BENIGN GASTRIC TUMOR

Case Report of Neurofibroma

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Benign tumors of the stomach are of relatively uncommon occurrence in our experience, as well as upon the basis of reports in the literature. They are seen with sufficient frequency, however, to warrant consideration if certain findings are present in the clinical course and in the roentgen examination. As with any gastric tumor it is not only the roentgenologist's responsibility to make a diagnosis of neoplasm, but every effort should be made to determine whether the tumor present is benign or malignant. Although this is not always possible, accuracy in the diagnosis of gastric lesions improves with the use of the newer developments in roentgen examination as well as with the use of other new diagnostic aids.

Three gastric neurofibromata have been seen at the Cleveland Clinic within the past year. In all of these cases the tumor has been removed surgically, and it has been possible to make a final histologic diagnosis. One of these cases had been followed for approximately one year before operation and had progress examinations, both roentgen and gastroscopic.

We wish to report this case in detail because of its diagnostic features, as well as to show the roentgen appearance of the other two neurofibromata.

CASE REPORT

The patient was a man, aged 64, who was first seen at the Clinic in March, 1939. The gastrointestinal complaints at that time were inability to eat heavy and fried foods without abdominal distress, gas, bloating, etc. These symptoms had persisted for several years. At the time of the first admission, there was no history of tarry stools. There had been a recent weight loss of 5 pounds.

The past history revealed that in 1923 the patient had had an operation for the removal of kidney stones, apparently from the left ureter or kidney. He had been told that at the present time there were several small stones in each kidney, although no symptoms were referable to these calculi.

The physical examination was negative except for a small, left inguinal hernia.

The laboratory examination was essentially normal. The urine had a specific gravity of 1.019 and was negative for sugar and albumin. The blood examination was as follows: 4,700,000 red blood cells; 91 per cent hemoglobin; and 8,100 white blood cells. Both the Wassermann and Kahn reactions were negative. The Ewald test meal at the time of the first examination showed a total acidity of 20, but no free hydrochloric acid. The total quantity aspirated was 30 cc., and neither gross nor occult blood could be demonstrated.

Roentgen examination. A preliminary scout film of the abdomen showed a normal lumbosacral region. The right kidney was normal in size, shape, and position with two

opaque shadows in the region of the pelvis. The left kidney was not visualized, but there were several, small opaque shadows in this region. An intravenous urogram made the same day showed a prompt appearance of the dye on both sides. Both kidneys, however, showed a calculous pyonephrosis. The total function was apparently good with some delay in emptying from the left side. In the gastrointestinal series the gallbladder functioned normally with the cholecystographic dye, and no calculi were visualized. The esophagus was normal. The stomach showed a rather large, smooth contoured mass arising from the posterior wall along the greater curvature. This tumor mass was thought to be a benign lesion, although a malignant neoplasm had to be considered. The duodenum was normal, and there was no evidence of organic disease of the colon.

Gastroscopic examination two days after the roentgen examination revealed a mass about the size of a lemon along the greater curvature which was covered with normal mucosa. The impression of the examiner was a benign tumor of the stomach, probably myoma or fibromyoma.

Surgery was considered at this time, but was not urged since the presence of the renal infection made any surgical procedure a rather poor risk. Then, too, there was no definite evidence of malignancy, as both the roentgen and gastroscopic findings were more suggestive of a benign tumor. Hence, operation was deferred at this time, and the patient was to return for progress examination six months later.

The patient returned to the Clinic one year later. His history revealed that his progress had been good for a time and that gradually he had been able to give up all medication. About four weeks previously, however, he had had a severe dizzy spell, and ten days later had had tarry stools for forty-eight hours. He reported that a blood count made at that time had not been affected to any great extent. No symptoms referable to the renal calculi had developed during this interval.

Roentgen examination. The stomach showed a rather well-demarcated tumor in the pars media with an ulcer niche near the superior border. The tumor was larger than when seen one year previously. There was no definite evidence of neoplastic change, but the possibility had to be considered in view of the growth. The duodenum was normal.

Gastroscopic examination. This report was rather lengthy, but was summarized as follows: "I would still consider this a benign gastric tumor, although I am a little puzzled by the apparent growth of the tumor during the past year and the small circumscribed area of mucosal change near the cardia, which may be either a severe gastritis or neoplastic change."

Operation was advised in view of the questionable neoplastic changes and was carried out two weeks after the progress examinations. Palpation revealed a tumor mass in the middle third of the stomach which could be moved about. The operator believed that this was probably a polyp and therefore decided upon a transgastric resection. After incision of the stomach wall, a polyp-like structure approximately 2½ inches in diameter with several areas of erosion on the surface was found and resected. Satisfactory hemostasis was obtained, and the incision in the stomach was closed.

Pathologic report. The specimen consisted of a roughly circular segment of gastric wall weighing 62 grams and measuring 7 by 5.5 cm. in cross diameters and 3 cm. in thickness. One surface was completely covered by smooth gastric mucosa except for three irregular ulcerated areas. Between the muscular coat and the mucosa was a large, irregular, somewhat lobulated, firm, elastic, encapsulated tumor mass consisting of fairly uniform, pinkish-gray, translucent tissue. The gross appearance was suggestive of neurofibroma or leiomyoma.

Microscopic examination of the section showed an encapsulated tumor mass between the muscular and mucosal coats of the stomach. It consisted principally of spindle-shaped connective tissue cells of variable size, forming large quantities of intercellular substance. In other areas the tumor was very loosely arranged and consisted of stellate cells of variable size, forming an intricate reticular type of tissue with many spaces which probably contained mucinous material. In still other areas the tumor cells varied

greatly, many being quite large and multinucleated. Mitotic figures were scarce. One section including the mucosa of the stomach showed an area of ulceration extending down to the tumor growth with complete loss of epithelium. In this area there was considerable acute inflammatory reaction. The final pathologic diagnosis was neurofibroma of the stomach.

In a review of the literature we have found a rather wide variation in the incidence of benign gastric tumors. Although most authors have found them to be uncommon, Rigler and Erickson[1] have reported a much higher incidence of these lesions. They have summarized their findings in two series of cases, the first consisting of 239 tumors of the stomach or duodenum in which 11 per cent were diagnosed as benign by roentgen examination. In the other series of cases they have reported 194 tumors of the stomach and duodenum found at autopsy in which 25 per cent were found to be benign. This, it would seem, is an unusually high incidence for benign tumors.

Our own experience, on the basis of autopsy, surgical, and roentgen findings, indicates a much lower incidence. We have seen only 17 benign gastric tumors in 250,000 admission records at the Cleveland Clinic. In this group 12 cases have been definitely proved benign by histologic examination at autopsy or surgical operation. Of these proven cases three have been neurofibromata and three leiomyoma. This finding is of interest since the leiomyomata have generally been accepted as, and probably are, the most common benign tumor of the stomach.

Shallow and Lemmon[2] have made a report of 13 cases of benign tumors of the stomach in a review of 300,000 case histories, covering admissions to Jefferson Hospital, Philadelphia, for the period 1909 to 1939. Eleven of these cases had a histologic diagnosis, only one of which, however, was neurofibroma. Minnes and Geschickter[3] in 1936 reviewed the literature covering 931 benign gastric tumors and reported 50 cases of their own from the Johns Hopkins Hospital. In both series the leiomyomata group was the largest and made up approximately one-third of the total number. In their own series they have reported only one neurofibroma, but this type of tumor was present in 10.9 per cent of the collected cases.

The symptoms produced by the benign tumors are quite indefinite and vary greatly. They may depend upon the size, location, and the presence or absence of associated ulceration. Many of these patients have ulcer-like distress which is one of the most common complaints. This distress may be relieved by ulcer management, and the true cause not discovered unless a thorough examination is made. Another common complaint is hemorrhage, which may or may not be associated with other symptoms, and which may vary from occult blood to hematemesis. The cause is apparent since most tumors, as they increase in size, show a thinning of the mucosa over the summit of the mass with

single or multiple ulcers. The occurrence of hemorrhage with benign gastric tumor should be kept in mind, as this may at times be the only symptom, and the patient may be in good health during the interview. If the tumor is at the pylorus, obstruction may be present and in a pedunculated type of lesion is often intermittent in character. The smaller tumors, not associated with ulceration and located in the body

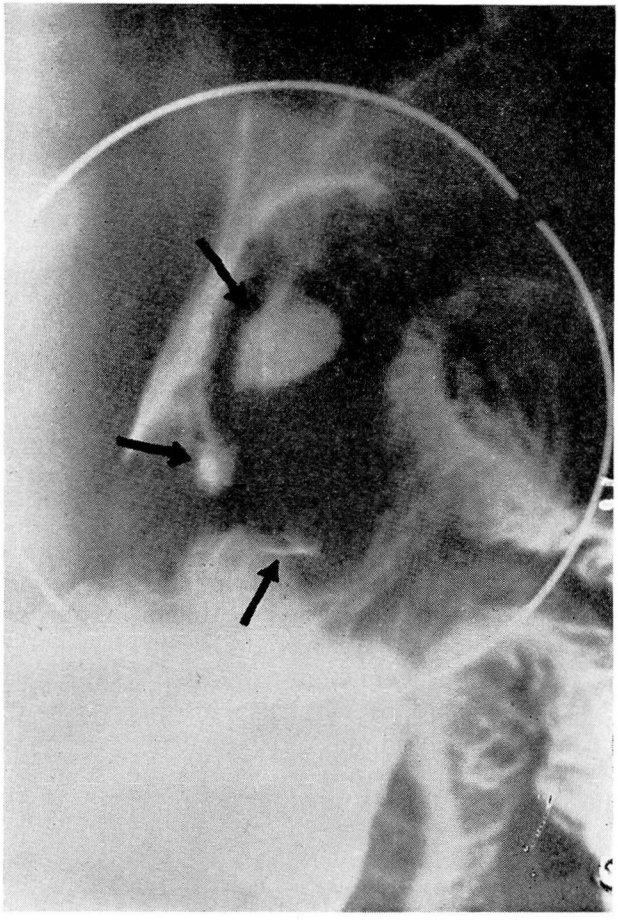

FIGURE 1. Fluoro-roentgenogram of a gastric neurofibroma. This film was made with moderate degree of compression to show the smooth contour of the tumor and the three ulcer niches.

of the stomach, are usually asymptomatic and discovered only by the surgeon or pathologist.

The diagnosis of benign gastric tumor depends first upon the roentgen examination and second upon the gastroscopic examination.

In the larger tumors the entire surface may not be visible to the gastroscopist, hence, the former procedure may give more reliable information concerning the nature of the lesion. This is illustrated in Figure 1 in which three ulcer niches are demonstrated on the surface of a neuro-

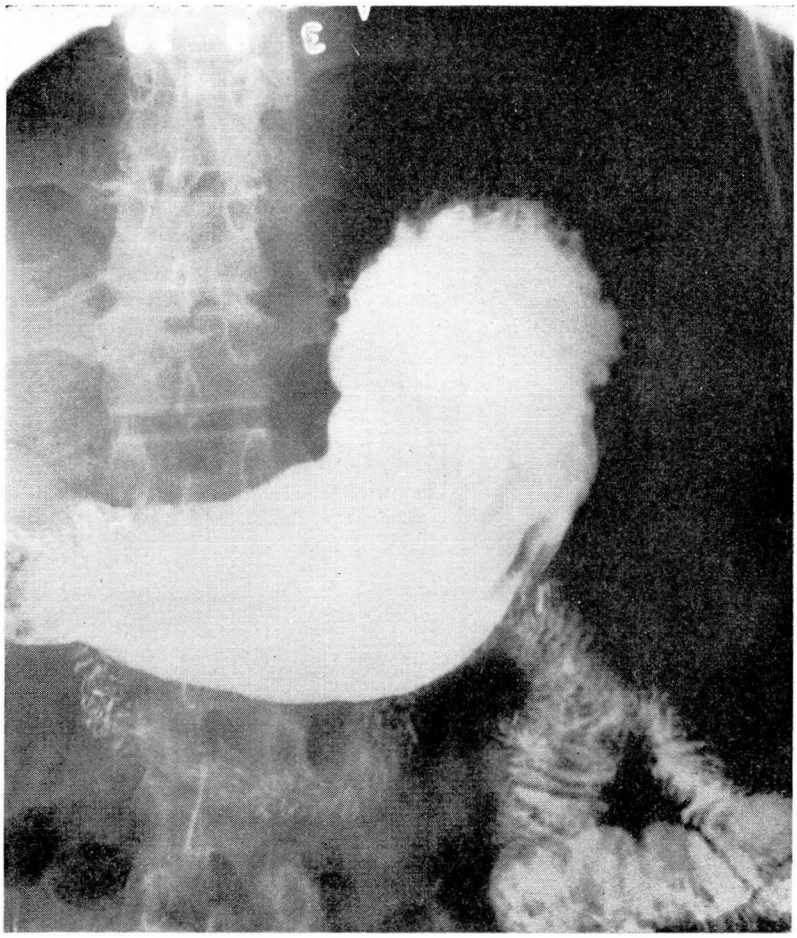

Figure 2. Posterior-anterior film of stomach containing a large amount of barium which obscures the tumor.

fibroma which were not visualized at the time of gastroscopic examination. By no preoperative method may the class of benign tumor be differentiated, nor may its status always be determined. Leiomyomata and neurofibromata may have the same gross appearance, and the true histology is often not determined until special stains have been used by the pathologist. The same holds true for malignant changes,

which may be present but not discovered before the pathologic examination.

The technic[4] employed for the examination is essentially that routinely used for the roentgen examination of the stomach. This consists of a preliminary examination with a small amount of barium. At this

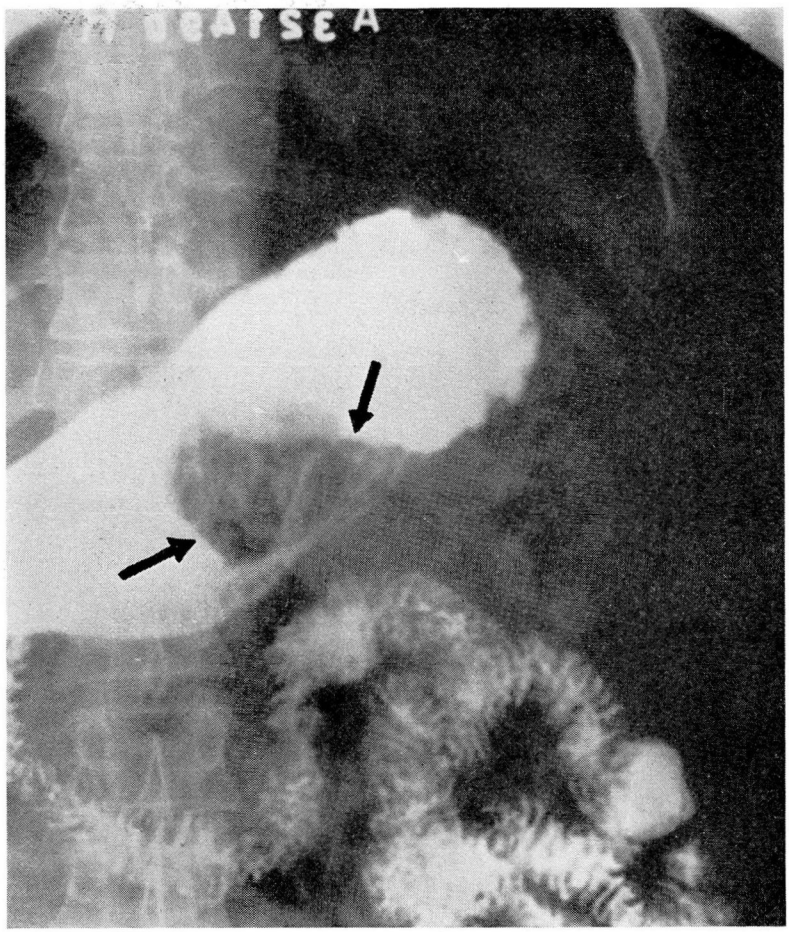

FIGURE 3. Anterior-posterior film of stomach in which the tumor is visualized in spite of the large amount of barium present. Note the smooth contour of the tumor.

time thorough palpation is used in the attempt to show the complete mucosal pattern of the entire stomach. We cannot overemphasize the importance of this phase since lesions may be obscured and completely overlooked by using a larger amount of the opaque meal. The illustration in Figure 2 shows how even a large tumor can be almost completely

obscured by a large amount of barium solution. This film is of the same stomach as that in Figure 3, and both were made at the original examination of the case under discussion. During this initial phase films may be made to record the characteristics of the mucosal pattern.

The second portion of the examination, which is continuous with the foregoing preliminary phase, makes use of a greater amount of

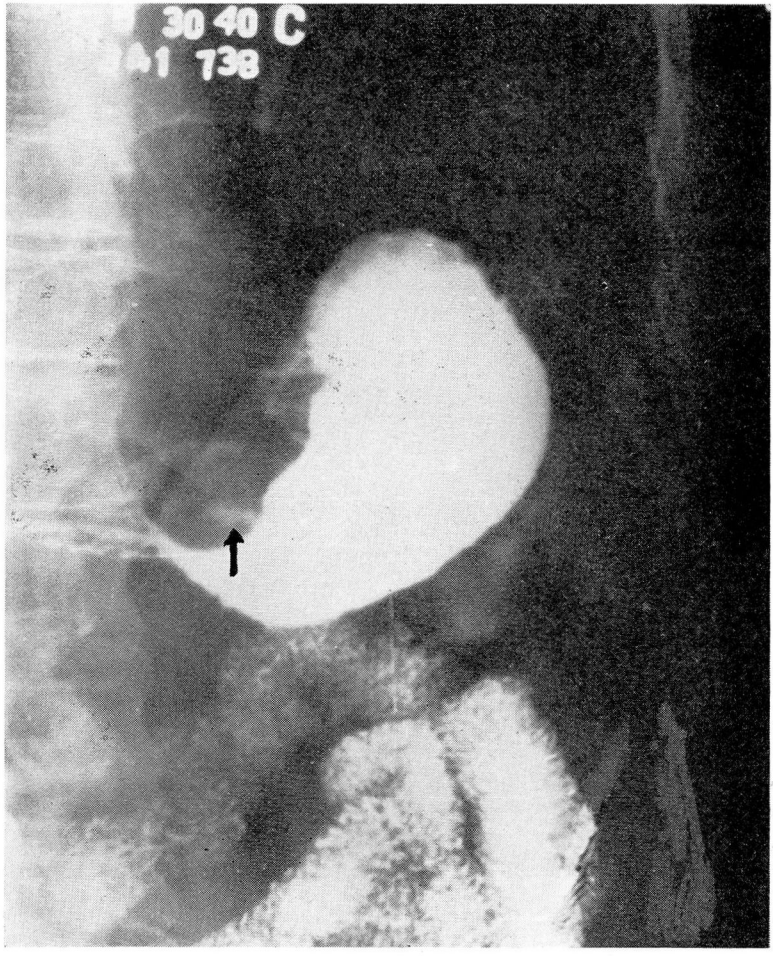

FIGURE 4. A smooth bordered filling defect in the distal end of the stomach with an ulcer niche on its surface. Histologic examination proved this to be a neurofibroma.

the barium solution. This should be limited in amount, however, and we prefer to use not more than a total of seven ounces. If a "spot film" device is available, films may be made at any time during the fluoroscopic examination, and any questionable finding should have the benefit

of this technic. After satisfactory fluoroscopy the standard radiographic films may be made of the filled stomach. It is desirable at that time to make use of the positions which allow the best visualization of the various portions of the stomach. Here, due consideration must be given to the shifting bulk of the barium and to the intragastric air bubble.

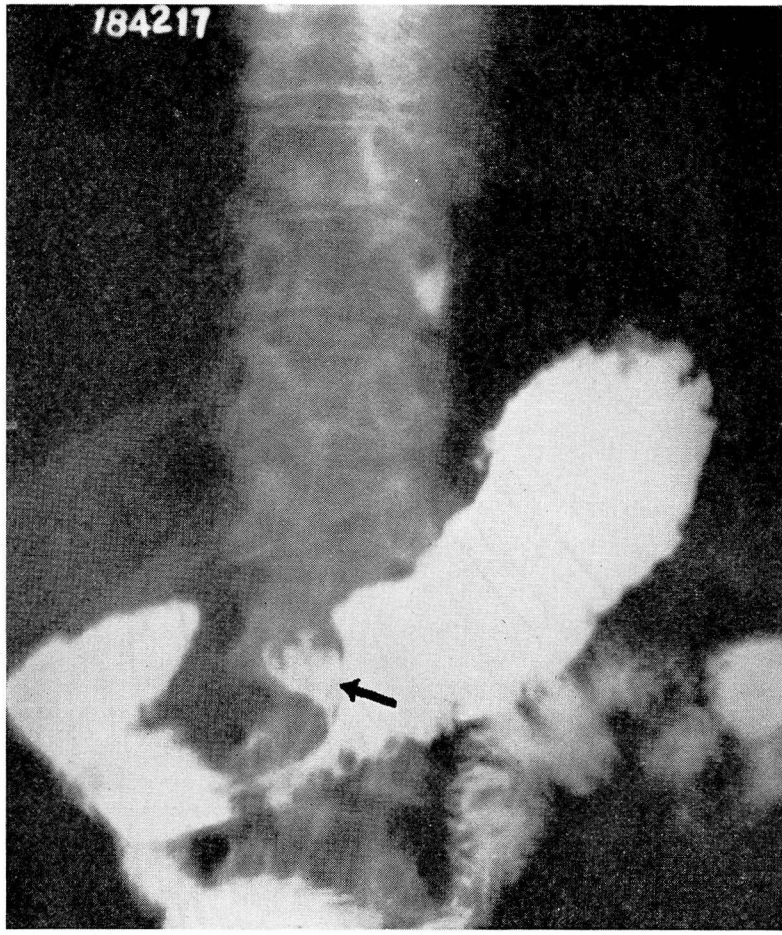

FIGURE 5. A posterior-anterior film showing a neurofibroma at the distal end of the stomach. The tumor presents a smooth contour with a rather large ulcer niche of the mucosa.

The utilization of the air bubble is a great aid at times as a lesion may be visualized through it, but be obscured by the opaque meal in other positions.

The roentgen appearance of these lesions is fairly characteristic and consists of smooth bordered, filling defects in the barium filled stomach. Ulcers on the surface of the mass are usually prominent if seen *en face*.

This effect is seen in Figures 4 and 5 in which a filling defect with evidence of ulceration is seen in the distal portion of the stomach. Fluororoentgenograms are frequently of considerable value and may be employed to demonstrate certain features of the lesion exactly as seen during the fluoroscopic examination. The illustration in Figure 1 is a fluororoentgenogram which was made chiefly to show the three ulcers as seen by the fluoroscopist, but which were obscured in the routine stomach films.

SUMMARY

Benign gastric tumors, relatively uncommon clinically, frequently escape diagnosis during life. This may be due to absence of symptoms, but they should be suspected if there is unexplained gastric hemorrhage.

A fairly characteristic roentgen appearance, which has been illustrated, may be present. It is, however, impossible to make a final diagnosis of benign gastric tumor by any means other than histologic examination.

REFERENCES

1. Rigler, L. G., and Ericksen, L. G.: Benign tumors of the stomach. Radiology, 26:6-15, (January) 1936.
2. Shallow, T. A., and Lemmon, W. T.: Benign tumors of the stomach. Internat. Coll. Surgeons, 3:312-317 (August) 1940.
3. Minnes, J. F., and Geschickter, C. F.: Benign tumors of the stomach. Am. J. Cancer, 28:136-150, (September) 1936.
4. Collins, E. N.: The fluoroscopic examination in patients suspected of having peptic ulcer. Surg. Clin. N. A., 923-935 (August) 1936.