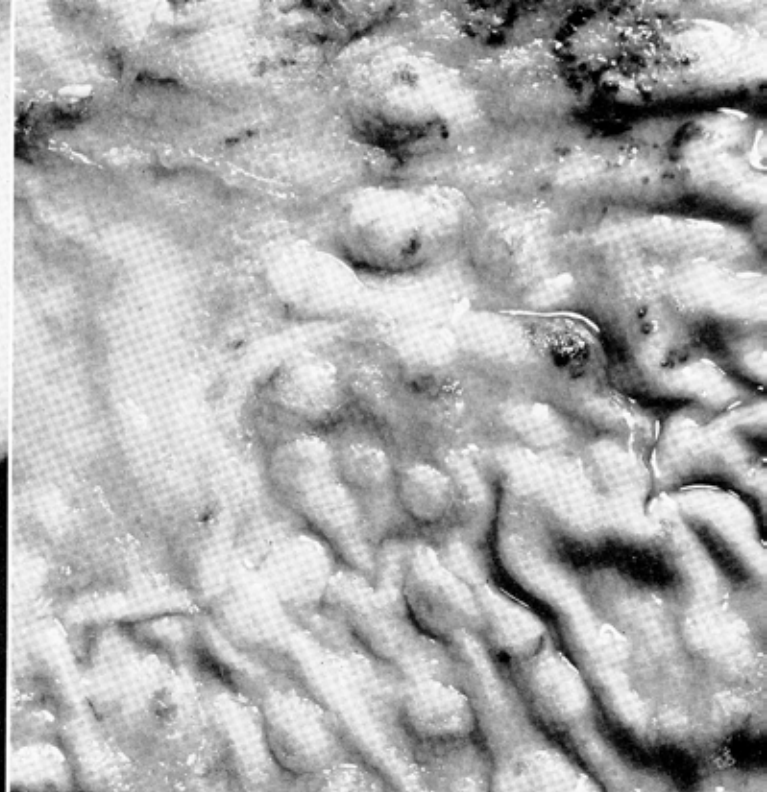


Fig. 2—Photograph of the surgical specimen showing uniformity of small mucosal ulcerations and punctate area of hemorrhage.

cystic changes. Those changes may or may not be associated with increased submucosal connective tissue or increase of lymphoid tissue; I have difficulty making any subdivision of gastritis.

*Charles F. Ingersoll, M.D., Denver, Colorado:* There is a question in my mind as to whether or not many reported cured cases of cancer of the stomach are not in reality cases of gastritis. Six radiologists in Denver and Dr. William B. Dublin have been interested in this particular subject. I think that we have to bring every effort we possibly can to make this differentiation.

*Dr. Ackerman:* It must be remembered that in this exercise the pathologist has a single slide, no gross, no lymph nodes, so that naturally there are bound to be errors in the interpretation and differences of opinion. I think that 90% of the cases can be diagnosed with a fair degree of accuracy. Then that small remaining group of cases are the ones in which there are differences of opinion. I put those cases in a separate file and try to find out what happens to them and the follow-up will often give the answer. The pathologist must be honest for he has a great responsibility; if he begins to put his diagnostic abilities to the test he must be courageous in calling something benign that somebody else would like to have him call cancer.

*Dr. Rigler:* Some years ago a group of cases was presented in which a fairly high percentage of 5-year-cures of carcinoma of the stomach were reported. We suspected that this rather high percentage of cures included a number of benign ulcers which the pathologist in that hospital felt honestly were malignant. But such reports do not influence greatly the total view of the problem, because the vast majority of cases that we see today are unequivocal, and advanced. And therefore, there isn't any argument about affecting favorably and significantly the percentage of results: the difference isn't very great.

*Dr. Regato:* Even morphology has definite limitations in the diagnosis of cancer. These Seminars are intended to contribute towards the dissemination of such a concept. The worst attitude is that of never challenging your pathologist with facts that may carry as much weight as pure mor-

phology, for an unchallenged pathologist becomes dogmatic and unaware of his own errors and limitations.

*Franz Leidler, M.D., Jefferson Barracks, Missouri:* Given a case in which the gastroscopic examination and roentgenologic examination give the impression of a polypoid gastritis, what would be the best way to proceed?

*Dr. Ackerman:* If you had a patient with the type of gastritis in which you have numerous hemorrhages, perhaps that would be an indication for a gastric resection. If you had a patient who had a gastritis with few symptoms and no polyps, perhaps it would be best not to resect the stomach. In this case which we are discussing, the radiologist reported that there were multiple polyps and the surgeon found multiple polyps: there is enough indication for a subtotal gastric resection.

*E. Sanders, M.D., (Capt. M. C.) Camp Carson, Colorado:* In hypertrophic gastritis, gastroscopy is often of value; we have seen a few cases in which gastroscopy has saved the patient an unnecessary gastric resection and a poor subsequent course.

*Roath E. Meatheringham, M.D., Colorado Springs, Colorado:* We speak of gastritis as if were an entity which we understood and the etiology and pathogenesis of which we knew. From the standpoint of the clinician I think it is important to possess an understanding of the underlying etiology.

*Dr. Rigler:* There is some confusion as to what the radiologist calls gastritis and what the gastroscopist calls gastritis. The radiologist, generally speaking, is dealing in terms of either absence of folds of mucous membrane or enlarged folds, whereas the gastroscopist is thinking about what is only thick and shaggy and superficially ulcerated, and I think the term *hypertrophic gastritis*, for instance, is a bad one in that respect because we are talking about two different things. Actually what the radiologist deems gastritis often isn't gastritis at all. It is due to some submucosal process which causes the folds to heap up. The gastroscopist has a great advantage in that regard in that he has really seen the superficial surface in greater detail. But I don't think we have any idea as to the etiology or the background at all.



Dr. Robert Hebbel did some interesting studies at our institution largely with the question of whether or not gastritis is related to carcinoma of the stomach. Hebbel felt that the histologic changes of gastritis had the same topographic distribution in the cancerous as in the non-cancerous stomach.

*Morie Horwitz, M.D., Beverly Hills, California:* I would like to ask Dr. Ackerman his opinion of the cytological studies of gastric contents.

*Dr. Ackerman:* There has been a great deal of effort to use this technique as a method of identifying cancer in the stomach, and there was a very high percentage of false negatives. Attempts have been made to dissolve the mucus so that the cancer cells would be more readily exfoliated; the results have not improved when paraffin sections are made of the entire material obtained. I have been impressed by the recent results obtained by examining the debris accumulated on the rough surface of a balloon placed within the stomach (Panico). I don't believe that I would subject patients to this technique as a routine procedure. I think that this method should be restricted to those cases such as the one we are discussing in which the radiographic diagnosis is in some doubt; if you had positive information it would be very helpful in directing treatment.

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Fig. 3—Low-power photomicrograph of a pseudopolyp; submucosal fibrous lymphatic infiltration.



## 5. Polyp of the Stomach with Chronic Gastritis

Contributed by JAMES W. McMULLEN, M.D., ERVING F. GEEVER, M.D. and ROATH E. MEATHERINGHAM, M.D., Colorado Springs, Colorado

**T**HE PATIENT was a 68-year-old woman who, on a routine physical examination done in May 1952, was found to have some epigastric tenderness. A roentgenologic examination was reported as showing a prepyloric ulcer; she was put on medical treatment and was asked to repeat the roentgenologic examination after one month. In June, 1952, the gastric analysis showed no free hydrochloric acid and a trace of blood; the roentgenologic examination revealed heavy rugal folds and rounded filling defects mostly along the greater curvature; the stomach wall was pliable and emptying time was satisfactory.

Roentgenologic Impressions Submitted by Mail	Histopathologic Diagnoses Submitted by Mail
Hypertrophic gastritis ---- 79	Gastritis (hypertrophic, polypoid).....108
Gastric polyposis ..... 38	Polyposis (adenomatous) .. 23
Carcinoma ..... 15	Precancerous, carcinoma in situ ..... 18
Lymphosarcoma ..... 11	Submucous lipomatosis .. 7
Can't tell ..... 1	Others ..... 15
Others ..... 16	

*Dr. Rigler:* The stomach is only partly filled. Within it there are multiple, rounded filling defects interspersed with rather large, broad folds of mucous membrane. These filling defects are largely on the greater curvature and are





Fig. 1 — Roentgenogram showing multiple rounded defects within heavy rugal folds along the greater curvature.

sharply defined. It is evident that the gastric walls are flexible and peristalsis is undisturbed. The whole appearance would be quite consistent with multiple benign polypi, that is, adenomas of the mucosa associated with somewhat thickened folds of mucous membrane.

Such a diagnosis would be consistent with the demonstration of achlorhydria and the trace of blood occasionally found. It would also be quite consistent with the pliability of the gastric wall reported on fluoroscopic examination. It should be noted that there is a large defect right at the antrum of the stomach apparently protruding toward the base of the duodenum. This may represent another polyp.

A large mass of barium is seen to the right of the duodenal cap which suggests an anti-mesenteric border diverticulum, a rather unusual phenomenon. This would need to be investigated further with films in the oblique views in order to make certain as to its nature.

One other finding is observed. That is an irregular, abrupt termination of the jejunum about 10 cm from the duodeno-jejunal juncture. One film alone is insufficient to make the diagnosis on this, as aberrations in the passage of

Fig. 3—Low-power photomicrograph of adenomatous polyp.

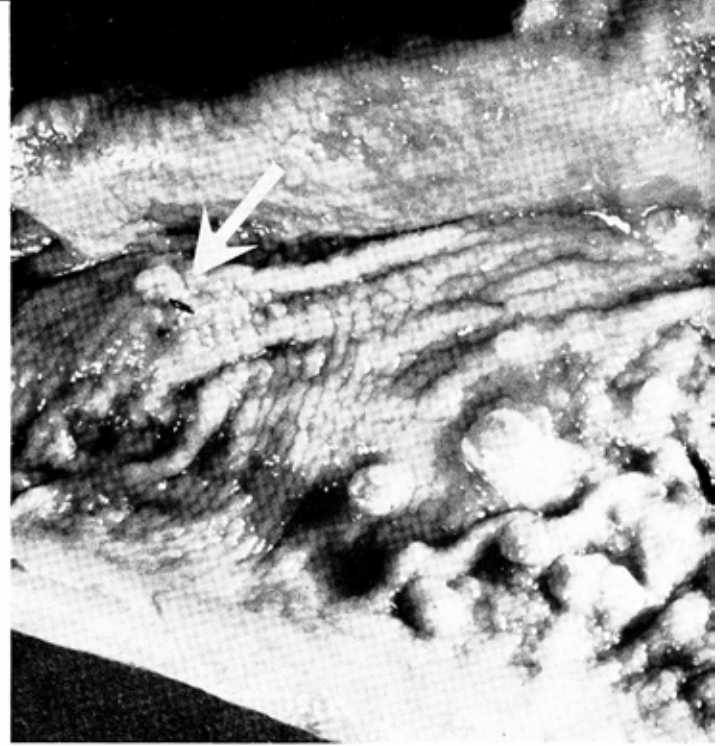
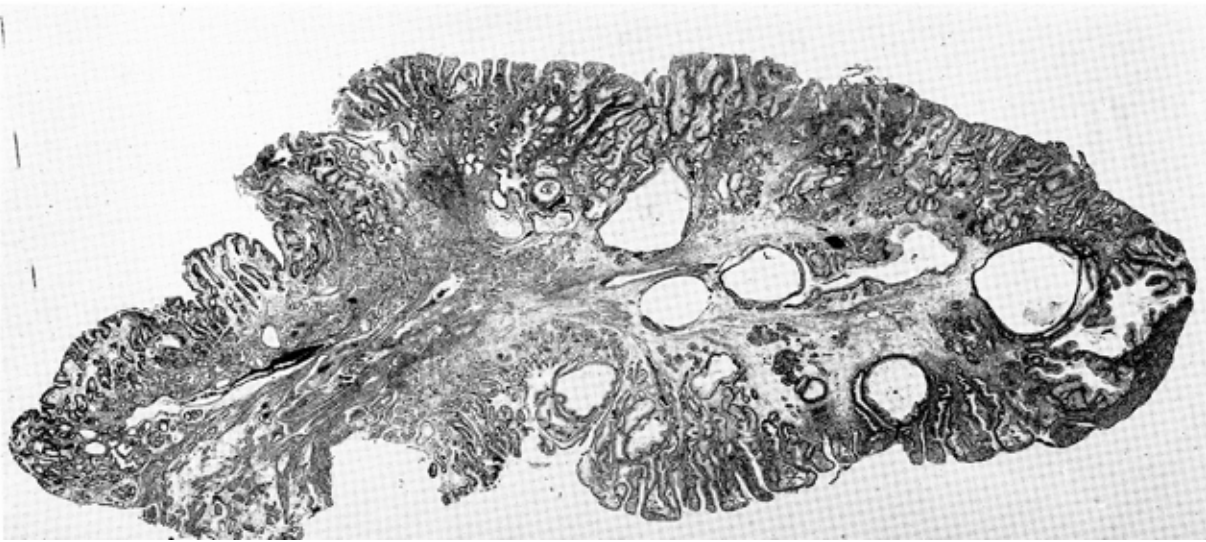


Fig. 2—Surgical specimen showing amputated polyp (arrow) and numerous other polypoid structures.

the barium meal frequently occur. Nevertheless, the complete absence of the mucosal pattern in this area and the irregular stenosing appearance of this would suggest strongly carcinoma of the jejunum with ulceration. Further study of the small bowel would have to be made to determine this diagnosis more certainly. I do not believe this would have any relationship to the lesions in the stomach.

Dr. Rigler's impression: BENIGN POLYPI (probably adenoma) and DIVERTICULUM OF THE DUODENUM

Dr. Regato: Dr. Robert R. Newell of San Francisco suggested that this stomach may only have coarse rugal patterns and no cancer. Dr. Cirilo Montes de Oca of Mérida and Dr. Gonzalo Esguerra-Gómez of Bogotá submitted a diagnosis of polypoid gastritis.

Philip J. Hodes, M. D., Philadelphia, Pennsylvania (by mail): Since there is no distorted motor activity it is reasonable to assume that there is no focus of inflammation or of neoplasm. The majority of the lesions appear in close relationship with the rugal folds; actually they are part of the fold. This suggests dilated blood vessels, polyps or ordinary rugal distortion of the type seen in hypertrophic gastritis. The fact that the patient had no free hydrochloric acid supports the view that these are broad-based polyps.



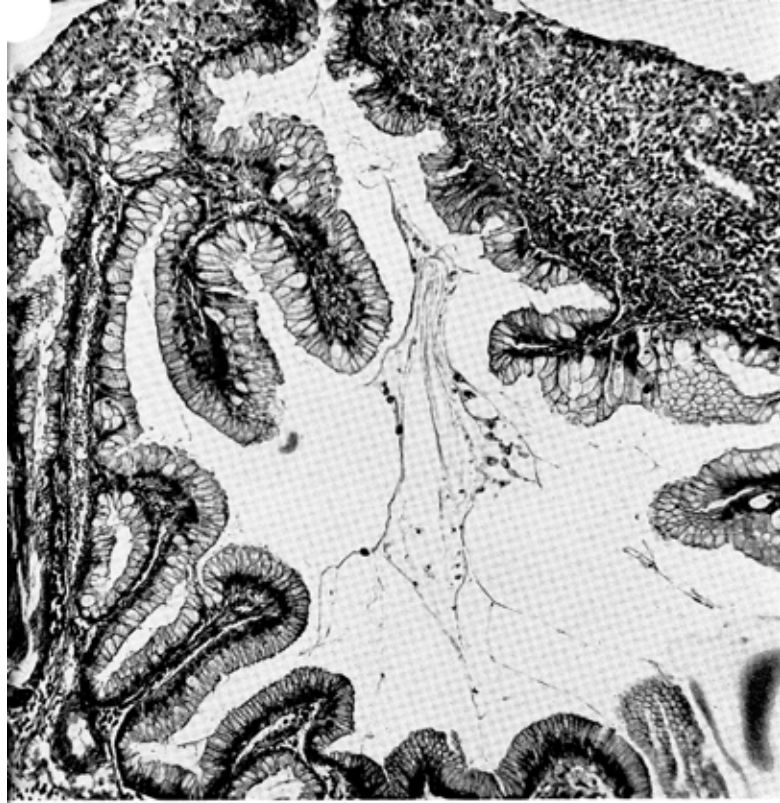


Fig. 4—High-power photomicrograph of the same polyp showing cystic dilatation of the gland and trapping of mucosa.

*Operative findings:* On gastrotomy, a pedunculated polypoid lesion, 1 cm in diameter, was found in the prepyloric area. The rest of the stomach appeared coarse with hypertrophic rugae. There were numerous sessile polyps particularly in the region of the antrum and extending along the greater curvature. They measured a maximum of 1 cm in diameter. A subtotal gastrectomy was performed.

*Dr. Ackerman:* There was a pedunculated polypoid lesion measuring 1 cm found in the prepyloric area. This is the usual location for adenomatous polyp. It was stated that the upper portion of the stomach was coarse and showed hypertrophic rugae. There were several small polyps seen in the antral area. The section submitted is an adenomatous polyp, probably a true neoplasm. There are numerous cystic glands present. Some of the glands show polymorphonuclear leukocytes within the lumen. I see no evidence of malignant change. Without better verification, I do not believe I could classify this case as one of multiple gastric polyposis. In this lesion are the usual innumerable polyps of varying size and about half the cases show evidence of change to carcinoma (Pearl). It is our impression that single polyps of the stomach are pre-malignant and can become cancer. We have seen polypoid lesions in which one-half of the polyp has been replaced by cancer.

*Dr. Ackerman's diagnosis:* GASTRIC POLYP and CHRONIC GASTRITIS.

*Dr. Regato:* A diagnosis of chronic gastritis was submitted by Dr. M. Polak of Buenos Aires, by Dr. Charles Oberling of Paris and by Dr. Lars Santesson of Stockholm.

*Pierre Masson, M.D.,* Montreal, Canada (by mail): Hyperplastic, interstitial, microcystic and atrophic gastritis variously associated. There is submucous adiposity and hyperplasia of the muscularis mucosa.

*Arthur P. Stout, M.D.,* New York, New York (by mail): The section shows only a thin mucosa and a remarkably fatty submucosa probably from the proximal secreting portion of the stomach near the antrum. The mucosa is atrophic with the formation of several microcysts. I have come to regard microcysts with great suspicion because they are found so frequently in gastric mucous membrane adjacent to stomach carcinomas. But all I can say about this mucosa is that it is atrophic and thin. The fat in the sub-

mucosa is interesting and I wonder if it can account for the thickening of the mucosal folds.

*Dr. Rigler:* We used to think that multiple polyposis was a rare disease. It is just a question of whether you have to have fifty polypi to make it a polyposis or is it enough to have five? Are these really adenomas? Are they neoplasms? Are they just simple enlargements of the folds which have raised up around the stalks? That is the problem that the pathologist should be able to answer but isn't always ready to answer. The distinction between a malignant polyp and one which is benign, has, of course, agitated us a great deal. We think that we can be very often reasonably certain that a polyp is already malignant, but we can't be certain when they are benign. If the stalk and the wall are invaded, you usually can get roentgenologic evidence which is clear cut. But if only superficial layers of the polyp are malignant, it is usually impossible to say.

*Dr. Ackerman:* Perhaps Dr. Geever can tell us more definitely about the gross examination of these polyps; if there were two polyps then we would have to agree with the diagnosis of polyposis of the stomach.

*Erving F. Geever, M.D.,* Colorado Springs, Colorado: The frozen section was taken from the largest of the polyps, so the Seminar slides were cut from the smaller one; I think that accounts for the difference of opinions here. Dr. Ackerman showed the largest of the lesions in which the cystic and glandular changes were quite characteristic.

*Alexis E. Lubchenco, M.D.,* Denver, Colorado: I think we are quite confused as to just what is a polyp? Would Dr. Ackerman clarify just what is a true polyp and what is not a polyp?

*Dr. Ackerman:* In making a diagnosis of a polyp you must have a lesion that has a stalk enclosed by epithelium. In hereditary polyposis the first changes will be in the mucosal surface and then in time a definite lesion is formed which will have a stalk, but between the ones that have a stalk and the very earliest changes there must be examples where you cannot say this is definitely a polyp. The slide I projected had a very definite stalk with a little smooth muscle pulled up into it closed by epithelium on a definite polyp. But in the sections which many of you had it was not possible to say that it was a polyp. By definition, anything with a stalk can be a polyp. One should call these lesions adenomas since they arise from epithelial cells.

*Dr. Rigler:* The word polyp is a very convenient one for the radiologist because he doesn't have to commit himself and it describes in gross fashion what we see very effectively. It certainly is a poor term for a pathologist to use, except for gross description.

*Robert H. Smith, M.D.,* Colorado Springs, Colorado: The question really is: Does the disease that has been called polypoid gastritis have the same connotation and the same poor outlook as a real polyposis? I don't think it does. I think that polypoid gastritis or hypertrophic polypoid gastritis are simply a form of chronic hypertrophic gastritis, they should be treated, if not conservatively, at least expectantly. I am inclined to think that these patients don't necessarily have to be diagnosed or treated at the first glimpse. We accept that polyp is a precancerous lesion. If we can't make sure by roentgenology, by gastroscopy, by the clinical course of the patient, whether the polyp is a real polyp or not, I feel that we should keep the patient under observation and take another look in a few months; if this is in fact polypoid gastritis, I do not think that subtotal gastrectomy is the treatment of choice. Now we don't know yet whether this woman really had a true polyposis or a polypoid gastritis. My personal feeling is she had one polyp and that the balance of her lesions were polypoid gastritis.

*Dr. Regato:* I saw the specimen myself. The patient had an obvious pedunculated polyp in the antral area. I believe that she had a single polyp with polypoid gastritis.

*Roath E. Meatheringham, M.D.,* Colorado Springs,



Colorado: There was a question at operation and at gastroscopy of whether this lesion arose within an area of hypertrophy or in an area of atrophy. The distal two-thirds of the stomach were grossly atrophic. The tumor which was removed was definitely in the prepyloric area. We thought that this was a true polyp with pseudopolyposis of the rest of the stomach.

Wayne A. Geib, M. D., Rapid City, South Dakota: A true adenomatous polyp will not iron out when the folds are flattened out.

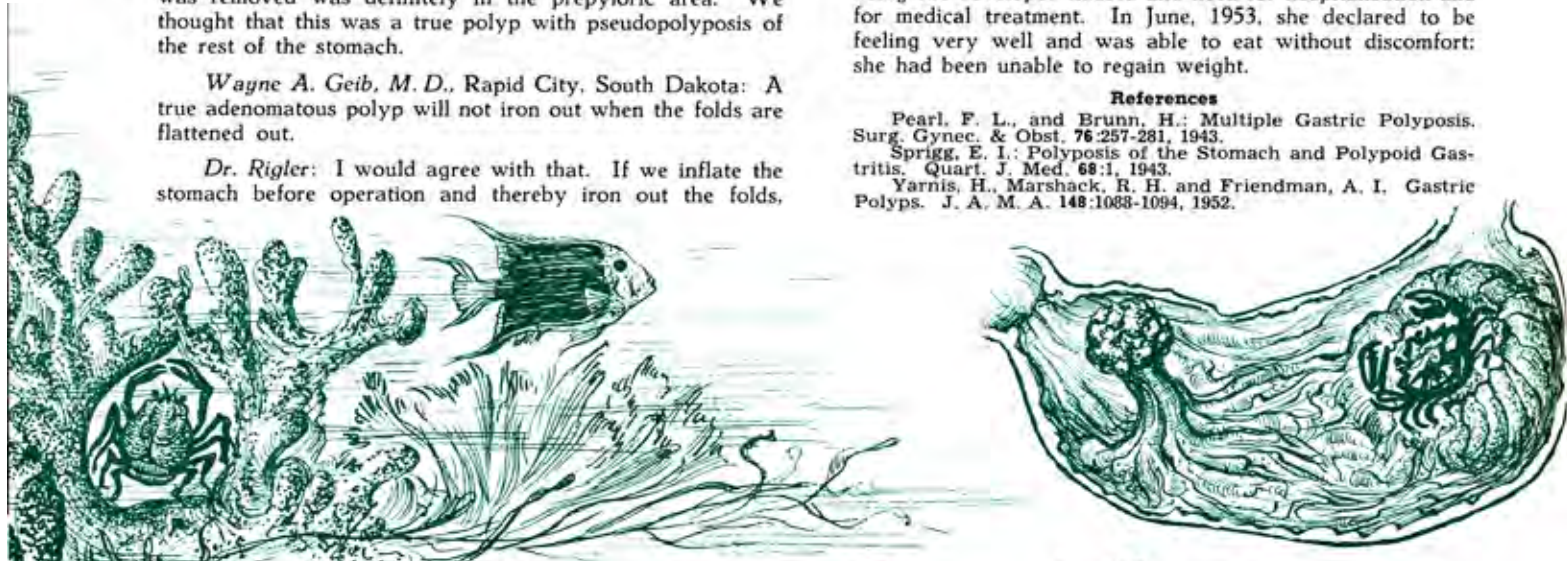
Dr. Rigler: I would agree with that. If we inflate the stomach before operation and thereby iron out the folds,

the lesions are not probably polyps but if there is a real tumor it usually remains so you can distinguish it.

*Subsequent history:* Following operation, the patient recovered remarkably well, but after a few days of well being she developed nausea and need for hospitalization and for medical treatment. In June, 1953, she declared to be feeling very well and was able to eat without discomfort: she had been unable to regain weight.

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## 6. Carcinoma in Situ and Benign Polyps of the Stomach

Contributed by FRANZ LEIDLER, M. D., Jefferson Barracks, Missouri

**T**HE PATIENT was a 58-year-old man who, in December, 1949, gave a history of dysphagia of 30 years' duration; for 20 years he had been treated by mechanical dilatations of the esophagus. Physical examination uncovered no abnormalities. The Kahn test was positive. Roentgenologic examination revealed no esophageal obstruction but there was complete gastric obstruction distal to the incisura. The rugal patterns were normal. The lowermost segment of the stomach appeared irregular and presented diverticulum-like formations. No mass could be palpated. Gastroscopy showed a diffusely infiltrating lesion of the distal portion of the stomach.

Roentgenologic Impressions Submitted by Mail	Histopathologic Diagnoses Submitted by Mail
Tertiary syphilis ..... 58	Adenocarcinoma ..... 123
Carcinoma of the stomach 36	Luetic gastritis with carcinoma ..... 8
Peptic ulcer (gastric, duodenal) ..... 35	Carcinoma (in situ, multicentric) ..... 7
Hypertrophic pyloric stenosis ..... 8	Qu'est-ce que c'est? ..... 1
Strep throat! ..... 1	Others ..... 10
Others ..... 18	

*Dr. Rigler:* The stomach is markedly distended. It obviously shows evidence of retention of fluid and food. At the distal end complete obstruction is apparent. Unfortunately, the nature of the obstructive lesion is not well brought out since the barium did not enter into the area of stenosis. The curious irregularities of the distal end of the stomach may well be simply the result of the retention, although there are two protrusions well at the distal end which resemble pockets of barium. It is impossible to make a diagnosis as to the nature of this process since the area of the actual lesion is not visualized in the film.

Our diagnosis should be considered in view of the history. Could this man have had a stricture of the esophagus of fairly high grade, but with it also a stricture of the

stomach induced by the same corrosive substance? It is possible that the stricture of the stomach produced few or no symptoms because of the minimal amounts coming from the esophagus into the stomach. After the esophagus was dilated, the increase in the quantity coming from the esophagus into the stomach would make apparent the obstruction, produce some edema in addition and thus produce the area of obstruction.

*Dr. Rigler's impression:* OBSTRUCTIVE LESION in the pyloric end of the stomach.

*Dr. Regato:* Most authorities thought that we had something up our sleeve and guessed tertiary lues.

*Philip J. Hodes, M. D., Philadelphia, Pennsylvania (by mail):* As a rule, cancer of the prepyloric portion of the stomach or of the pyloric canal does not cause such marked obstruction and, also as a rule, the stomach is not dilated. For these reasons I would favor a benign lesion as a cause of the obstruction. The most common benign cause of obstruction is an ulcer but I do not believe that such case would have been presented to this Seminar. Patients with gastric syphilis are rare; the few I have seen did not present obstruction. The possible relationship between the history of dysphagia and the pyloric stenosis attracts me. It is possible that both are due to ingestion of an acid solution. Thus, I would suggest the possibility of a pyloric stenosis due to a chemical agent. The intelligent men would probably suggest carcinoma.

*Operative findings:* In December 1949, an almost total gastrectomy was carried out: there was no localized tumor found. The mucosa was redundant and several shallow ulcerations were found; the wall was markedly thickened. No lymphadenopathy was noticed.

*Dr. Ackerman:* Grossly there was a small polyp present. The wall in the region of the polyp showed several super-



ficial mucosal ulcerations and some mucosal redundancy. Microscopically the polyp was obviously benign. In the region of the polyp there was an area of ulceration and the Seminar sections are from that zone; some sections show more prominent change than others. The epithelium in some areas shows obvious changes to carcinoma in situ with prominent variations in the glandular pattern. In some of the sections there is evidence of invasion of the muscularis mucosae but in none of the sections which I have seen was there evidence of invasion of the inner muscular wall. The lesion falls into the group described by Mallory, Stout, Hebbel and others. I have not seen this superficial spreading carcinoma in association with a polyp before. This type of lesion may have large areas of ulceration (as much as 54 square cm) without evidence of invasion in depth. The prognosis for this group of cases is excellent because only about one-half of them have lymph node metastases.

Dr. Ackerman's diagnosis: SUPERFICIALLY SPREADING CARCINOMA (carcinoma in situ) and benign polyp.

Dr. Regato: All of the authorities were in agreement that this is a case of carcinoma of the stomach, few gave details as to whether or not it is superficial.

Dr. Rigler: The radiologic diagnosis of superficial carcinoma is a very difficult one. Actually, the number of these cases, while it seems very large in Gutmann's material, is very small in almost everyone else's. Hebbel, after a good deal of hard work, has managed to collect 11 such cases from our material; some of these are extremely small in their extent. We thought that 10 of these 11 cases were ulcers of some bizarre type; I think Golden has had somewhat similar difficulty in the rather larger series that Stout had collected there at Columbia University. Most commonly there is a shallow very superficial ulcer with some slight elevation and irregularity of the mucosa contiguous to it, sometimes for some distance: a very peculiar looking ulcer. In this case, the roentgenogram does not exhibit the actual area of carcinoma, because of the obstruction, so that no one could draw any conclusion on the basis of the roentgenologic examination.

Every radiologist of experience has once in a great while had the pleasure of making a diagnosis of carcinoma that was not detected in the operating room, by ordinary

Fig. 2—Low-power photomicrograph showing carcinomatous changes of the mucosa without penetration into the deep layers.

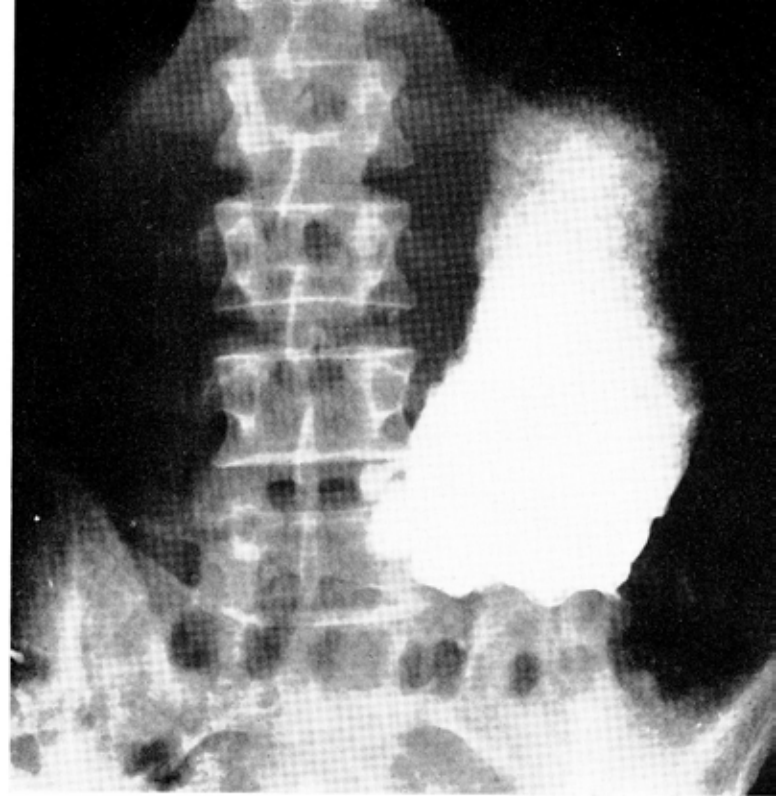
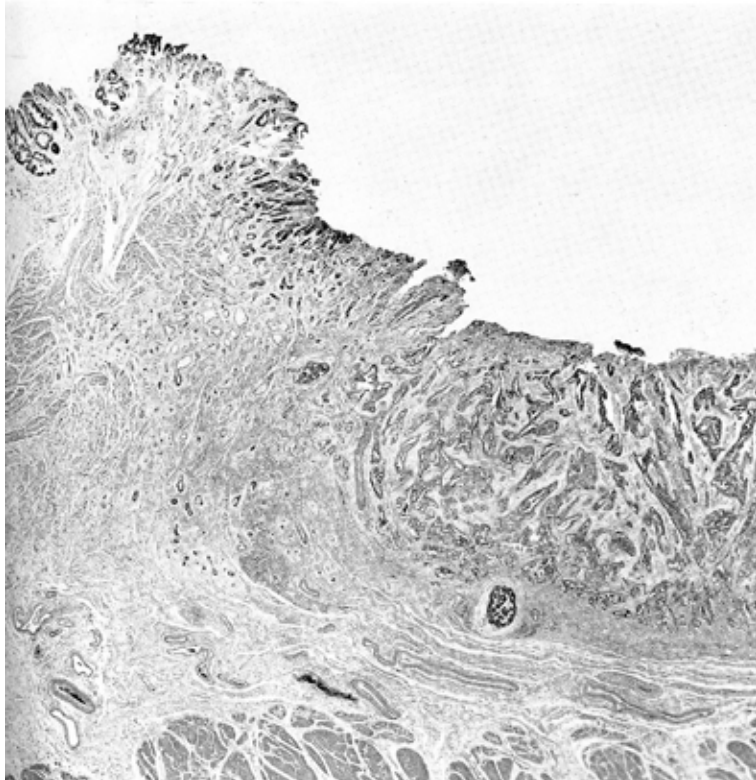


Fig. 1—Roentgenogram showing distention and apparent complete obstruction of the stomach with irregularities of the distal end.

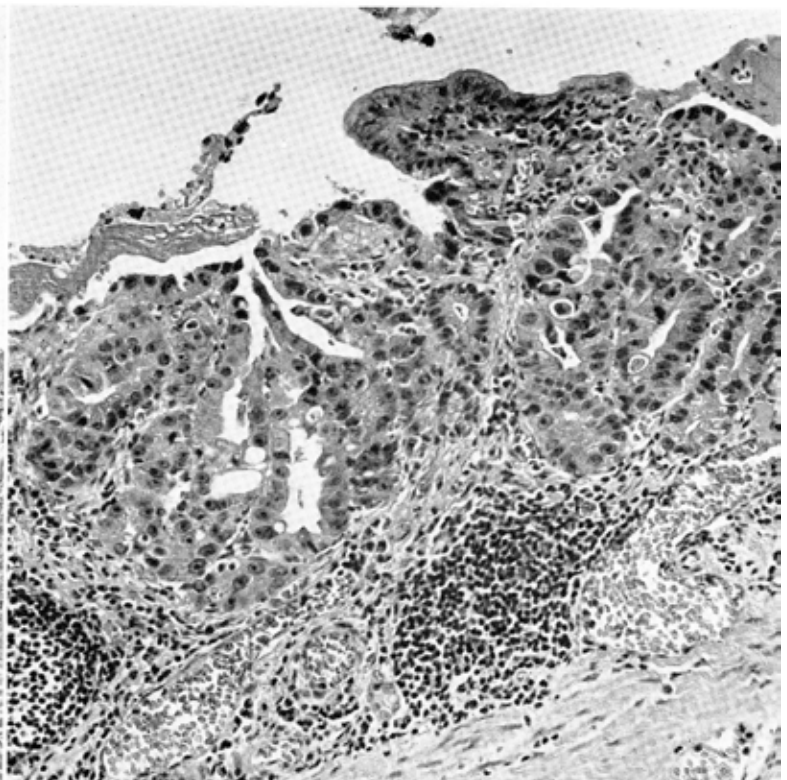
palpation, but which was later proved histologically. It doesn't have to be superficial spreading carcinoma for that to happen.

Subsequent history: This patient was last seen in May 1953 when he appeared well. A complete physical examination, gastroscopy and radiographic studies revealed no abnormalities.

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Fig. 3—High-power photomicrograph of carcinoma limited to the mucosa.







## 7. Benign Polyp and Adenocarcinoma of the Stomach

Contributed by LEO G. RIGLER, M. D., Minneapolis, Minnesota

**T**HE PATIENT was an 87-year-old man, who in November, 1951, complained of malaise and nausea of several months' duration; there had been black stools and recent continuous vomiting. On physical examination only a small rectal polyp was found. There was moderate anemia and achlorhydria with some blood in the gastric washings. Roentgenologic examination revealed a filling defect in the lesser curvature and a contiguous one in the duodenal bulb; the relationship of the two was not clear. There was loss of flexibility in the region of the antrum.

Roentgenologic Impressions Submitted by Mail	Histopathologic Diagnoses Submitted by Mail
Carcinoma of the stomach 65	Adenocarcinoma 140
Other tumors 24	Pancreatic carcinoma 8
Benign peptic ulcer 43	Metastatic carcinoma 1
Polyp (prolapsed) 6	
Others 11	

*Dr. Rigler:* Since the whole stomach except for the pyloric third is reported as pliable with good peristalsis, and there is no evidence of any lesion here, attention is directed to the defect in the barium column at the pyloric end and the defect in the base of the duodenal cap. On the lesser curvature side there is a local accumulation of barium resembling a crater and this is constant. The whole appearance suggests a large polypoid mass at the antrum of the stomach which has prolapsed through the pylorus into the duodenum. Most commonly such prolapsing tumors prove to be benign polypi, but the character of this mass and its irregularity would suggest that it may be a polypoid carcinoma which has prolapsed in this fashion. The changes on

the lesser curvature, however, are more difficult to interpret and the possibility that this carcinoma has produced an irregular ulceration on the lesser curvature would have to be borne in mind.

The defect in the duodenum might, of course, be primary in the duodenum such as a papilloma of the duodenum itself, or even a carcinoma. These are so uncommon, however, that it is much more likely that this is due to prolapse from a primary lesion in the stomach.

*Dr. Rigler's impression:* POLYPOID TUMOR OF THE STOMACH prolapsing into the duodenum, probably CARCINOMA WITH ULCERATION. Benign polyp cannot be excluded.

*Dr. Regato:* Dr. G. Esquerro-Gómez of Bogotá made a diagnosis of mucosal prolapse with carcinoma. A diagnosis of carcinoma was also rendered by Wendell P. Stampfli, M. D., of Denver, Colorado.

*Paul C. Swenson, M. D., Philadelphia, Pennsylvania (by mail):* This patient has an ulcerative lesion of the antrum which requires immediate exploration. Since Dr. Rigler brings it, obviously there must be something "screwy" about it. It is probably an ulcerating carcinoma which has continued out over the duodenal bulb.

*Operative findings:* In November 1951, a subtotal gastrectomy and splenectomy were carried out. A polyp 3 x 2 cm in diameter was found in the first portion of the duodenum which had prolapsed from the antrum; it was broadly attached to the border of an ulcer 2.5 cm in diameter, in the lesser curvature of the prepyloric area.





Fig. 1—Roentgenogram showing a filling defect of the lesser curvature and of the duodenal bulb; there are also signs of ulceration in the lesser curvature.

*Dr. Ackerman:* The polyp seen in the roentgenogram is perfectly benign. Immediate to this polyp there is an ulceration which is obviously cancer. The tumor, an adenocarcinoma, was quite well differentiated but it extended deep into the wall of the stomach. There were no lymph node metastases. In a previous case we had had a polyp associated with superficial spreading of cancer and in this case we had a polyp associated with invasive cancer.

*Dr. Ackerman's diagnosis:* ADENOCARCINOMA of the stomach and benign polyp.

*Dr. Rigler:* Most of the patients we have seen with polypi are rather curiously free of inflammation in the stomach, at least inflammation that is obvious. I think it is important for those who do gastric surgery to remember

Fig. 3 — Low-power photomicrograph of carcinoma of the stomach.

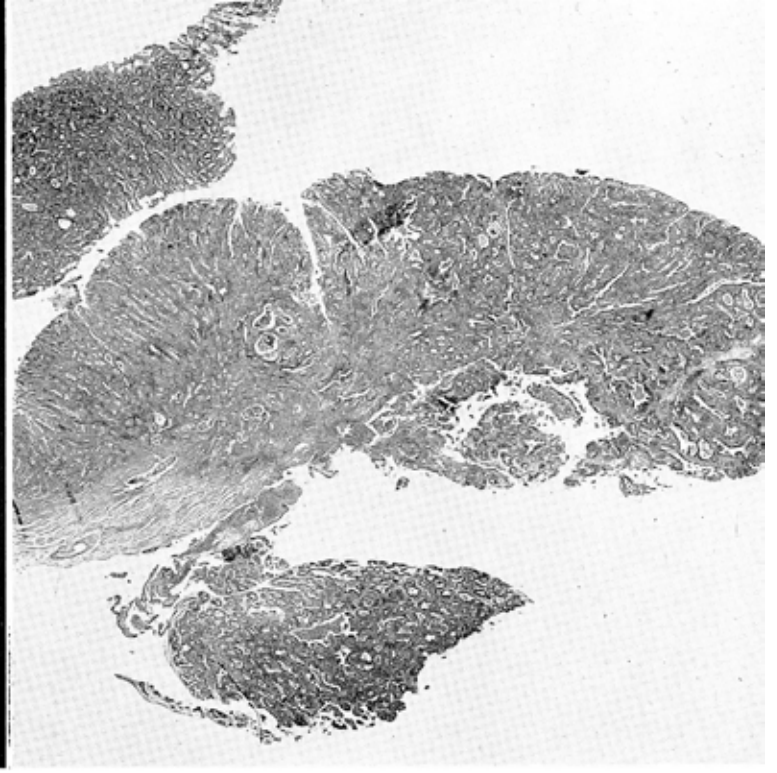
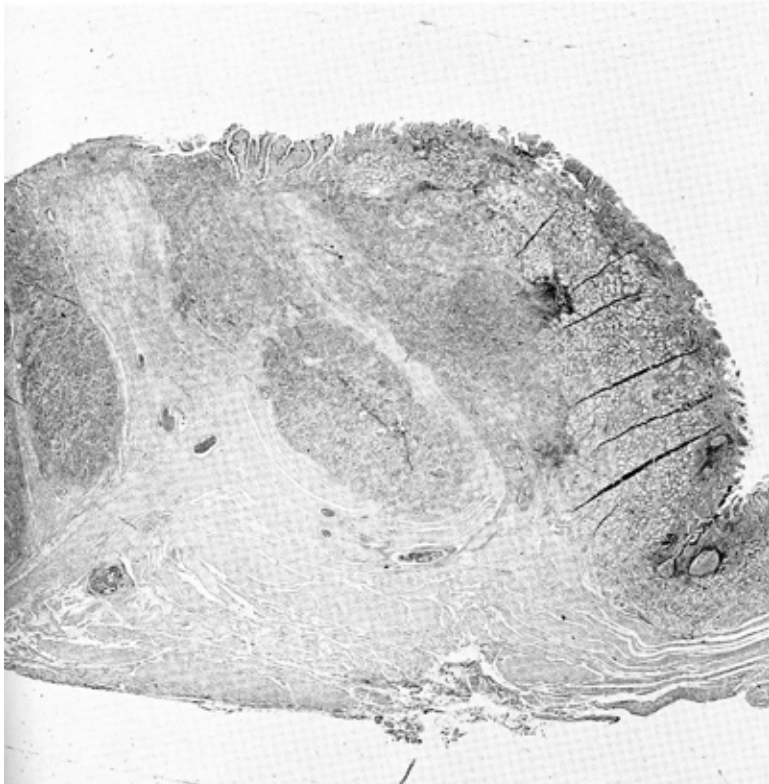


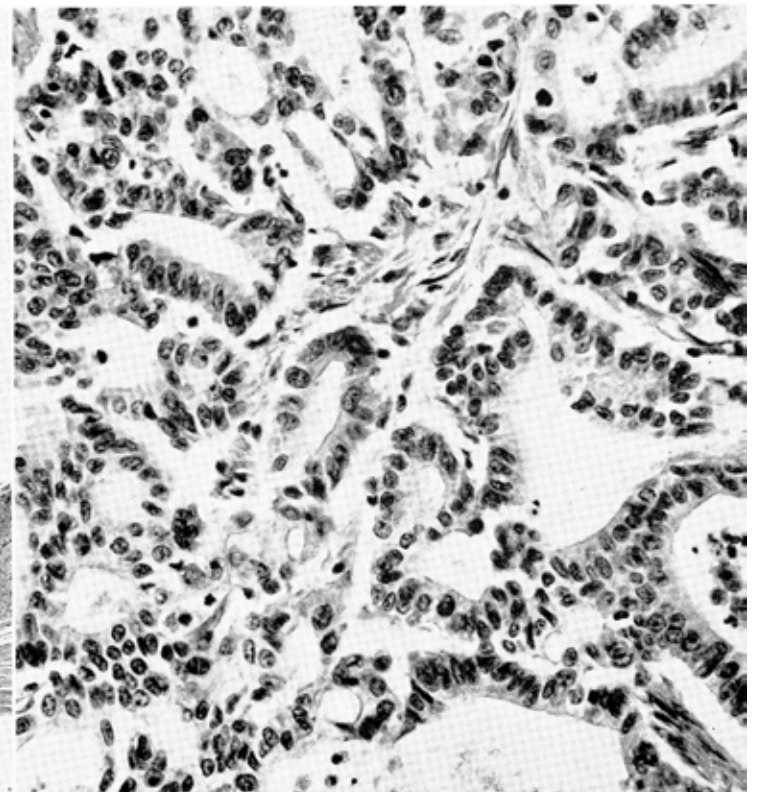
Fig. 2—Low-power photomicrograph of benign polyp with well formed stalk.

as has been shown now by Zininger and Castleman and others that about one out of four of the carcinomas that are located in the pyloric region will invade the duodenum for distances of as much as 7 cm and that they may infiltrate practically all layers except often the mucosa.

Let us say that you have a patient with a single well-defined polyp of the stomach and no other symptoms. Should you (1) follow the patient, (2) should you just remove the polyp without removing a section of the stomach, (3) should you resect the polyp and part of the stomach wall, or (4) should you do a total gastrectomy.

*Eugene M. Bricker, M. D., St. Louis, Missouri:* I would approach this problem very much in the same way as approaching a solitary polyp of the colon. I think the

Fig. 4—High-power photomicrograph of the same tumor showing typical adenocarcinoma.





pedunculated polyp which is grossly benign and has a long pedicle could be treated in a conservative manner by ligation at the stalk. Another conservative approach would be to take a section of the stomach wall. Benign polyps would hardly require a subtotal gastrectomy unless grossly or by frozen section examination there was a strong suspicion of malignant change in the polyp anywhere. If there is invasion of the stalk, stiffening of the stalk or ulceration, or if carcinoma is demonstrated by frozen section, the patient should have the standard type of gastrectomy for carcinoma of the stomach in the region in which it happened to be located.

*Dr. Rigler:* Dr. Hay believes that if the polyp is less than 2 cm in diameter and there is no ulceration or signs of malignancy and gastroscopically the surface of the polyp was that of a benign lesion, he would do nothing but watch, making roentgenologic examinations every six months. If the patient had pernicious anemia and we have the feeling that his possibility of developing carcinoma in the polyp is greater than in other patients, and a local excision should be made.

*John E. Karabin, M.D.,* Colorado Springs, Colorado: I think that in these polyps we should have a frozen section made of the base and if there is any indication of infiltration of the base we should do a radical procedure, a wide resection of the stomach. If it is a superficial carcinoma, we excise the polyp with the base and part of the mucosa and submucosa.

*Charles E. Fisher, M.D.,* Colorado Springs, Colorado: One of the fellows at the University of Minnesota several years ago did his theses on the subject of gastric polyps and, aside from the people who have pernicious anemia with polypoid disease of the stomach, he found a greater incidence of carcinomatous degeneration in patients who had polyps and also had achlorhydria. One could be guided to a certain extent in following these polyps along by whether or not they have a fair degree of free hydrochloric acid or an achlorhydria.

*Dr. Rigler:* In the series of polyps that we have studied and that were confirmed as such, 95% have had achlorhydria. So it wouldn't help us very much. Dr. Hay and Dr. Carry our gastroscopist, are not at all convinced that benign polypi become malignant. They think that they are either malignant from the beginning or they remain benign; we are not agreed on the idea that a gastric polyp is necessarily a precancerous lesion. We don't say that all polypi become malignant, but we don't know which ones are going to be. I doubt if achlorhydria would be a good way of distinguishing.

*Charles E. Lockhart, M.D.,* Springfield, Missouri: Is it justifiable to become so radical as to do a pancreaticoduodenectomy or would you consider a carcinoma that has invaded the duodenum as being inoperable and probably incurable?

*Dr. Rigler:* Recently we were reviewing some of our results. Our results in pancreatic carcinoma when doing the most radical procedures are almost 100% bad. But if the lesion does not arise in the pancreas the results are not bad at all; therefore, we would feel strongly that a very radical procedure was justified and that one would not give up hope merely because of the invasion into this area.

*Richard Johnson, M.D.,* Columbia, Missouri: I should like to ask whether the indications for surgery are based on technical considerations of the operative procedure itself, or on something in regard to the nature and the location of cancer.

*H. Mason Morfit, M.D.,* Denver, Colorado: Carcinoma of the stomach occurs much more frequently in the distal portion and the question of whether total gastrectomy or subtotal gastrectomy should be done in these cases is still being argued. But concerning the lesions located near the

cardia, for a number of reasons it seems clear that the best operation, poor though it may be, is a total gastrectomy.

*John Modlin, M.D.,* Columbia, Missouri: Regarding the question of total gastrectomy for early carcinoma of the stomach, the problem revolves about two things. How happy can a human being be without his stomach and second, how many more patients will be cured by total than subtotal gastrectomy? There are many surgeons who have very definitely emphasized that those patients can be happy without their stomachs. From my experience in following a small number of these patients, I am not so sure. The literature is now becoming replete with papers from men who propose to construct some sort of a pouch to take the place of the stomach; this is an admission that some of these patients at least are doing poorly following the removal of their stomach. In regard to how many more will be cured, only time will tell. I think that the statement that "there is no limit to lymphatic drainage of any organ in the body" is a good one. In other words, a total gastrectomy, radical as it may seem, is really a limited operation and I doubt that surgery, which at the moment is the best we have, would ever appreciably cure very many patients with cancer of the stomach.

*Frank B. McGlone, M.D.,* Denver, Colorado: About three months ago, I reviewed 24 cases of total gastric resection done in Denver that included all the recent ones done at the Veterans Hospital, at Colorado General Hospital, at Denver General Hospital, and the remainder were cases in which I had the opportunity to select the surgeon. Of those 24 cases, there are three patients alive today. Of those 24 cases, there was not one carcinoma cured; there were four cases of benign disease of the stomach, which were mistakenly diagnosed as malignant, for which the total gastric resection was done and the patients did not survive. That is our experience; our fears of total gastric resection appear to be confirmed.

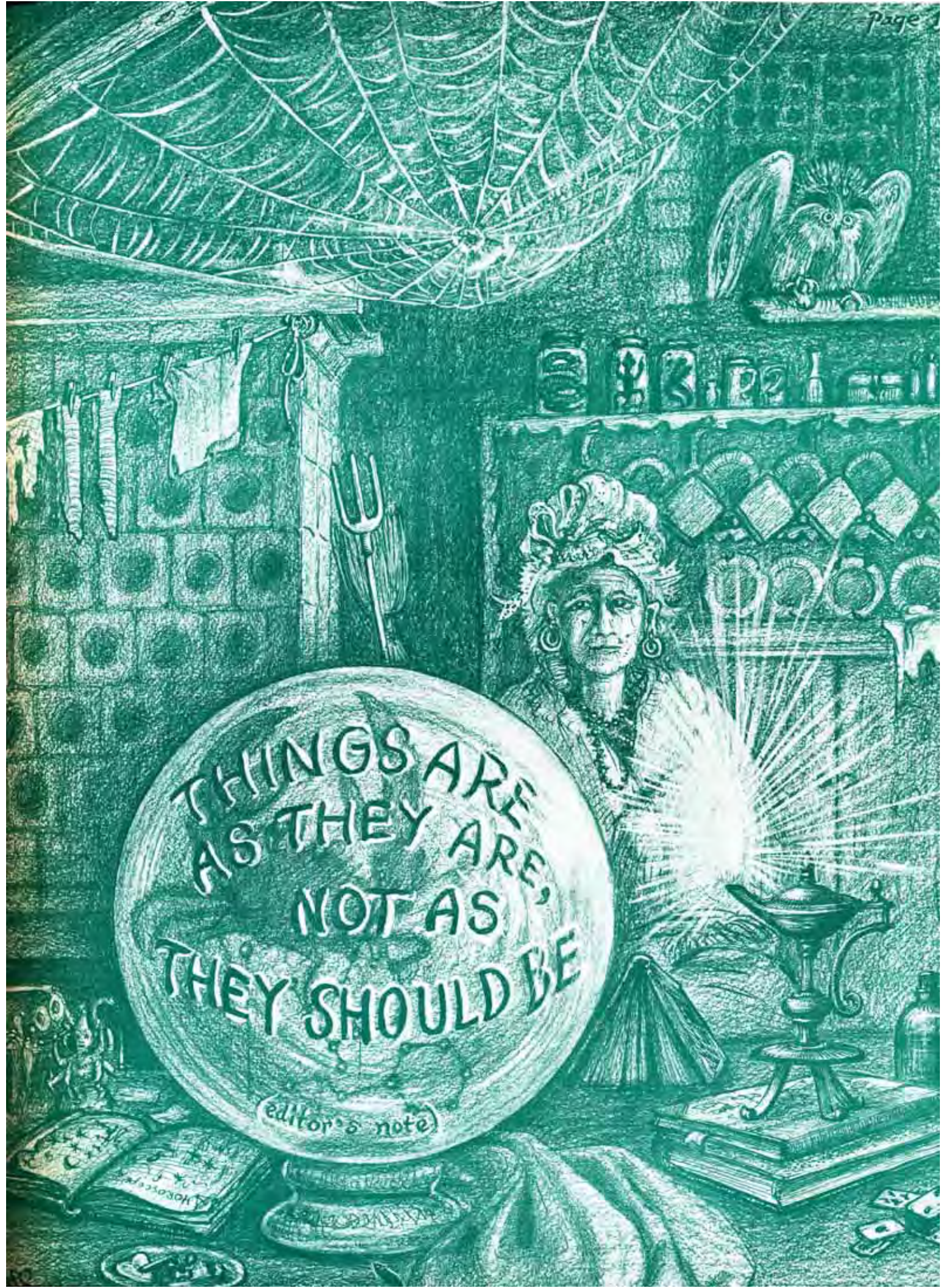
*Dr. Rigler:* I am a little astounded at all this worry about total gastrectomy. I think that those who have subtotal resections have trouble also, physiologic troubles of one kind or another, if the resection is a very extensive one. I doubt that there is such a distinct difference between the late effects of the total and subtotal resections. I can't believe that there is a real difference in the patient's ability to live comfortably afterwards. Likewise, as far as the immediate mortality, it really isn't strikingly different at all. I would not be in agreement to sacrifice any chance of cure merely to preserve a small segment of the stomach in the upper portion of the abdomen.

*Subsequent history:* The patient was last seen in good health in July 1952. He had a small rectal polyp which was removed. He also complained of urinary difficulties that were attributed to prostatic enlargement. The acid phosphatase was 1.2 King-Armstrong units. A transurethral resection was planned but had to be postponed.

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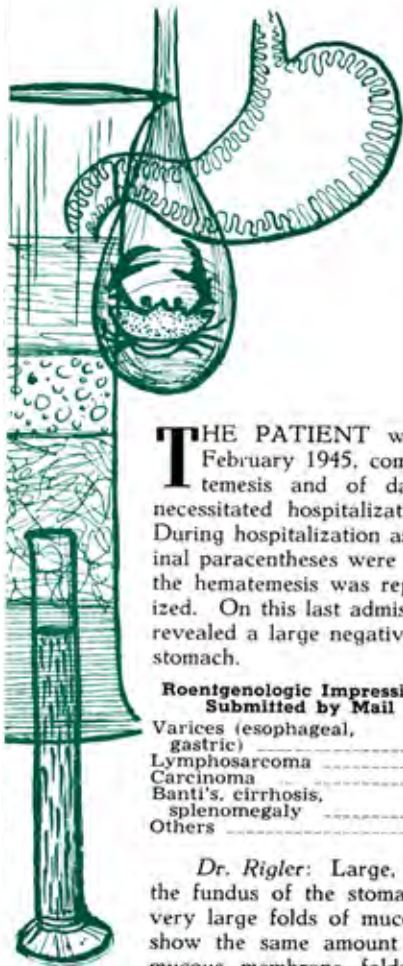
THINGS ARE  
AS THEY ARE,  
NOT AS  
THEY SHOULD BE

editor's note



## 8. Gastric Varices

Contributed by HUGH F. HARE, M. D., Los Angeles, California



**T**HE PATIENT was a 35-year-old woman who, in February 1945, complained of sudden attacks of hematemesis and of dark red blood in the stools; this necessitated hospitalization and twelve blood transfusions. During hospitalization ascites developed and several abdominal paracenteses were done. In June and in August 1945, the hematemesis was repeated and she was again hospitalized. On this last admission the roentgenologic examination revealed a large negative filling defect of the fundus of the stomach.

### Roentgenologic Impressions Submitted by Mail

Varices (esophageal, gastric) .....	83
Lymphosarcoma .....	29
Carcinoma .....	8
Banti's, cirrhosis, splenomegaly .....	28
Others .....	13

### Histopathologic Diagnoses Submitted by Mail

Splenomegaly (congestive, stasis) .....	80
Banti's disease of the spleen .....	54
Hypersplenism, hyperplasia .....	25
Peculiarly stained spleen .....	1
Others .....	8

*Dr. Rigler:* Large, sinuous, sharply defined defects in the fundus of the stomach are made out. These resemble very large folds of mucous membrane localized but do not show the same amount of barium-adherence to them that mucous membrane folds usually show. In view of the appearance of the lesion, the absence of enlarged folds elsewhere, and the history, the diagnosis of gastric varices seems apparent.

**Fig. 1—Roentgenogram showing sinuous sharply defined defects of the fundus of the stomach due to gastric varices.**



Varices in the stomach are not as common as in the esophagus, but are occasionally observed. Varices in the lower end of the esophagus are usually found in connection with varices in the stomach. The origin of both is, of course, obstruction of the portal circulation.

One would have to rule out giant rugae of the stomach, an apparently non-pathological condition. This condition is almost invariably on the greater curvature and lower down. Enlarged rugae show much greater grooves between the folds in which the barium can be made out. A polypoid tumor of the fundus, of course, is not excluded, but, here again, the presence of gas in the area of tumor itself, not excluded by the tumor, is clear evidence against it. The margins of the mass are, likewise, those of varices or of enlarged folds rather than a solid tumor.

*Dr. Rigler's impression:* VARICES OF THE STOMACH.

*Dr. Regato:* A diagnosis of gastric varices was also rendered by Dr. Milo Harris of Spokane and Dr. Russell Morgan of Baltimore. Dr. Robert Pendergrass of Americus, Georgia, suggested a Banti's syndrome and Dr. F. Gorishek of Los Alamos suspected the presence of cirrhosis of the liver.

*Operative findings:* In August 1945, an exploration was done. Markedly distended veins appeared scattered over the superior surface of the stomach; the epiploic and mesenteric vessels were markedly distended and congested. There was early cirrhosis of the liver and splenomegaly. A splenectomy was done. The slides of the Seminar were made from sections of the spleen.

*Dr. Ackerman:* Microscopic sections of the spleen show CONGESTIVE SPLENOMEGALY.

*Arthur P. Stout, M.D., New York, New York (by mail):* Since the changes in the spleen are compatible with Banti's syndrome, the bleeding may have been due to varices secondary to portal obstruction. This too would account for the ascites.

*Dr. Regato:* Most experts concluded that the bleeding, the ascites and the radiographic image were due to varices, secondary to portal obstruction.

*Mark Wheelock, M.D., Chicago, Illinois:* I think that too much emphasis has been placed on esophageal varices at the expense of varices in the stomach. On portal cirrhosis and similar entities, we take gross sections of the stomach as well as the esophagus and on those cases which we have attempted to inject into the esophageal veins we have noticed that on occasion there is dilatation also of the gastric veins.

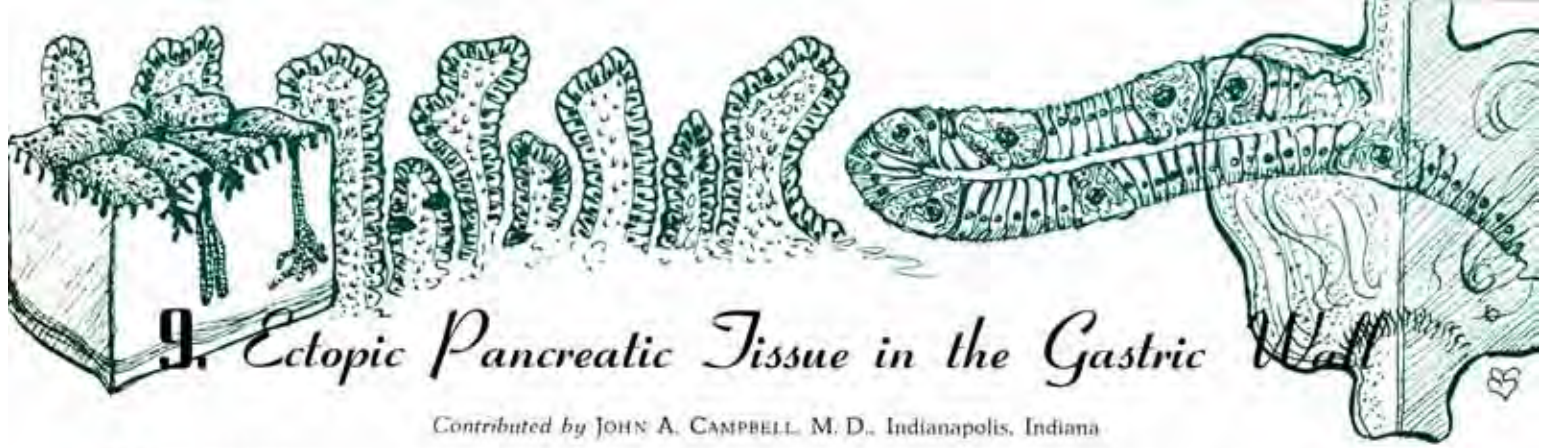
*Dr. Rigler:* We have more difficulty in demonstrating gastric varices radiologically than we do with esophageal varices. I suspect the same thing has been true with the pathologists, therefore this great emphasis on esophageal varices.

*Subsequent history:* The patient was last seen in September, 1945.

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## 9. Ectopic Pancreatic Tissue in the Gastric Wall

Contributed by JOHN A. CAMPBELL, M. D., Indianapolis, Indiana

**T**HE PATIENT was a 42-year-old man who, in July 1951, complained of anorexia and of a 20 pound weight loss in one year. Physical examination revealed no abnormalities; hemoglobin was 14.2 grams per cent and the Kahn test was negative. A non-ulcerated reddened mass was observed on the posterior wall through the gastroscope. On roentgenologic examination a rounded smoothly outlined filling defect was seen in the greater curvature of the stomach in the region of the antrum. There was no apparent rigidity of the wall.

Roentgenologic Impressions Submitted by Mail	Histopathologic Diagnoses Submitted by Mail
Leiomyoma . . . . . 59	Heterotopia (pancreatic, duodenal, biliary ducts). . . . . 85
Miscellaneous benign . . . . . 47	Adenomyosis, adenomyoma . . . . . 48
Miscellaneous malignant . . . . . 43	Adenocarcinoma . . . . . 14
Ectopic pancreas . . . . . 18	Hamartoma . . . . . 13
Flying saucer! . . . . . 1	Others . . . . . 6
Others . . . . . 9	

*Dr. Rigler:* Sharply defined, round, fairly smooth defect is seen on the greater curvature of the stomach. The mucous membrane folds are intact around it and are obviously displaced by the mass. The margins of the mass are apparently uninvolved. There is no sign of contiguous infiltration. There is slight suggestion of local areas of ulceration but this is not entirely definite.

The sharply localized character of the process and its rounded appearance with the obvious displacement of the mucosa around it all suggest an intramural tumor, most likely benign, perhaps a leiomyoma.

The history of loss of weight is somewhat disturbing in this regard and the absence of any vomiting of blood or of blood in the stool is likewise unusual. The gastroscopic findings would be consistent with this finding. Usually in

leiomyomas some ulceration can be clearly seen, however, and this was not seen either on gastroscopy nor is it clearly defined in the roentgenograms. Nevertheless, I believe a leiomyoma is the most likely diagnosis. It should be noted that fibromata of the stomach are indistinguishable from leiomyoma roentgenologically although they give a somewhat different histologic picture. The same is true of neurofibroma of the gastric wall. The latter are more commonly multiple.

The possibility of a benign or malignant polyp of the stomach must also be considered, particularly because of the blocking out of the curvature. It is very rare for the mucous membrane to extend around an epithelial tumor in the fashion seen here. Furthermore, while this might be a benign polyp, carcinoma would be very unlikely to have such sharp definition and such lack of infiltration contiguous to it.

Aberrant pancreatic tissue commonly is located along the greater curvature near the pylorus and produces a rounded, sharply defined filling defect in the stomach similar to that exhibited here. The clinical findings are often not distinctive. Most of these lesions show some ulceration on their surface in somewhat the same fashion as a leiomyoma, although the ulceration is usually more centrally placed. This is not clearly exhibited in these films, but a small ulcer in this area is not excluded. Involvement of the curvature and the location, together with the gastroscopic findings, would suggest this as a very strong possibility.

*Dr. Rigler's impression:* LEIOMYOMA or ABERRANT PANCREATIC TISSUE.

*Dr. Regato:* The probability of ectopic pancreas was suggested by Dr. R. W. Ludwick of Denver and by Dr. H. Hauser of Cleveland.

Fig. 1 — Roentgenogram showing sharply defined rounded defect of the greater curvature of the antrum of the stomach.



Fig. 2—Low-power photomicrograph showing ectopic pancreatic tissue projecting from the gastric wall; a pancreatic duct usually empties into such a projection.

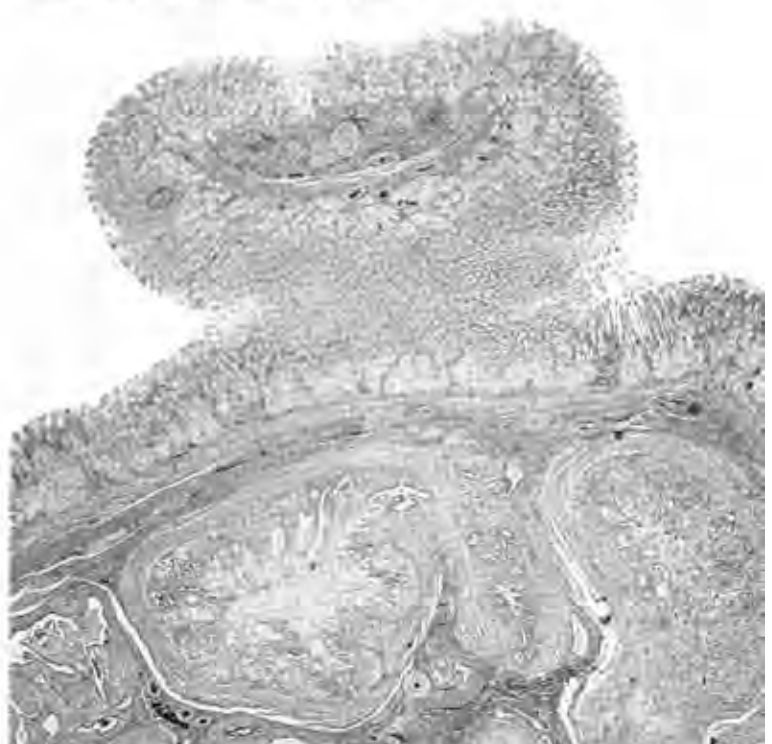






Fig. 3 — Typical pancreatic ducts within the wall of the stomach.

*Philip J. Hodes, M.D., Philadelphia, Pennsylvania (by mail):* I find it difficult to believe that the patient's symptoms are due to this intramural non-apparently ulcerated tumor. This could be one of the benign submucosal tumors which usually arise in the wall of the stomach; they are usually of muscle nerve or connective tissue origin. I know of no way to differentiate between them radiologically. It could be also an adenoma, hamartoma or ectopic pancreatic tissue. Purely as a guess, I would venture that this is a case of ectopic pancreatic tissue.

*Operative findings:* In July 1951, a subtotal gastrectomy was done. A whitish tumor, 2 cm in diameter, was found on the anterior surface of the greater curvature 3 cm from the pylorus; it had a fibrous capsule. The mucosa appeared normal but just over the tumor it was thickened and dimpled. There were several enlarged nodes in the greater curvature.

*Dr. Ackerman:* This shows a lesion situated in the wall of the stomach. Directly above it the mucosa forms a small projecting rounded mass. Within the wall of the stomach there are numerous ducts lined by tall columnar epithelium. These ducts vary considerably in size and have no constant pattern. These changes represent heterotopic pancreas within the wall of the stomach. There is no islet tissue present. I believe it would be extremely rare to find it. It is rather common for this pancreatic tissue to project from the wall toward the lumen and there may be a small mound-like depression in the center of which a small duct or ducts may empty.

Heterotopic pancreas can have all the complications of normally situated pancreas. Pancreatitis is not unusual. We have seen two instances of carcinoma of the stomach arising apparently from the heterotopic pancreas. In some sections there were areas of apparently normal pancreas. About three-quarters of them occur in the submucosal layer. Commonest sites of heterotopic pancreas are in the walls of the duodenum stomach and jejunum, but they can occur in innumerable other locations such as on the surface of the gallbladder, omentum, or in the wall of a Meckel's diverticulum.

Dr. Ackerman's diagnosis: HETEROTOPIC PANCREAS.

*Dr. Regato:* Dr. M. Polak of Buenos Aires suggested heterotopia of biliary ducts. Dr. G. Bennett of Chicago diagnosed aberrant ducts and questioned their pancreatic origin. Dr. Engelbreth Holm of Copenhagen made a diagnosis of adenomyomatosis.

*Arthur P. Stout, M.D., New York, New York (by mail):* Situated deep in the submucosa and muscularis there are a number of differentiated mucous glands but with few inflammatory cells and no signs of malignancy. I believe they are intestinal type glands and that this represents an adenoma of heterotopic intestinal glands in the gastric wall. The overlying mucosa may be a little hyperplastic but I hesitate to be sure because of tangential sectioning. All the heterotopias I have seen have been in the distal half of the stomach and have usually involved the muscularis as in this case.

*Pierre Masson, M.D., Montreal, Canada (by mail):* At first I thought of aberrant pancreas but I was unable to find pancreatic acini. This is a case of congenital malformation similar to Case 3; it consists of excretory ducts and of glands of pyloric or Brunner's type which penetrate the muscular layers.

*Leo Loubeer, M.D., Tulsa, Oklahoma:* How could one explain the appearance of symptoms such as achlorhydria in a lesion which evidently is congenital? And secondly, have you ever seen a combination of ectopic pancreas and anurous pancreas?

*Dr. Rigler:* I think that ulceration begins to appear late and the symptoms are probably due to the ulceration. I have seen patients go for 10 years with leiomyoma and never know they have it and then suddenly develop massive hemorrhages; there is no reason why one can't carry it from birth and have the same thing happen.

*Dr. Ackerman:* The answer to the second question is no.

*Edward M. Lipan, M.D., Denver, Colorado:* Is there any information available on the incidence of this tumor among diabetic patients?

*Dr. Ackerman:* I think that heterotopic pancreatic tissue very rarely has islet tissue. Therefore the patient with heterotopia of the pancreas does not develop islet cell tumor.

*Dr. Regato:* Pancreatic tissue, ectopically situated on the wall of the stomach, is often symptomless and discovered only at autopsy. The usual site is the prepyloric area and the average size is 1.5 cm. The mass is well delimited and is covered by a smooth stretched, thinned out mucosa. Symptoms of pyloric obstruction may lead to considerable loss of weight as in this case; seldom there is bleeding as tinctive character is the presence of an umbilication which in other intramural lesions of the stomach. A special dismay or may not be observed on gastroscopy or on the roentgenogram but which is always noted on gross examination of the specimen.

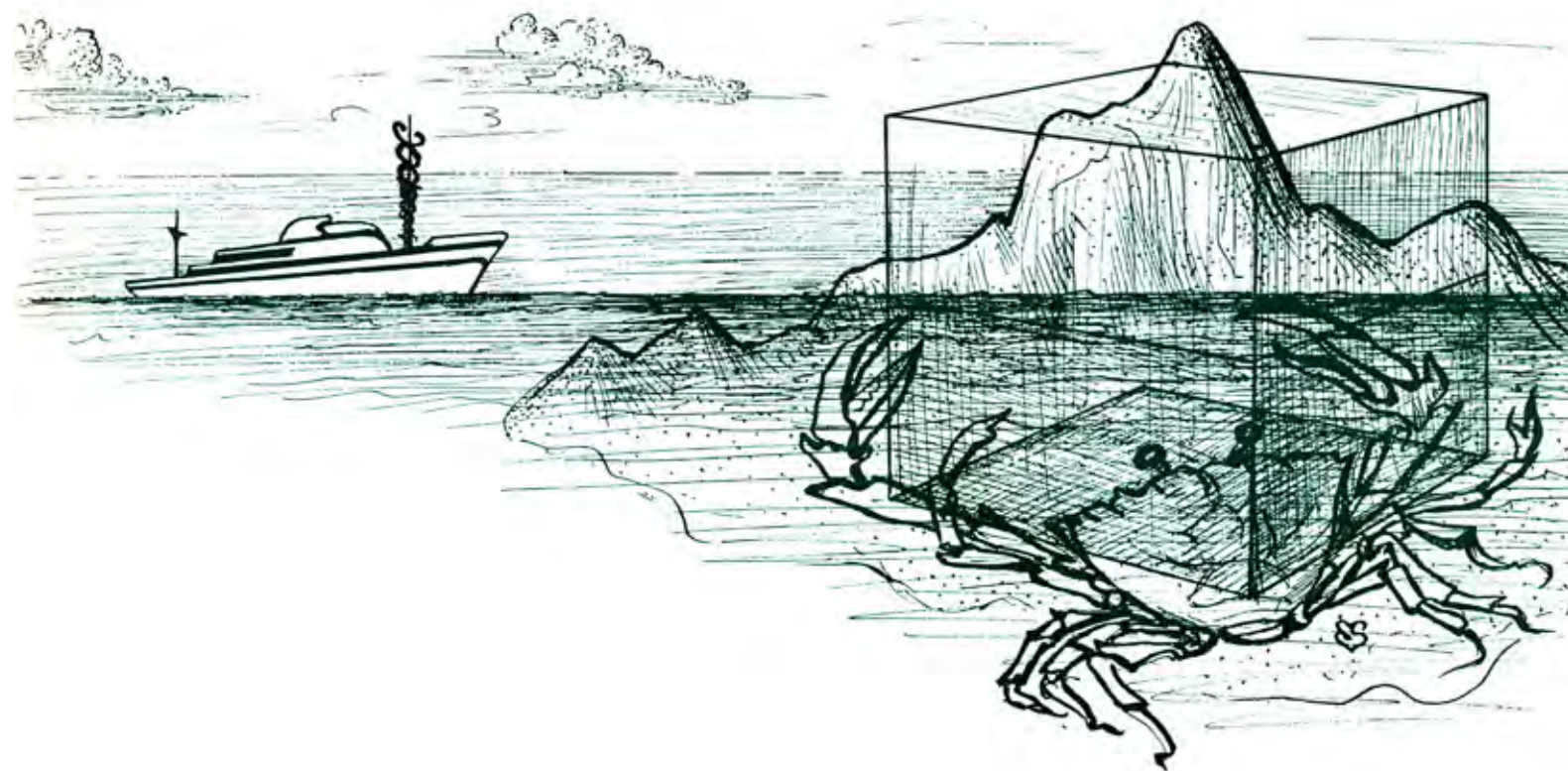
Our residents often appear confused in the use of the words, aberrant, ectopic and heterotopic. The following phrase illustrates what we feel is the proper use: In the course of embryological development aberrant islands of pancreatic tissue are left in an ectopic situation, thus creating a case of pancreatic heterotopia.

*Subsequent history:* The patient was seen in July 1952, when he appeared in good health.

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## 10. Pancreatic Heterotopia (Malignant?)

Contributed by ALEXIS E. LUBCHENCO, M. D., Denver, Colorado

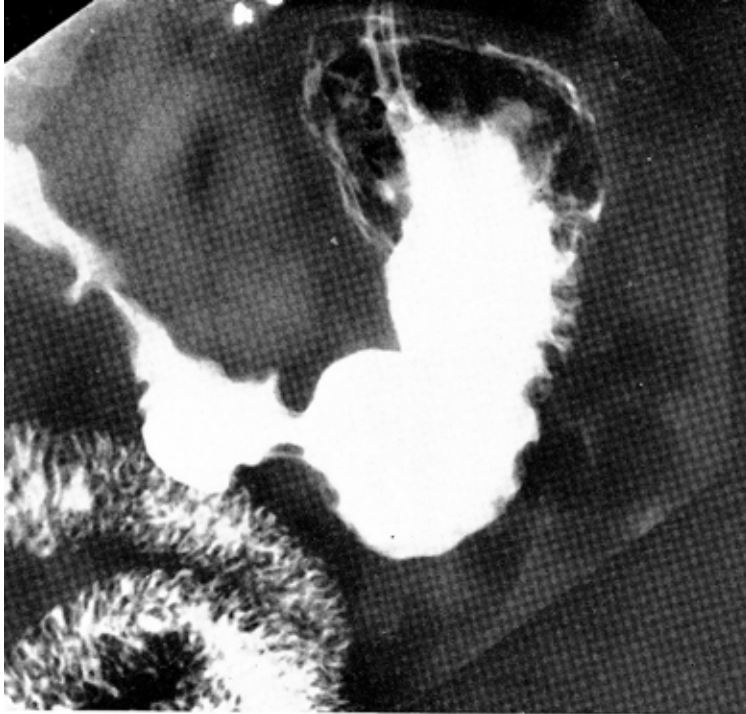
**T**HE PATIENT was a 52-year-old man who, in December, 1951, complained of epigastric pain of 25 years' duration; recently the pain had become severe after meals and radiated posteriorly, and there had been an episode of melena. Physical examination revealed no abnormalities. On roentgenologic examination the stomach was found in transverse position and narrowed in its lower third; the deformity was persistent and the borders of the distal area of the stomach were irregular. The duodenal cap showed some deformity and was eccentrically placed in respect to the pyloric ring.

Roentgenologic Impressions Submitted by Mail	Histopathologic Diagnoses Submitted by Mail
Peptic ulcer (gastric, duodenal) ----- 55	Adenocarcinoma ----- 74
Gastritis (chronic inflammation) ----- 52	Adenoma (papillary, cystic) ----- 52
Carcinoma of the stomach 33	Carcinoma in ectopic pancreas ----- 10
Extragastric Tumors ----- 16	Congenital diverticulum... 8
Insufficient evidence! ---- 1	Others ----- 17
Others ----- 12	

*Dr. Rigler:* Diffuse contraction of the antrum of the stomach but with vigorous peristalsis in all other portions of the stomach approaching it. The pylorus is elongated. The duodenum shows a characteristic deformity with, I believe, a small crater representing an ulcer. The whole appearance is quite characteristic of the type of gastrospasm sometimes accompanied by hypertrophy of the gastric muscle, which attends an active duodenal ulcer and simulates a tumor mass. I do not believe there is any real tumor here at all.

In such cases, the introduction of a local anesthetic such as larocaine, is occasionally attended by good results in relaxing the spasm and thus eliminating the question of tumor. Furthermore, the use of a small dose of morphine subcutaneously will usually induce peristalsis even in such areas of contraction, and thereby also give a better picture of the lesion. It would be important to know the degree of gastric acidity in this particular instance since usually in such cases there is an excess of free hydrochloric acid.





**Fig. 1 —** Roentgenogram showing diffuse contraction of the antrum, vigorous peristalsis and elongated pylorus.

There is on the lesser curvature of the stomach, near the pylorus, a small elevation of the barium column which might represent a small gastric ulcer, likewise benign. This is not clearly defined in this one film and it would be impossible to be sure that this is not simply due to a variation in the mucous membrane folds without further studies and repeated films.

The contraction of the pyloric end of the stomach simulating a tumor often occurs as a result of ulcers, either in the stomach or in the duodenum.

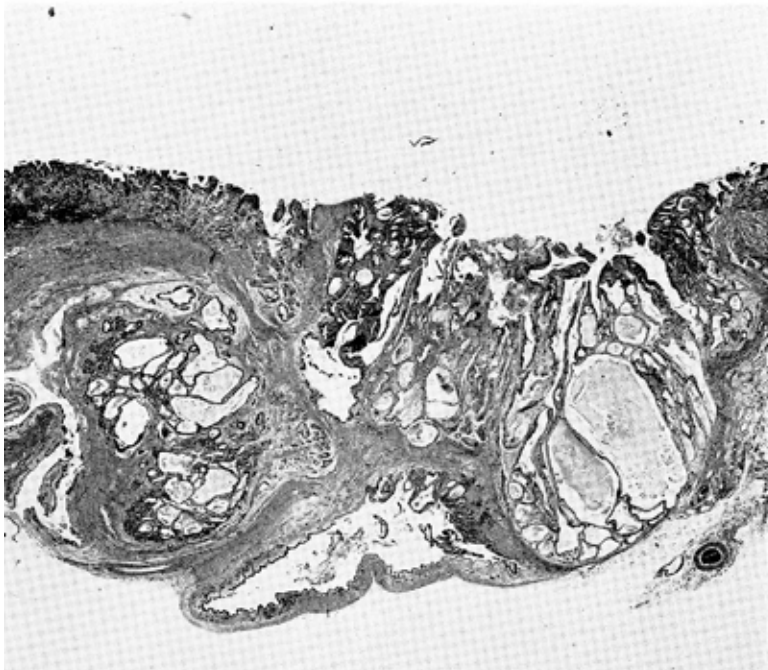
**Dr. Rigler's impression:** DUODENAL ULCER with gastro-spasm. Possible small GASTRIC ULCERATION.

**Dr. Regato:** Dr. Byrl R. Kirklín of Rochester and Dr. Hugh F. Hare of Los Angeles also diagnosed a duodenal ulcer in this case.

**Paul C. Swenson, M. D.,** Philadelphia, Pennsylvania (by mail): I don't see any stomach lesion but there is an ulcer in the lesser curvature of the bulb.

**Operative findings:** In December 1951, a subtotal gastrectomy was done. There was an ulcerated area 1.5 cm on the lesser curvature surrounded by an induration 2.5 cm in

**Fig. 3 —** Low-power photomicrograph demonstrating cystic lesions replacing the entire gastric wall and communicating with the lumen.



**Fig. 2 —** Surgical specimen with ulcerated area of the lesser curvature.

diameter; on cut section there was a cystic appearance and mucinous material. Two large ulcers of the first portion of the duodenum were also found.

**Dr. Ackerman:** This is an extremely unusual tumor which forms a rather large mass; it is confined to the wall of the stomach. There were no involved lymph nodes. It consisted of numerous duct-like spaces lined by tall columnar epithelium suggesting to me pancreatic ducts. In some areas this had a lattice-like effect. Individual cells lining these areas were not remarkable. In a few zones the glands appeared somewhat atypical with some stratification of the cells, tendency towards inter-glandular budding but in no area was there any evidence of invasion. The differential diagnosis seems to lie between a tumor arising from gastric glands or tumor arising from heterotopic pancreas. I am more disposed towards the latter diagnosis because of the character of the epithelium and the pattern which this takes. Next question is whether this is benign or malignant. There is no evidence of invasion, it is rather well circumscribed and there are only a few focal atypical changes in the epithelium. Palmer was able to find 215 cases of heterotopic pancreas occurring in the stomach. In only five was the lesion grossly cystic. Most of these were single. The most common size ranged from 0.6 cm to 3 cm; rarely they were cystic. This is an unusual gross pattern for heterotopic pancreas. It is usually firm, light yellow or cream color and lobulated. Ulceration surrounding heterotopic pancreas has previously been reported. The only other possible diagnosis in this case is that of enterogenous cyst.

**Dr. Ackerman's diagnosis:** HETEROTOPIC PANCREAS.

**Dr. Regato:** Dr. Engelbreth Holm of Copenhagen made a diagnosis of "inverted polyposis." Dr. Malcolm B. Dockerty of Rochester made a diagnosis of carcinoma arising from ectopic pancreatic tissue; Dr. Dockerty qualified it as low grade. Dr. Georges Gricoureff of Paris made a diagnosis of malignant papillary adenoma. Dr. Frank Foote of New York thought that the typical areas approached cancer but are below the "honest to God level".

**Arthur P. Stout, M. D.,** New York, N. Y. (by mail): This section comes from the stomach since there is gastric mucosa on both sides of it. Apparently the muscular coat is not included, only mucosa and submucosa. A cystic and glandular tumor occupies all of the central part of the section extending deeply into the submucosa but with sharp



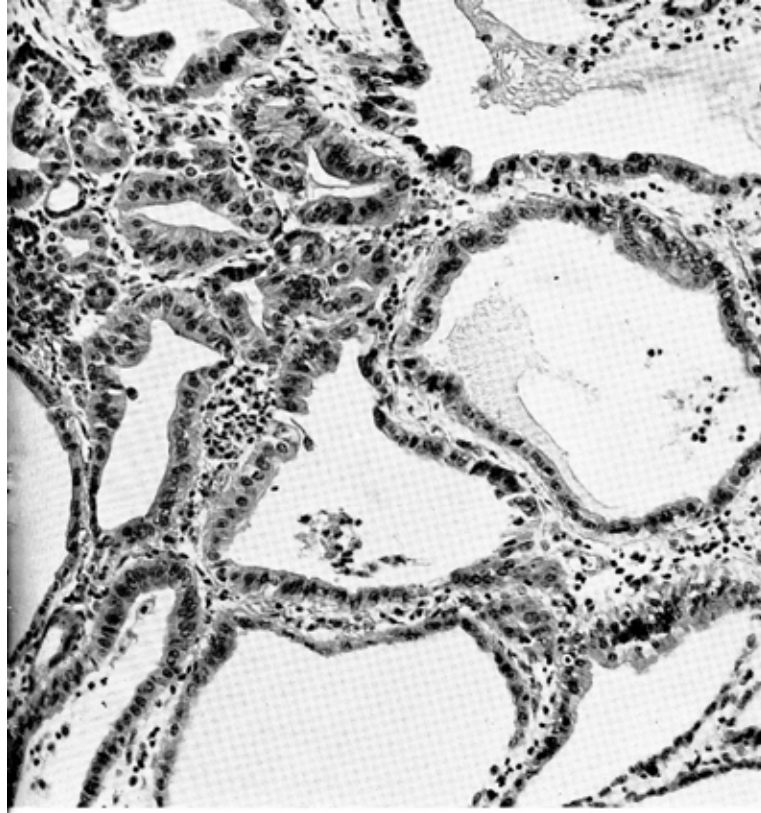


Fig. 4—Photomicrograph showing duct-like structures lined by columnar epithelium having some resemblance to pancreatic ducts.

delineation in the depths as if it was pushing its way downward rather than growing by infiltration. It does the same thing at both extremities, pushing its way under intact mucosa. Part of the cells lining the glandular spaces and cysts are differentiated goblet cells of the intestinal type. Most of them are carcinoma cells. I presume this is a localized intestinal cell heterotopia which has become carcinomatous in an extremely restrained fashion. I have not before seen anything like this.

*Pierre Masson, M. D., Montreal, Canada (by mail):* Another congenital malformation like that of Cases 3 and 9, but here the epithelium shows active proliferation. The obvious cellular anaplasia renders the prognosis guarded.

*Rupert Willis, M. D., Leeds, England (by mail):* This case and Cases 3 and 9, are possibly similar lesions to those reported by Stewart and Taylor as adenomyoma.

*Anthony F. Rossitto, M. D., Wichita, Kansas:* I would like to ask Dr. Rigler how does he explain the large size of the lesion found at surgery?

*Dr. Rigler:* My feeling is that the major portion of the contraction of the stomach seen in the roentgenogram is not due to this lesion at all. It is due to the duodenal ulcer and represents a gastric spasm. This is, of course, very difficult to prove on the basis of one film. What complicates the matter is the fact that there is a duodenal ulcer. The little thing that I pointed to undoubtedly represents the ulcer that was found in the stomach.

*Alexis E. Lubchenko, M. D., Denver, Colorado:* This lesion was rather deep in the submucosa and well encapsulated. When we first saw it, we were not too impressed, although we couldn't explain why we had such a relatively deep ulcer present. It wasn't like a leiomyoma or some intrinsic lesion of the wall. On microscopic examination we thought it was pretty definitely malignant in the periphery and we explained the ulceration on the basis of cancerous change. Most of the pathologists whom I have shown this slide to have agreed or have called it some form of low grade cancerous change. We called it a cancer for lack of a better term. Dr. Vernon L. Bolton of Colorado

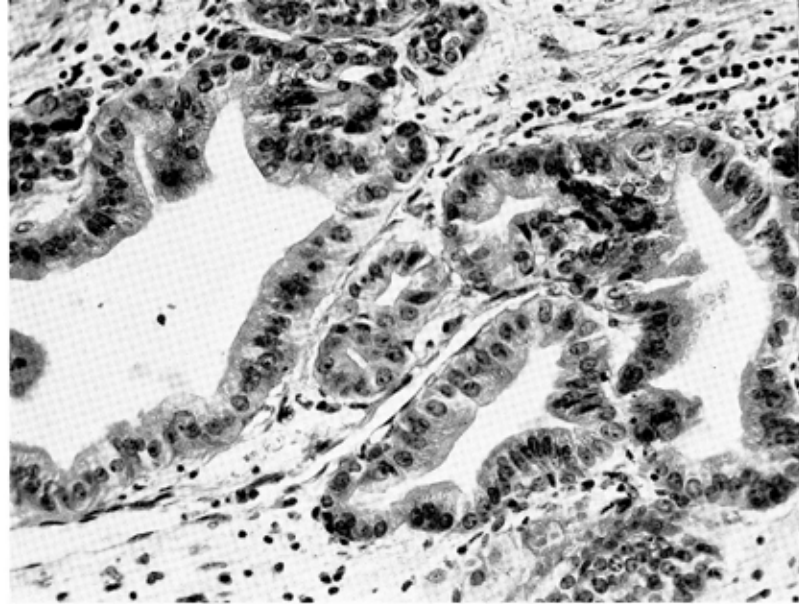


Fig. 5 — Low-power photomicrograph showing a group of glands with some tortuosity but no malignant transformation.

Springs, and Dr. John H. Jamison of Denver made their own roentgenographic and fluoroscopic studies and both considered this to be a cancerous ulcer on the lesser curvature.

*Horace K. Giffen, M. D., Omaha, Nebraska:* I should like to know what it is that defines this lesion as definitely related to pancreas. Is it the proximity to the gland, hunch, or olfactory sense?

*Dr. Ackerman:* This is heterotopia of some sort; I indicated that I wasn't absolutely certain how much the pancreas and how much the intestinal glands had to do in it. You can make the diagnosis very easily when the mass looks like pancreas grossly and when it is located in the usual place for pancreatic heterotopia and when microscopically the duct and the lobules resemble almost exactly pancreatic tissue. But when the character is at variance I don't see how anyone can be sure by just looking at the slide. The changes do not appear malignant. Dr. Dockerty is much more malignant than I am; he would probably call it a grade 0.5 cancer.

*Philip T. Flynn, M. D., Austin Texas:* How frequently do you see carcinoma of the stomach in the face of a duodenal ulcer?

*Dr. Ackerman:* If you have an active duodenal ulcer and you have another ulcer in the stomach it is probably not cancer. There are a few exceptions as there are exceptions to everything.

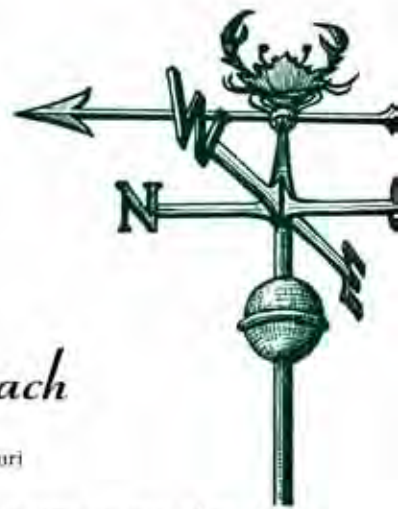
*Dr. Regato:* Among 45,000 cases of duodenal ulcer and 13,000 cases of carcinoma of the stomach observed at the Mayo Clinic (1911-1945) there were only 48 instances in which both were found in the same patient; in only four cases was the duodenal ulcer active when the diagnosis of cancer of the stomach was made (Fisher).

*William A. D. Anderson, M. D., Milwaukee, Wisconsin:* I felt that this was a benign lesion. Like Dr. Ackerman, I couldn't see the malignancy in it and I quite agree with his feeling that it is a heterotopia, but I don't know how you would call it pancreatic.

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## II. Leiomyoma of the Stomach

Contributed by LAUREN V. ACKERMAN, M. D., Saint Louis, Missouri

**T**HE PATIENT was a 55-year-old man who, in October 1951, gave a history of postprandial epigastric discomfort and tarry stools of two months duration. Physical examination revealed no abnormalities. On roentgenologic examination a filling defect 3.5 by 4 cm was observed in the mid-portion of the stomach; the mass occupied the posterior wall and the mucosal folds passed uninterruptedly over the area.

Roentgenologic Impressions Submitted by Mail	Histopathologic Diagnoses Submitted by Mail		
Leiomyoma	37	Leiomyoma	64
Miscellaneous benign tumors	45	Leiomyosarcoma	33
Gastric polyp	38	Neurilemoma	30
Carcinoma	16	Neurosarcoma	12
Miscellaneous malignant tumors	26	Neurofibroma	6
Others	12	Stoutoma	1
		Others	15

*Dr. Rigler:* The stomach is distended and some contraction at the pyloric end is apparent. In the middle third there is an irregularly outlined filling defect, apparently on the posterior wall. It suggests a large tumor mass, but the exact nature of it cannot be clearly delineated from this one film. The character of the border would suggest that this is a polypoid carcinoma.

It would be important to observe whether there was any motion of this mass, whether the gastric walls were rigid, and the exact situation of the tumor in the oblique view. It should be determined whether the jejunum was displaced. Thus the further possibilities of a bezoar or extrinsic pressure from a post-gastric mass could be more definitely excluded.

Fig. 1—Roentgenogram showing filling defect of the posterior wall of the stomach.



At the same time, there is some evidence of an obstructive process at the pylorus and the duodenal bulb is poorly filled. The appearance here suggests a duodenal ulcer. The combination of duodenal ulcer and polypoid carcinoma is very unusual. For this reason, the possibility that the tumor in the body of the stomach is of some other nature, such as a leiomyosarcoma, should be seriously considered. The history as given gives no indication concerning the possible duodenal ulcer and from one film a statement as to this could not be definitely made. Further study would have to be undertaken to determine this finally.

*Dr. Rigler's impression:* TUMOR OF THE STOMACH. Most probably LEIOMYOSARCOMA, also duodenal ulcer.

*Dr. Regato:* Byrl R. Kirklín, M. D., Rochester, Minnesota, Dr. Russell Morgan of Baltimore, and Dr. Charles M. White of Wichita, Kansas, submitted a diagnosis of leiomyoma of the posterior gastric wall.

*Paul C. Swenson, M. D., Philadelphia, Pennsylvania (by mail):* If the displacement defect was constant, the differential diagnosis lies between an early polypoid carcinoma, adenoma, neurofibroma and leiomyoma. Your gastroscopist might be able to help but in my neck of the woods they mislead rather than help. I would favor a guess that it is a leiomyoma.

*Operative findings:* In October 1951, a subtotal gastrectomy was performed. A spherical mass of grayish-pink, uniformly lobulated tissue measuring 3 cm in diameter was found within the posterior wall near the lesser curvature;

Fig. 2—Surgical specimen showing non-ulcerated spherical growth.





it was well encapsulated. There was a *small* neighboring ulceration.

*Dr. Ackerman:* On cross section this tumor appeared to be resistant and is formed by a well encapsulated, grayish-pink, uniform, lobulated tissue. It is lying entirely within the wall of the stomach.

This is a classic benign smooth muscle tumor with a characteristic gross appearance. Frequently these tumors undergo cystic central degeneration forming a niche (Marks). The central portion of these tumors may excavate. This particular tumor has few uniform cells which at times have long tapering blunt ended nuclei. Myofibrils can be demonstrated with the Masson trichrome stain. The PTAH stain can at times demonstrate hooklets on the ends of these cells. These tumors are usually benign. They are often over-diagnosed as malignant because of their cellularity. We have called them malignant when they have shown numerous mitotic figures. However, we have seen them with uniform cells which have metastasized. As an incidental autopsy finding smooth muscle tumors are extremely common and often multiple and usually at the cardia (Leidler). As a clinical finding, however, they are much less frequent than carcinoma of the stomach. Subtotal gastric resection should be done.

*Dr. Ackerman's diagnosis:* LEIOMYOMA.

*Dr. Regato:* Dr. Rupert Willis of Leeds, and Dr. Granville A. Bennett of Chicago submitted a diagnosis of leiomyoma. Dr. Engelbreth-Holm of Copenhagen made a diagnosis of neurogenous fibroma. Dr. Charles Oberling of Paris and Dr. Dorothy S. Russell of London made a diagnosis of leiomyosarcoma; Dr. Fred W. Stewart of New York also considered it as a low grade leiomyosarcoma.

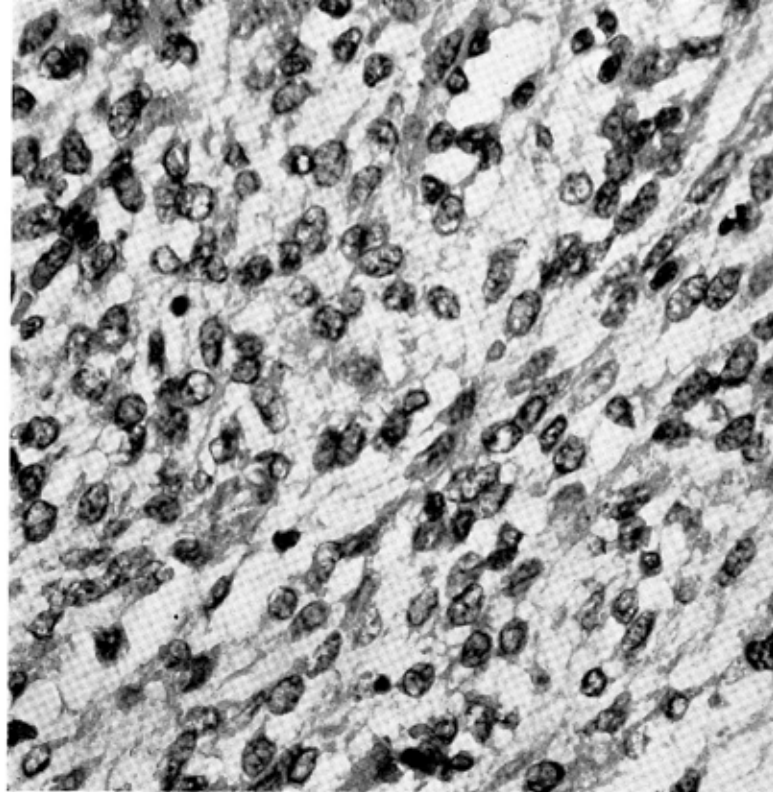
*Arthur P. Stout, M.D.,* New York, N. Y. (by mail): This appears to me to be a leiomyoma of the stomach. Although not fully differentiated, because I doubt if one can demonstrate myofibrils in all of the tumor cells, I judge it is benign because I can find so few mitoses. This is not completely reliable as a criterion of malignancy, but sufficiently so to permit one to prognosticate the probability of recurrence and metastasis.

*Malcolm B. Dockerty, M.D.,* Rochester, Minnesota (by mail): In spite of the nuclear palisading present, I would classify this lesion not as a malignant neurofibroma but as a grade I leiomyosarcoma.

*Franz Leidler, M.D.,* Jefferson Barracks, Missouri: Palmer gives an incidence of 0.18% leiomyomas found in 38,000 autopsies. I think that it is purely a matter of how hard you look. We examined 1,000 stomachs and found 302 leiomyomas, an incidence of 22%. The largest one of these tumors was 25 mm in diameter. Leiomyomas are about the same in incidence in both sexes. There seems to be a greater number of aged patients among those with clinical significant leiomyomas.

Among the large leiomyomas the submucous type is the most frequent but that is not true among the small ones which are often intramural. In large subserous leiomyomas, the presenting symptom is an intra-peritoneal severe hemorrhage. The majority lies in the lower half of the stomach; relatively few of them near the pylorus.

*Dr. Rigler:* I think ulceration in leiomyoma is, from the point of view of the roentgenologist, very common. The reason, of course, is that the patients who come for examination usually do so because they had a hemorrhage. That is why in a clinical group of cases one will find ulcer very commonly whereas in a group that Dr. Leidler has just described, ulceration may be relatively rare. The ulcers are sometimes multiple and one of their characteristic features is that they are extraordinarily deep so that if you can get a profile view of them you will see them going down much deeper than any gastric ulcer would because they have a lot of of tumor to dig into. I have several where



**Fig. 3—High-power photomicrograph showing an area of leiomyoma in which individual cells have plump nuclei and do not suggest smooth muscle origin.**

we have been able to demonstrate two ulcers. Usually, however, they are eccentric from the tumor.

*Richard M. Mulligan, M.D.,* Denver, Colorado: I think the reticulum pattern might help out in the differential diagnosis. I think that it would be helpful in distinguishing between nerve sheath tumors and smooth muscle tumors.

*William R. Platt, M.D.,* St. Louis, Missouri: Admitting the rarity of neurilemmomas of the stomach, I would like to mention the fact that recently we have encountered two cases. One was found at autopsy of a patient who died from extenuating hemorrhage, and the second one in a patient that was operated upon because of severe hematemesis. Both of them were in the age group of 30 to 40, both of them measured from 2.5 to 4 cm in diameter.

*Dr. Ackerman:* I can only say that what Dr. Platt has described is also perfectly compatible with a smooth muscle tumor.

*Frank Queen, M.D.,* Portland, Oregon. I would be interested in knowing how many fibromas were found in the study made by Dr. Leidler.

*Franz Leidler, M.D.,* Webster Groves, Missouri: I don't have the exact figures but there were about five or six fibromas. I have some question as to the nature of these fibromas because it so happened that in one of these stomachs there were multiple leiomyomas and with it there were one or two fibromas. I don't see why leiomyomas in the stomach couldn't fibrose as much as they do elsewhere, and I am not sure but that at least some of these reported fibromas are fibrosed leiomyomas.

*Frank Queen, M.D.,* Portland, Oregon: That brings up a point that I was trying to make and made poorly. We disagree on the precise terminology, the fine terminology of these tumors. But it doesn't make any difference because on the malignant and benign we all agree.

*Subsequent history:* In June 1953 this patient was reported to be feeling well and capable of eating all foods; no roentgenologic re-examination has been done.

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## 12. Leiomyosarcoma of the Stomach

Contributed by JOHN A. CAMPBELL, M. D., Indianapolis, Indiana

**T**HE PATIENT was a 50-year-old woman who, in May, 1948, gave a history of fainting spells, progressive asthenia, tarry stools and loss of 15 pounds in weight. On physical examination she was found moderately anemic. Roentgenologic examination revealed a filling defect of the fundus of the stomach at the cardiac orifice; on entering the stomach the barium column was diverted around a polypoid mass. The rest of the stomach appeared normal.

Roentgenologic Impressions Submitted by Mail	Histopathologic Diagnoses Submitted by Mail
Carcinoma of the stomach 78	Leiomyosarcoma 59
Lymphosarcoma 17	Malignant neurogenous tumor 37
Leiomyosarcoma 8	Sarcoma (myxo, lipo, fibro) 25
Benign lesions 31	Leiomyoma 26
Exploration indicated 1	Others 8
Others 12	

*Dr. Rigler:* There is a mass in the fundus of the stomach just at the esophageal orifice. It is well demonstrated because of the gas in the fundus and the fact that the mass is coated with the barium which extended into the stomach. Further examination in the upright position with more gas might reveal the soft tissue mass, especially with films made with a relatively low exposure. The outlines of the mass might then be more clearly delineated. One may assume that this is a carcinoma of the fundus since this is not an uncommon location for carcinoma and the somewhat irregu-

lar outline of the mass tends to bear this out. It appears to be well confined to the fundus but extends down the lesser curvature a short distance. The remainder of the stomach appears entirely normal.

The possibility of a benign tumor here, particularly fibroma, must also be considered since these occasionally occur in this area and hang down from the fundus. The fact that the barium column of the esophagus was diverted, however, strongly suggests that this is an infiltrating tumor, and, therefore, is more likely to be a carcinoma.

*Dr. Rigler's impression: TUMOR OF THE FUNDUS OF THE STOMACH. CARCINOMA?*

*Dr. Regato:* The possibility of a lymphosarcoma was suggested by Dr. Paul C. Swenson of Philadelphia, and a diagnosis of leiomyosarcoma of the stomach was submitted by Dr. Wendell P. Stampfli of Denver.

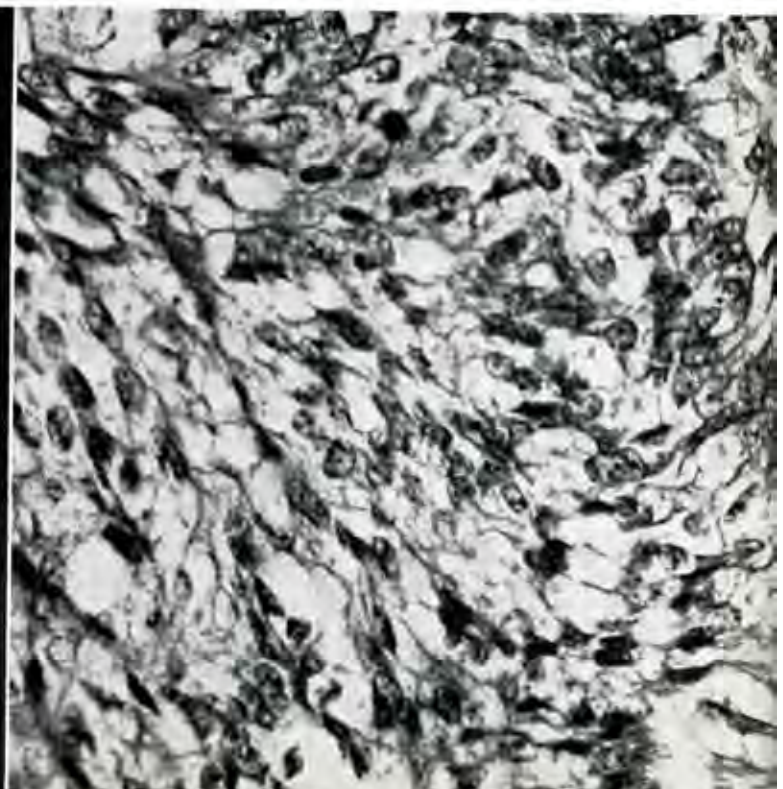
*Operative findings:* In May 1948, a subtotal gastrectomy was carried out. A mass 7.5 by 8.5 cm and 4 cm thick was found at the cardiac end of the stomach. On cut section, it appeared translucent and very friable; it was entirely covered by normal appearing mucosa except for the lack of rugae.

*Dr. Ackerman:* This was a large ulcerative tumor which was cellular and somewhat necrotic. Individual cells

Fig. 1—Roentgenogram showing filling defect of the fundic area of the stomach.



Fig. 2—Photomicrograph showing probable leiomyosarcoma. The individual cells suggest smooth muscle cells; mitotic figures are present.





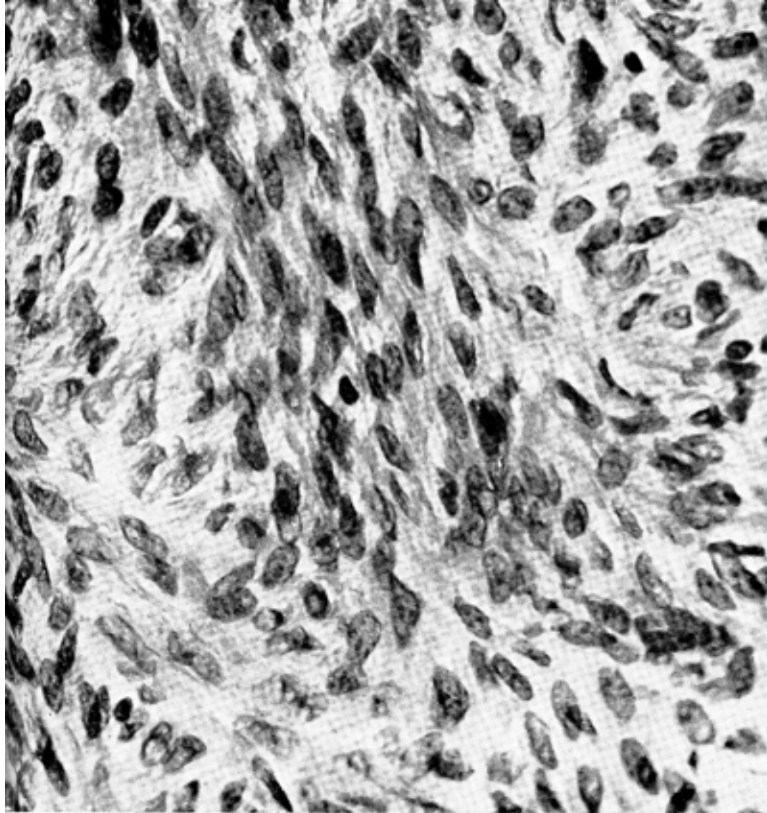


Fig. 3—Photomicrograph of another case of leiomyosarcoma with metastases to the omentum; the section was made from the metastasis.

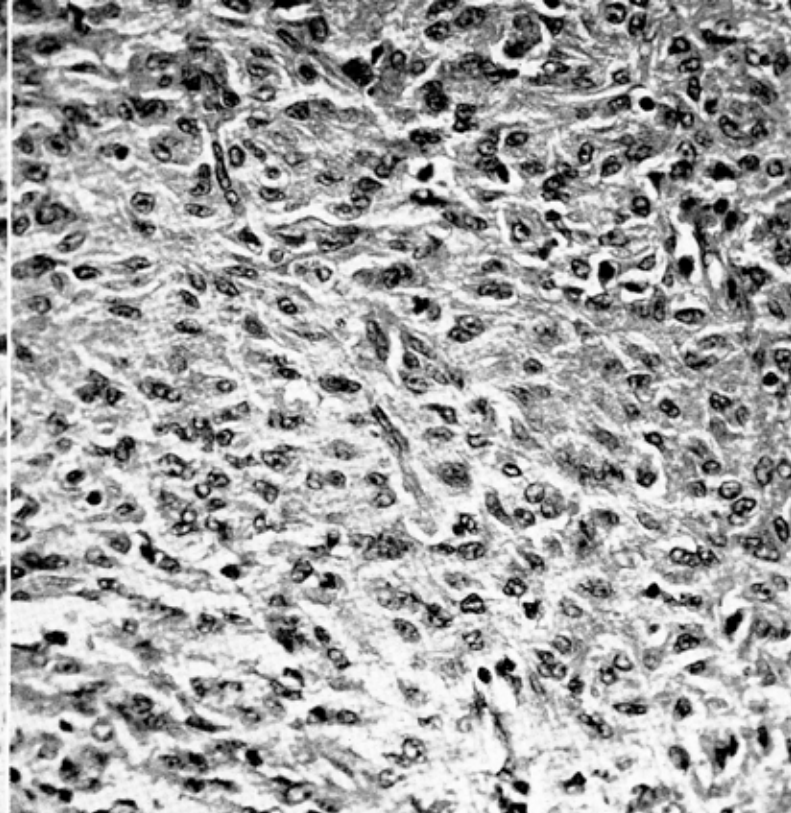


Fig. 4—Photomicrograph of a case of leiomyosarcoma of the small bowel with extensive metastases which was first diagnosed as benign.

appear quite uniform and mitotic figures are present. This is a leiomyosarcoma. These tumors usually metastasize through the blood stream to distant organs such as the liver and lung but we have also seen them within the regional lymph nodes. It is impossible to say what the prognosis of a given case may be. In Marshall and Meissner's group of leiomyosarcoma, eight out of nine were apparently cured. I suspect that tumors are more often called malignant when they should be called benign than the reverse.

Dr. Ackerman's diagnosis: LEIOMYOSARCOMA.

Dr. Regato: Dr. M. Polak of Buenos Aires made a diagnosis of leiomyoma and commented that only silver stains could differentiate this tumor from a neurinoma, but Dr. Engelbreth-Holm of Copenhagen made a diagnosis of neurinoma without silver stains. Dr. Malcolm B. Dockerty of Rochester, Dr. James B. McNaught of Denver and Dr. C. Oberling of Paris submitted a diagnosis of leiomyosarcoma; Dr. Frank Foote commented that this one was friskier than the previous case. Dr. Georges Gricouroff of Paris suggested the possibility of a colloid carcinoma.

Arthur P. Stout, M.D., New York, New York (by mail): There appear to be two independent lesions in this case. One of them is a simple ulcer of the lower end of the esophagus probably of the decubitus type rather than a peptic ulcer. The other lesion is a papillary tumor of the cardia separated only by about one centimeter of cardiac mucosa from the squamous mucosa of the esophagus. This tumor consists of rounded and spindle shaped cells growing in closely packed cords supported on broad cores of submucosal tissue. In a few areas the cords of tumor cells are surrounded by a mucoid material. It is hard to say whether or not the tumor has invaded the muscle coat. Although the tumor cells show no tendency to form glands or differentiate in an epidermoid direction, I can only suppose it must be a carcinoma of a very unusual type.

Pierre Masson, M. D., Montreal, Canada (by mail): Badly preserved specimen. In spite of the rounded form of many cells and of the mucoid imbibition, I do not think that this could be a carcinoma; the dominant structure recalls a leiomyosarcoma.

Mark Wheelock, M.D., Chicago, Illinois: This tumor was more cellular than the previous one and had no capsule;

also there was a greater nuclei-cytoplasm ratio in this case. I believe with Dr. Ackerman that the frequency or the occurrence of mitoses is not adequate criteria upon which to make a diagnosis.

General E. DeCoursey, (M. C.), Washington, D. C.: I would like to hear some of Dr. Ackerman's philosophy in the diagnosis of benign and malignant tumors of any kind on the basis of microscopic cytology. Does he always correlate the morphology of a tumor with a given natural history, or does he make a diagnosis of benignancy or malignancy on the basis of morphology alone?

Dr. Ackerman: Experience is a great thing. We all have in our minds tumor patterns which we think of as benign or malignant. But as the years pass, we find variations in behavior in relation to such microscopic patterns. I don't think that, as pathologists, we are limited to looking at just the slide. We make enough mistakes when we know the whole story to be dogmatic on the basis of microscopic appearance without a history, etc. We all know, for instance, that the criteria for malignant change in a cartilaginous tumor are very subtle. In smooth muscle tumors, it becomes a very difficult problem and one can only talk to some extent in generalities. I find that when a smooth muscle tumor looks perfectly benign, in most instances it will accommodate by behaving in a benign fashion but there will be exceptions; on the other hand, if it looks malignant, it behaves more consistently as a malignant tumor.

Dr. Regato: I hope the General approves of the generalities. Perhaps it would be wise to admit that, in the field of tumors, an authoritative histologic diagnosis is often subjective opinion rather than objective truth.

Subsequent history: In June 1952 the patient complained of diarrhea and loss of weight; the liver was enlarged. In July, 1952, she expired; no autopsy was done.

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- Marshall, S. F. and Meissner, W. A.: Sarcoma of the Stomach. *Ann. Surg.* 131:824-837, 1950.



# 13. *Leiomyosarcoma (?) of the Stomach*

Contributed by JOHN D. BAUER, M. D., Saint Louis, Missouri

**T**HE PATIENT was a 71-year-old man who, in March, 1950, complained of asthenia and dyspnea of three weeks' duration. There were no physical findings except for severe secondary anemia. He was treated with transfusions and administration of iron. Two years later, in April, 1952, he was readmitted; hemoglobin was 8.3 grams per cent but physical examination uncovered no abnormalities. On roentgenologic examination a sharply circumscribed filling defect was found in the antrum of the stomach. The peristaltic waves did not pass along the lesser curvature; there was no apparent ulceration.

Roentgenologic Impressions Submitted by Mail	Histopathologic Diagnoses Submitted by Mail		
Gastric Polyp .....	65	Metastatic melanoma .....	59
Miscellaneous benign tumors .....	33	Ganglioneuroma .....	28
Ectopic pancreas .....	14	Leiomyosarcoma .....	28
Polypoid carcinoma .....	25	Carcinoma .....	8
Others .....	20	Pheochromocytoma .....	6
		Damnedifinoma .....	1
		Others .....	21

*Dr. Rigler:* The whole antral portion of the stomach appears rigid, particularly on the greater curvature but also on the lesser. In addition, there is a fairly large, sharply defined filling defect suggesting a tumor which is extending throughout the whole lumen of the stomach and anterior to the posterior wall.

If one saw the tumor defect alone without the corresponding changes in the gastric walls, he might be inclined to consider some intramural or extragastric lesion, such as a leiomyoma or possibly even a tumor of the head of the pancreas compressing the stomach. The changes in the gastric walls, however, would suggest more likely that this represents a carcinoma of the stomach.

The history of an attack of anemia of unknown origin sometimes earlier would suggest that this patient may well have had a large benign polyp of the stomach which was bleeding at that time. These not infrequently become malignant and the polyp might have developed into a polypoid carcinoma with infiltration of the walls at this time.

Fig. 1—Roentgenogram showing sharply circumscribed filling defect of the antral area of the stomach with regional rigidity.



There is apparent displacement downward of the second and third portions of the duodenum, the duodenal curve being somewhat increased in size. This may, however, be due to pulling up of the stomach rather than to an actual lesion in the head of the pancreas.

The sharply defined and very large filling defect suggests the possibility that this is not an ordinary carcinoma. Nevertheless, a very large polyp which had degenerated and begun to infiltrate the gastric walls might account for it. The absence of an ulcer in the surface of a mass of this size is strong evidence against an intramural tumor, such as a leiomyoma or leiomyosarcoma.

The sharp definition of the defect and its almost square borders lead toward the direction of a bezoar of some kind. I have seen gallstones give exactly this appearance in the stomach and there are occasional cases in which gallstones are found in the stomach. One looks in vain here for evidences of an internal biliary fistula, but with only one film of this kind, such a fistula could not be excluded. It is notable that the duodenum looks compressed as if there were a large mass along side of it and medial to it, the sort of thing that might go with an enlarged gallbladder pressing against the first portion of the duodenum. Some other type of bezoar might also occur and it should be noted that, in patients who have obstructive lesions in the stomach, it is not unusual that accumulations of food or other particles will remain in the stomach thus simulating tumor. Such a process could be easily determined by its mobility under manipulation under fluoroscopy.

*Dr. Rigler's impressions:* (1) LARGE POLYP which has become malignant, (2) LEIOMYSARCOMA or (3) BEZOAR.

*Dr. Regato:* Dr. Jean Papillon of Lyon considered a pedunculated malignant tumor. Dr. Byrl R. Kirlin of Rochester suggested a diagnosis of leiomyoma, probably benign, but possibly malignant. Dr. Paul C. Swenson of Philadelphia suggested a benign tumor, leiomyoma or neuroma.

*Operative findings:* In May 1952, a partial gastrectomy was done. An intramural tumor 3 cm in diameter was found on the anterior wall of the antral area; it was grayish-white and of soft medullary consistency. There was no enlarged lymph nodes.

*Dr. Ackerman:* This is an intramural tumor of the stomach which has an unusual microscopic pattern. It apparently does not arise from the mucosa, it doesn't have the characteristics of a glomus tumor or a carcinoid. There is considerable pigment present and I considered the possibility that this might be a metastatic melanocarcinoma. The pigment all stained for hemosiderin. I also considered the possibility of a hemangiopericytoma but the reticulum pattern was nonrewarding. In hemangiopericytoma the tumor cells are outside of the reticulum; I could not demonstrate any myofibrils. Mitotic figures were few and far between. I am left with the possibility that this is a tumor of smooth muscle origin, although the microscopic pattern is unorthodox. I am not absolutely certain that it is benign. We had a tumor with this pattern arising in the small bowel which later metastasized and killed the patient. Therefore, I will tentatively classify this as a smooth muscle origin and consider the possibility that it might be malignant. Certainly nothing further need be done. Time, often a better diagnostician than the pathologist, may make the correct diagnosis.

*Dr. Ackerman's diagnosis:* LEIOMYOSARCOMA??

*Dr. Regato:* Dr. Frank Foote of New York considered this as a structural variant of leiomyosarcoma. Dr. D.



Brachetto-Brian of Buenos Aires suggested a ganglioneuroma and Dr. C. Oberling of Paris thought that this is a sarcoma of rare type possibly a liposarcoma.

*Arthur P. Stout, M.D., New York, N. Y. (by mail):* Whatever this tumor proves to be, I believe it is uncommon, for I have never seen nor have I ever read of anything quite like it. It does not seem to be composed of cells derived from any of the usual gastric cells. If this is correct, it must be either a metastasis or a tumor of heterotopic cells. It is so neatly and perfectly encapsulated, it is hard for me to believe it could be a metastasis, but of course it may be. If metastatic, I can offer no suggestions as to the site or nature of the parent neoplasm. I am equally unable to recognize the possible heterotopic tissues from which it might arise. This seems to exclude everything and leave it as a completely unexplained tumor. I will make one suggestion which would need study with special stains to support. I have seen some leiomyomas so altered by degeneration that one could hardly suspect their myomatous nature—it is conceivable that this may be one of them. It is a diagnosis of desperation because I cannot think of anything else.

*Pierre Masson, M.D., Montreal, Canada (by mail):* I have never seen a primary gastric tumor of this type. Could it be a metastasis from a renal tumor?

*Mark Wheelock, M.D., Chicago, Illinois:* I called it a paraganglioma. I see that I had some others with me at least as far as it being a tumor from the medullary portion of the adrenal cortex.

*Dr. Ackerman:* Microscopically it doesn't fit too well with pheochromocytoma. The so-called nonchromaffin paraganglioma is a very good high powered diagnosis. There is a rather good epidemic of this type at present and there have been some articles written recently on nonchromaffin paraganglioma occurring retroperitoneally. Individually

Fig. 2—Low-power photomicrograph demonstrating the tumor arising from the wall and extending to the serosal surface; the mucosa is intact.



perhaps the cells might fit with such a diagnosis but from the standpoint of the pattern, it does not fit in that they do not form little groups of cells separated by vascular spaces nor is there any well-defined reticulum pattern which is usually present in such tumors. Also the cytoplasm of those tumors is often fairly granular and often there may be more than one nucleus.

*Dr. Regato:* In submitting his diagnosis of leiomyosarcoma, Dr. Frank Foote of New York predicted that we will have many diagnoses of paraganglioma; he did not elaborate.

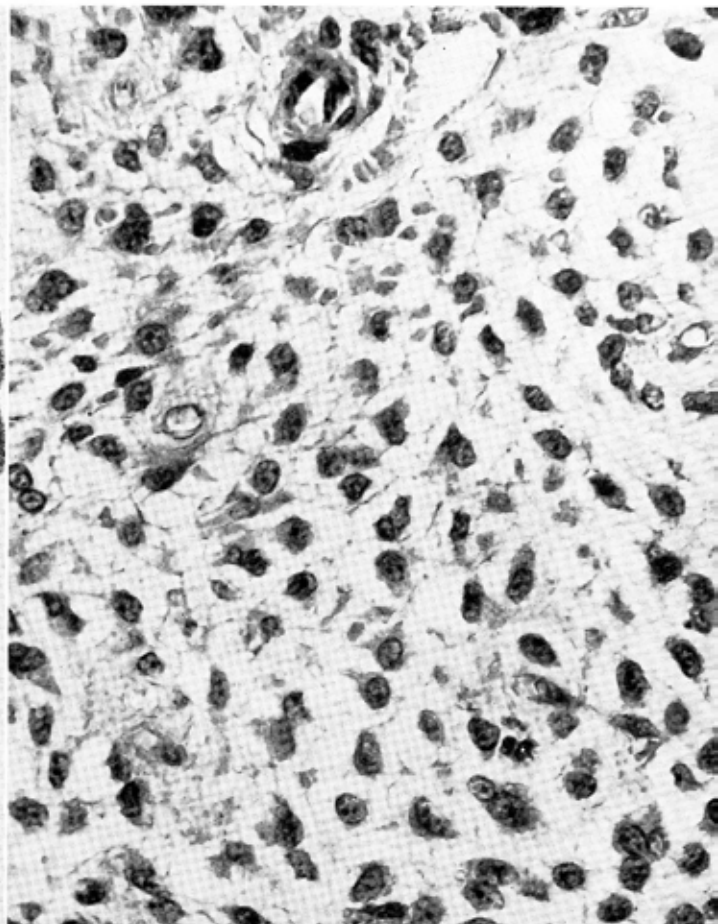
*Frank B. McGlone, M.D., Denver, Colorado:* This man had anemia which was treated by iron with no evidence of any diagnostic procedures being made two years before diagnosis; this is, of course, the responsibility of the family physician. The physician, or internist taking care of the patient, has the advantage of knowing the patient and in addition is familiar with the clinical history. In a great number of cases when it comes to making a diagnosis of probably benignancy or malignancy of a tumor, he is in possession of valuable information. It has been shown here how accurate Dr. Rigler can be in interpreting a single roentgenogram; obviously a thorough radiologic examination adds considerably to the diagnosis of probability. All of us will agree to the surgical exploration of a patient suspected of having a malignant tumor, but many of us will rather be conservative in treatment of a lesion known to be benign. I believe that we should exhaust all possible diagnostic means, gastroscopy, radioscopy, cytologic study, gastric analysis, etc., before embarking on a form of treatment which may prove to be excessive in certain instances though adequate in others.

*Subsequent history:* The patient was last seen in June, 1953, when he appeared in good health.

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Fig. 3—Photomicrograph showing uniform cellular detail and rare mitotic figures in possible leiomyosarcoma.







## 14. Carcinoma in Situ with Peptic Ulceration of the Stomach

Contributed by CARL E. LISHER, M. D., Saint Louis, Missouri

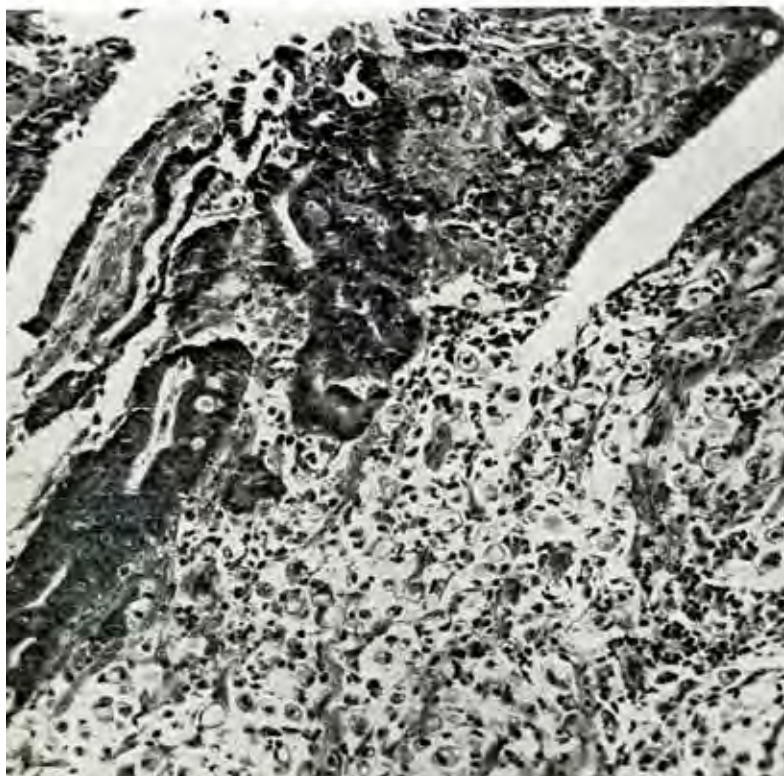
**T**HE PATIENT was a 58-year-old man who, in November 1951, complained of postprandial epigastric pain of five months' duration; he also had frequent bloating sensations and eructations and occasional vomiting of coffee-ground material. There had been a progressive loss of 30 pounds in weight in three years. There were no physical findings, but on gastroscopy, an apparently malignant ulceration was seen in the lesser curvature. On roentgenologic examination an extramural crater was seen in the lesser curvature with stiffening, lack of peristalsis and distortion of mucosal patterns; there was a suspicion of annular infiltration and the duodenal bulb never entirely filled.

Roentgenologic Impressions Submitted by Mail		Histopathologic Diagnoses Submitted by Mail	
Carcinomatous ulcer	68	Benign chronic ulcer	78
Benign gastric ulcer	62	Malignant ulcer	66
Miscellaneous benign lesions	10	Kaposi's disease	4
Miscellaneous malignant lesions	16	Others	18
Others	9		

*Dr. Rigler:* The stomach is moderately distended and there is evidence of a mild degree of obstruction at the pyloric outlet. On the lesser curvature near the incisura there is a very large niche characteristic of an ulcer crater. This has a rather unusual form in that the external surface is depressed. The appearance, however, is not that of a meniscus, although there is some rigidity of the contiguous walls of the stomach. The contraction in the region of the antrum could well be secondary to the ulcer in the stomach, which the large niche no doubt represents.

The problem of differential diagnosis here as between a malignant and a benign ulcer is involved. Obviously, a final diagnosis as to this differential must be made definitely on biopsy study. Nevertheless, in cases of frank ulceration

**Fig. 2—**Photomicrograph of an area near the ulceration in which poorly defined tumor cells can be seen.



**Fig. 1—**Roentgenogram showing extramural crater in the lesser curvature with rigidity of the area.

**Fig. 3—**High-power photomicrograph showing signet-ring tumor cells in the margin of the ulcer.





without obvious tumor, the diagnosis of benign ulcer is by far the best to make since the vast majority of such ulcers prove to be benign. The apparent annular contraction around the antrum can well be explained by a benign ulcer and is due to spasm. The curious shape of the ulcer may well be due to some granulations at its very base. The ulcer is not intraluminal and does not have the characteristic meniscus shape of a carcinomatous ulcer. There are no real masses seen beyond it. It would be well to have a mucosal study here to see what the mucous membrane pattern is contiguous to the ulcer in attempting to make this differential. The size of the ulcer is of little help in making the differential diagnosis as between benign and malignant lesions. While this one is on the large size, the degree of penetration would be consistent with a benign ulcer despite the size.

Dr. Rigler's impression: **BENIGN ULCER** with gastrospasm at the pyloric end. No definite evidence of a tumor.

Dr. Regato: Dr. Luis Arrieta-Sanchez of Panama, Dr. Charles A. Priviteri of New York, Dr. Robert Ball of Baton Rouge, and Dr. Cirilo Montes de Oca of Mérida submitted an impression of benign gastric ulcer with carcinoma.

Paul C. Swenson, M.D., Philadelphia, Pennsylvania (by mail): This is probably an ulcerating carcinoma of the stomach; I base my view on the shape of the ulcer crater. You will probably find cancer in one corner of the ulcer. I think that the prepyloric constriction is for the most part spasm.

**Operative findings:** In November 1951, an exploration was performed. An apparently benign ulcer surrounded by induration was found in the lesser curvature; frozen section confirmed the diagnosis of benign ulcer. A subtotal gastrectomy was done. There was a palpable superficial liver nodule.

Dr. Ackerman: This case taught us several lessons. I was called to the operating room and was told that a gross diagnosis of carcinoma of the stomach had been made. A subtotal resection had already been done but only as a palliative procedure for there were metastases in the liver. The surgeon called me to look at some lesions on the subserosal surface of the small bowel. These were vascular and frozen sections proved them to be hemangiomas. We asked for a look at the lesions of the liver. These lesions were somewhat grayish-white in color and did not measure more than a centimeter. We were not too impressed and asked that one be biopsied, frozen section demonstrated that they were healed tubercles.

The gastric ulcer was sharply defined, measured 2.5 by 1.5 cm and had penetrated the stomach wall deeply; the rugae extended into it. There were no enlarged lymph nodes seen. A single frozen section showed no evidence of cancer. The entire ulcer was blocked and we found evidence of superficial cancer on the margin of the ulcer in some of the sections. The distribution of this cancer is shown in Fig. 4. About (half of the Seminar slides were from an area which did not show carcinoma.) This carcinoma shows signet ring cells and the tumor has not extended beyond the muscularis mucosae. The peptic ulceration, however, demonstrated complete destruction of the muscle with replacement of fibrosis. These changes to me suggest that this was peptic ulceration of a carcinoma rather than carcinoma arising in a chronic ulcer. We have become convinced with Hebbel and Mallory that carcinomatous changes within a chronic ulcer may be a relatively rare event. The regional lymph nodes in this case were negative and we feel that this patient should have excellent prognosis.

The diagnosis of carcinoma engrafted on an ulcer should be based on gross and microscopic findings. The clinical

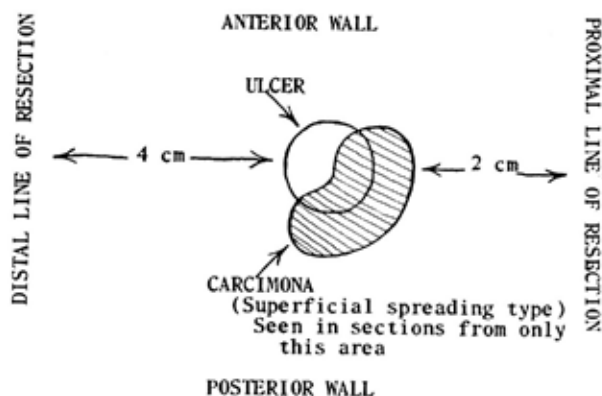


Fig. 4—Diagrammatic presentation of the area of ulceration and of superficial carcinoma.

history can only suggest such a relationship. The criteria are as follows: 1. Rugal folds converge into the lumen. 2. The ulcer is sharply demarcated. 3. The muscularis on the edge of the ulcer bends sharply upward to fuse with the muscularis mucosae. 4. The base of the ulcer is free of carcinoma and completely replaced by fibrous connective tissue with a broad band of subserosal fibrosis and evidence of obliterative vascular changes. 5. Carcinoma is found on only one margin after sub-serially sectioning the lesion.

In primary ulcerating carcinoma the ulcer does not have steep over-hanging edges. Carcinoma is present through the base, and the muscle is preserved. Newcomb believes that proof of origin is evident when the muscularis mucosae is adherent to the muscularis. However, exceptions to this occur. It is usually stated that when the base of the ulcer is free of carcinoma, the wall is completely replaced by fibrous tissue, and subserosal fibrosis is present, carcinoma will be found on one or both margins. Carcinoma on both margins suggests that peptic ulceration is secondary rather than primary. The question arises as to whether peptic digestion of a carcinoma would cause enough destruction of the base of an ulcer to completely destroy the wall. We have seen an instance in which carcinoma was present superficially on the margins. There was beginning destruction of the entire base by young inflammatory and connective tissue cells. Stout emphasized that in gastric carcinoma it is unusual to find ulceration passing down more than just into the true muscular coat, but Mallory has illustrated deep peptic ulceration in carcinoma.

At Barnes Hospital, over a three-year period, 61 chronic gastric ulcers were resected and only four could be liberally

### Analysis of 733 Stomachs Surgically Excised for Chronic Gastric Ulcer or Cancer, 1921-1940

(STEWART)

Independent chronic gastric ulcer . . . . .	*459
Independent cancer . . . . .	*230
Ulcer-cancer . . . . .	51

#### Incidence of Ulcer-Cancer

Total stomachs with chronic ulcer . . . . .	510
Ulcer-cancer 51 (10%)	
Total stomachs with cancer . . . . .	281
Ulcer-cancer 51 (18%)	

\*In seven instances, unrelated ulcer and cancer were present in the same stomach.



	<i>Evidence in Favor of Carcinoma Arising From Previous Chronic Ulceration</i>	<i>Evidence Against Origin of Carcinoma Arising From Previous Chronic Ulceration</i>
Authorities Favoring Each Theory	Stout, Gomori, Newcomb	Mallory, Palmer, Hebbel
Clinical Data	Long history of peptic ulcer symptoms.	A carcinoma may be present for as long as 5 to 10 years (Hebbel, Steiner).
Roentgenogram	Typical changes of benign ulcer.	Ten to fifteen per cent error in interpretation of roentgenogram.
Gross Appearance	Punched out ulcer with rugae converging into ulcer.	Peptic ulceration occurs secondarily in carcinoma which gives typical gross pattern of benign ulcer.
Microscopic Changes	<p>Carcinoma on one margin of chronic ulceration with destruction of entire base. The base does not contain cancer.</p> <p>Fusion between muscularis mucosae and muscularis represents pre-existing chronic ulceration (Newcomb).</p> <p>Deep peptic ulceration rarely occurs in a primary ulcerating cancer.</p>	<p>Peptic ulceration of carcinoma takes place leaving a ring of carcinoma around border. Such changes are best demonstrated in superficial spreading carcinoma (Mallory).</p> <p>Exceptions to this rule occur.</p> <p>Deep peptic ulceration has been demonstrated in a primary ulcerating carcinoma.</p>

interpreted as showing carcinoma arising on the basis of this chronic ulcer (6 per cent). During this same period in which these four carcinomas were found, there were a total of 78 carcinomas resected (5 per cent). If severe pathologic criteria were applied to these four cases only one might be accepted as carcinoma arising on the basis of a previous ulcer.

Dr. Ackerman's diagnosis: **CARCINOMA IN SITU** with peptic ulceration.

*Dr. Regato:* Dr. Dorothy Russell of London and Dr. Georges Gricoureff of Paris made a diagnosis of peptic ulcer with early carcinomatous changes. Dr. Frank Foote of New York favored ulceration of a pre-existing carcinoma though admitting that this is not subject to proof. Dr. Pierre Masson of Montreal also was of this opinion.

*Arthur P. Stout, M.D.,* New York, New York (by mail): A deeply penetrating long standing chronic peptic ulcer with its bed outside of the stomach wall. I can find no evidence of carcinoma in the bed of the ulcer. There is a certain amount of glandular proliferation in the mucosa at the ulcer's margin and I presume the question arises, should this be considered carcinoma? In my experience carcinoma at an ulcer's margin may appear either as isolated signet ring cells in the stroma or the glandular proliferations are sufficiently anaplastic or invasive to warrant calling them cancer. Sometimes both of these features may be present. In this case the decision is a hard one because my

section had been damaged in the vital area; it is also a little thick and over-stained. Thus although I can see some signet ring cells, they may be only histiocytes—there are a good many phagocytes with lipoid vacuoles all around them. I can also detect a few darkly stained cells with mitoses but I cannot be sure they are cancer cells. The glandular elements show irregularities of proliferation but I cannot convince myself they are cancerous. I cannot therefore say there is any cancer in my section, but I shall not be surprised if other sections show it.

*Malcolm B. Dockerty, M.D.,* Rochester, Minnesota (by mail): Before committing myself to a definite diagnosis on this ulcer I should like to have other sections including several with mucous stains. One may possibly discount the hyperplastic changes about the edges of a healing ulcer and this one certainly exhibits hyperplasia aplenty. I am frankly worried about certain signet ring forms which are intermingled with inflammatory cells. If these are mucino-carcinophilic, then the lesion is cancerous.

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## Our Guest Speakers

LEO G. RIGLER, M.D., Chief of the Department of Radiology and Physical Medicine, University of Minnesota. Dr. Rigler graduated from the University of Minnesota Medical School in 1920. He is the author of several didactic books on roentgen diagnosis and one of the outstanding American teachers of this branch of medicine. Dr. Rigler was the guest of the Penrose Cancer Hospital.



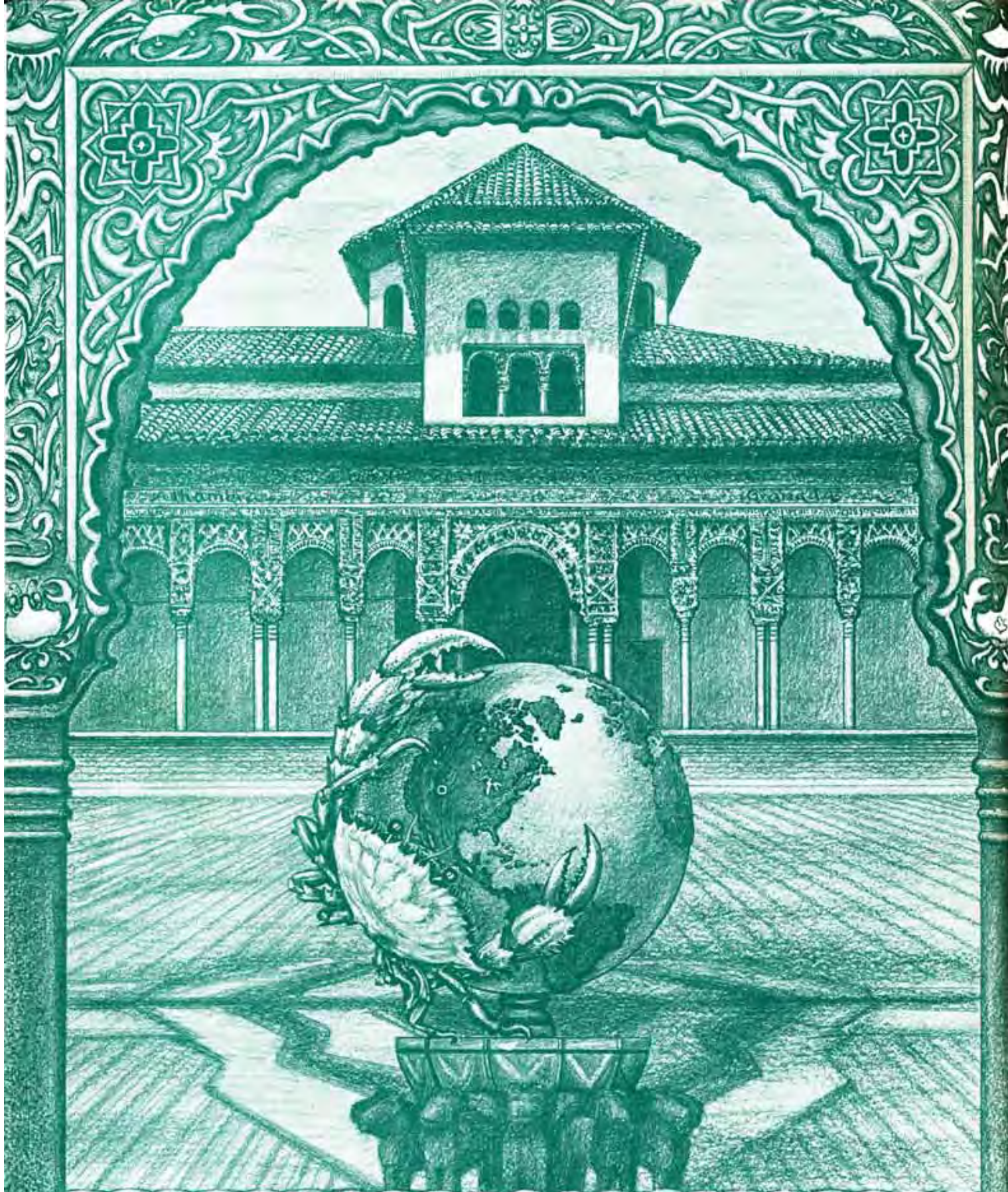
LAUREN V. ACKERMAN, M.D., Professor of Surgical Pathology and of Pathology, Washington University Medical School, St. Louis, Missouri. Dr. Ackerman graduated from the University of Rochester Medical School in 1932. He is the author of a book on Surgical Pathology and co-author of a book on Cancer. Dr. Ackerman is a recognized international authority on tumor pathology and has participated frequently in these CANCER SEMINARS. Dr. Ackerman was the guest of the College of American Pathologists.



MAC F. CAHAL, J.D., Executive Secretary and General Counsel of the American Academy of General Practice. Mr. Cahal was previously Executive Secretary of the American College of Radiology. He is one of the leading American authorities on the social and economic aspects of medicine. Mr. Cahal was the guest of the Penrose Cancer Hospital and was the speaker at the banquet.







Penrose Cancer Hospital  
Colorado Springs, Colorado