GASTRIC POLYPOSIS (PAPILLOMATOSIS)

REPORT OF A CASE WITH OPERATION AND PRESUMABLE CURE *

ERNEST S. DU BRAY, M.D.

SAN FRANCISCO

Confirmed cases of gastric polyposis are comparatively unusual, although reports of isolated cases of the disease have appeared from time to time in the literature for many years. Balfour¹ pointed out that in approximately 69,000 abdominal sections in the Mayo Clinic, 8,000 of which were for gastric lesions, his case was the first one of gastric polyposis that had been encountered. I cannot believe that this represents the true incidence of the disease, and in studying histories of gastric cases, it seems entirely plausible that some of the vague and obscure conditions of the stomach, masquerading under such diagnoses as chronic gastritis, gastric neuroses, etc., might, on further investigation, prove to be benign tumor conditions of the gastric wall. Ebstein² found fourteen cases of stomach polyps in 600 necropsies, and was able to collect reports of eight others from the earlier literature. Novak³ recently recalled that it is from the French that much of our knowledge of these growths has come. Cruveilhier⁴ has the credit of reporting the first undoubted case of adenoma of the stomach in 1849, and it is from this specimen that Brissaud⁵ made his comprehensive study of benign gastric neoplasms.

There are several varieties of primary benign tumors of the stomach. Basch⁶ states that the term polypus is merely descriptive and not histologic, since adenomas, fibromas, lipomas, myomas and papillomas may all form polypoid tumors, in which, sometimes, the connective tissue predominates, at other times, the glandular elements. The same author enumerates and discusses the types of benign tumors which have occurred in the stomach, mentioning mucous polypi (of which there are the two anatomic types, first distinguished by Menetrier⁷), adenomas, lymphadenomas, myomas, fibromas, lipomas, myxomas, osteomas and cysts. The last seven of these are extremely

---

* From the Departments of Medicine and Surgery, University of California.

1. Balfour, D. C.: Surg., Gynec. & Obstet. **28**:465 (May) 1919.

2. Ebstein: Arch. f. Anat. u. Physiol., 1864.

3. Novak, E.: Polypoid Adenoma of the Stomach, J. A. M. A. **74**:871 (March 27) 1920.

4. Cruveilhier: Traité d'anatomie Pathologique, 1849, tome 2, livraisen 30, 2,

5. Brissaud: Arch. gén. de méd. **2**:257, 1885.

6. Basch, S.: Surg., Gynec. & Obst. **22**:165 (Feb.) 1916.

7. Menetrier, P.: Des Polyadénomes gastriques et leurs rapports avec de cancer de l'estomac, Arch. de Physiol. norm. et path. **45**:32, 236, 1888.

rare tumors, and only a few scattered examples of each have been found in the literature. It is, therefore, safe to assume that of the primary benign tumors of the stomach the polyadenomas and papillomas form the important groups clinically.

Menetrier's⁷ anatomic classification of the gastric polypoid conditions is still accepted and seems useful. He distinguishes two varieties, depending on whether the ducts or the fundus of the gastric glands are involved. When the ducts are principally involved, the tumor is distinctly lobulated, and cysts are more common, owing to the obstruction of the excretory ducts. On the other hand, when the alteration is chiefly in the fundus, there is little or no lobulation, and the cysts are either few in number or entirely absent. In this latter type, the polyps have a more uniform appearance and tubulation is less pronounced. To the first type he gives the name "polyadenomes polypeux" and to the second "polyadenomes en nappe." This latter type appears to be a very rare condition, and up to 1913, Meyer⁸ states that only three authentic cases have been reported, one of them by Andral and the other two by Menetrier. Hayem⁹ described a third type of tumor which he calls the Brunnerian adenoma. The glands are of the duodenal type and are thought to have their "anlage" in misplaced duodenal glands. Anatomically, the case I report conforms to the rare variety of Menetrier, the "polyadenomes en nappe;" however, the histologic structure is not that of an adenoma but of a papilloma. This finding is in keeping with Basch's observation that polypoid conditions in the stomach result from numerous types of microscopic tumor patterns.

The object of this paper is, therefore, to put on record another of these unusual cases of benign gastric tumors, which in this instance proved to be a polyposis of a papillomatous histologic structure. The patient was first seen in September, 1919, when I was working in the Medical Out-Patient Department of the University of California. This patient was observed over a period of about one month. Finally, a diagnosis of gastric carcinoma was made, which was concurred in by the roentgen-ray department, and the patient was then admitted to the hospital on Dr. Wallace I. Terry's surgical service.

REPORT OF CASE

H. S., white, male, single, aged 48, tailor by occupation, was admitted to the Medical Out-Patient Department of the University of California Hospital, Sept. 15, 1919, complaining of a feeling of pressure in the epigastrium, constipation and belching, especially at night.

8. Meyer, J.: Polyposis gastrica (Polyadenomata), J. A. M. A. **61**:1960 (Nov. 29) 1913.

9. Hayem: Presse méd. **2**:53, 1897.

Family History.—The patient's father died aged 79 of an unknown cause; the mother died during childbirth; one sister died at birth; one sister is living and well; one brother has stomach trouble. There is no history of cancer or tuberculosis in the family.

Past History.—The patient was born in Germany, emigrated at the age of 17 to the Middle West of the United States; when he was 25, he came to San Francisco, where he has made his home up to the present date. Besides the usual childhood diseases, he thinks he had the influenza about one year ago. There is no history of venereal diseases. In September, 1919, his tonsils were removed. His habits are regular; uses neither tea nor coffee in excess, but before his present illness he was accustomed to drink considerable beer; he has smoked a pipe excessively. During the past year his bowels have been constipated and there has been some nycturia once or twice at night.

Present Illness.—The patient was in good health until March, 1919, when he noted a sensation of fullness in the epigastrium, especially in the left side; the sensation was as if the stomach were full of gas and compelled him to belch frequently. This gas seems to press on the heart and cause palpitation, which is most marked at night. He does not suffer severe abdominal pain, but the fullness and pressure are present often before meals and are relieved at times for an hour after eating. His appetite has remained good. Frequently

Fig. 1.—Fractional gastric analysis. Ewald test meal.

he has tried to vomit to relieve the distress, but without success. About one month ago he noted that his stools were black and tarry. He also thinks that he has been jaundiced several times since last March and that his constipation has been more marked since his present illness. He has noticed a slight shortness of breath for the past six weeks. There is no evidence of cough or night sweats. In March, 1919, his weight was 165 pounds; he thinks he has lost about 25 pounds since that time.

Physical Examination.—The patient is a fairly well developed and well nourished man of middle age, rather short and of heavy stature. Temperature, 98.2 F.; pulse, 74; respiration, 20. Height, 5 feet, 7 inches; ideal weight, 148 pounds; actual weight, 140 pounds. Blood pressure: systolic, 115; diastolic, 65. His hair shows the normal distribution with beginning baldness over the top of the head. The skin is dry with a moderate amount of pigmentation, particularly over the face. The eyes are normally set, the pupils equal, rather small and react to light and accommodation; the extra-ocular movements are good. The nose and ears on superficial examination are normal. The tongue is moderately coated and protrudes in the midline without tremor. The teeth are stained, probably from tobacco. The tonsils have been removed recently. Neither general nor local glandular enlargement is found. The chest is negative. The heart is within the normal limits as regards size, shape and position; the apex beat is distinct in the fifth left space, 10 cm. from the

midsternal line; the sounds are regular and rather distant; there are no murmurs; the pulmonary second sound is equal to the aortic second sound; the radial pulses are equal and regular. The vessel wall is not felt. The costal angle is rather wide and there is moderate depression of the epigastrium. The abdominal walls are lax and soft, and there are no abnormal masses felt and no visible peristalsis. On rather deep pressure in the epigastrium there is slight tenderness which is not definitely localized. No tumor mass can be palpated. There is also slight tenderness to deep palpation in the left lower quadrant. The extremities are negative and the deep reflexes are equal and active throughout. Rectal examination shows no hemorrhoids, external or internal; the sphincter is normal. No perirectal glands are palpable. The prostate is small and soft and the median fissure is well marked.

Fig. 2.—Roentgenogram picture showing large, complete filling defect in the greater curvature after six hours. In the lower portion of this defect there is only slight mottling, with the finger-print pattern described as the typical lesion of benign gastric tumors.

Laboratory Findings.—Wassermann blood reaction is negative. Fractional gastric analysis is shown in Figure 1. Residue from fasting stomach, 150 c.c. Occult blood test positive (benzidine). Many pus cells and much mucus present.

Urine examination of single specimen: Specific gravity, 1.020; urine clear, reaction acid; albumin and sugar negative; sediment negative.

Blood examination: Hemoglobin, 90 per cent. (Sahli); red blood cells, 4,800,000; white blood cells, 8,600. Differential count: polymorphonuclears, 65 per cent.; small mononuclears, 28 per cent.; large mononuclears, 7 per cent.

Stool examination (meat-free diet): Benzidine test positive.

The results of roentgen-ray examination are shown in Figure 2.

Fluoroscopic Examination: Lung fields show a wide aortic arch and a slightly enlarged heart. The diaphragm moves well and equally on the two sides. No delay is noted in the esophagus. The stomach tone is good, it is readily movable and its position is normal. There is no residue after six hours. There is a large defect in the greater curvature. The waves start high up on both curvatures and pass clear through over the lesser curvature, but fade out in the region of the defect in the greater curvature to reappear again below. The pyloric and duodenal caps are normal. The previous meal is found in the terminal ileum, cecum and the transverse colon, all of which are freely movable, separable and not tender.

Diagnosis.—Carcinoma of the stomach—Dr. Ruggles.

Fig. 3.—Specimen removed at operation.

CLINICAL SUMMARY

A tailor, aged 48, with a history of epigastric pain and belching; family history and past history unimportant, has been ill about eight months, with history of loss of weight. The finding of practically negative physical examination, except for epigastric tenderness, points to the possibility of a stomach condition. The absence of free hydrochloric acid in the stomach juice and the finding of occult blood in the stools together with the fluoroscopic picture, which revealed a large, clean cut defect in the greater curvature, indicated a diagnosis of gastric carcinoma. The patient was then sent to the surgical service of the hospital.

Operation.—Exploratory laparotomy, Dr. Wallace I. Terry, Oct. 29, 1919: A longitudinal incision was made through the right rectus muscle, extending from the costal margin to 3 cm. below the umbilicus. The abdomen was opened in the usual way. The foramen of Winslow was open. The abdominal contents were apparently negative. The stomach externally showed no patho-

logic signs, except that there were a few soft lymph glands near the attachment of the great omentum to the greater curvature of the stomach. At the greater curvature of the stomach, however, a mass could be palpated within, which was readily movable under the finger and not infiltrating the muscular or peritoneal coats. The impression conveyed was that of a large doughy tumor about 8 cm. in diameter. The presence of such a tumor immediately threw doubt on the preoperative clinical diagnosis. A frozen section of one of the glands above mentioned was made and no carcinomatous changes could be demonstrated in this tissue. The stomach was therefore opened to confirm the impression that a polypoid condition of the gastric wall was present; this proved to be correct. After closely applying abdominal tapes to the gastric wall the stomach was opened, and then grasping the periphery of the tumor with a couple of Allis forceps, it was excised. The great omentum had to be detached from this portion of the greater curvature. The wound was sewed together after the manner of Finney with mattress sutures of iodized catgut, running stitch, with a reinforcing stitch over this. So great a portion of the greater curvature and walls of the stomach had been removed, it was feared that an hour-glass stomach would result; consequently, a gastro-enterostomy was also performed. The cardiac end of the stomach was laid next to the proximal loop of the jejunum by means of the Allis forceps, the stomach being brought through the opening in the mesocolon, which had been turned up over it. The stomach was then grasped with an intestinal clamp and the jejunum with a Moynihan clamp. There was some difficulty in approximating the two pieces of bowel on account of the small amount of stomach that could be seized through the rest of the mesocolon. They were, however, finally joined by an approximating stitch of catgut and the two portions of bowel cut longitudinally, and the opposing and remote edges approximated by means of a Connell stitch. A last reinforcing stitch was applied to the now closed stoma and the jejunum fixed to the hole in the mesocolon by means of three stitches of iodized catgut. The abdomen was closed in the usual manner.

REPORT OF THE SURGICAL PATHOLOGY LABORATORY OF THE
UNIVERSITY OF CALIFORNIA

Case of Dr. W. I. Terry, Oct. 31, 1919. H. S., S. 19, 792.

Gross Pathology.—The specimen (Fig. 3) consists of a portion of stomach wall measuring 13 by 10 cm. The peritoneal surface does not show anything grossly abnormal, except some clamp marks and a few hemorrhagic stains. The mucosal surface presents a tumor mass measuring 11 by 10 cm., surrounded by a minimum of what in the gross appears to be quite normal stomach mucosa. The superficial picture shows closely packed papillomatous growths, thrown into folds, which resemble very much in color and contour brain cortex. It is relatively easy to separate the various convolutions (that is, the individual papillomas) clear to their bases. There can be traced a gradual increase from the apparently normal mucosa to the pronounced papillomatous outgrowths. No gross evidence of necrosis can be made out in any of the papillomas, although there is a slight amount of hemorrhagic discoloration in the tips of some of them. On section the gross picture does not show any increase in the muscular or connective tissue elements of the stomach wall proper. There is no gross evidence of any extension downward into the layers beneath the mucosa nor are there any other suggestions of malignant change. The mucosa displays a decided thickening in places as much as 0.5 cm. Gross impression: Papillomatosis of the stomach (benign).

Microscopic Pathology (Figs. 4 and 5).—Duplicate sections of the tumor were stained respectively with the routine hematoxylin and eosin, for muscle and connective tissue with Van Gieson's, for connective tissue by Mallory's method, and for elastic tissue by Weigert's stain. Sections show a picture of stomach mucosa displaying a gradual increase from normal thickness to

tremendous hypertrophy and thickening in a definitely papillomatous arrangement. The general picture of this hypertrophy is that of gastric glands. The tubular glands are greatly elongated, show a marked corkscrew type of growth and many branchings. The mucosal cells are invariably columnar in type and in many places, especially in the depths, show wonderfully clear differentiation from each other; the distinction between the chief and parietal

Fig. 4.—Photomicrograph, low power. Block taken from point X on Figure 3.

cells is striking. Occasionally, one sees some atypical nuclei which are definitely shown to be the result of degeneration instead of mitosis. The stroma is minimal in amount. The sections stained to show muscle and connective tissue by Van Gieson's method show the stroma of the papillomatous outgrowths to be connective tissue and to contain no muscle. The connective tissue is verified by Mallory's stain. Weigert's stain brings out no trace of elastic fibers within these structures. These special stains, more especially

the Mallory's, demonstrate the fact that there is no breaking up of the basal membrane of the glandular structures and show it to be everywhere intact. The stroma shows in places some edema, some infiltration with round cells, plasmalike cells, red blood cells and an occasional polymorphonuclear. The stomach musculature proper is everywhere normal in appearance.

Diagnosis: Papillomatosis of the stomach—Granville S. Delamere, M.A.

Clinical Course.—The postoperative course in the hospital was uneventful. November, 1919, a gastro-intestinal series following a bismuth meal showed

Fig. 5.—Photomicrograph, high power. Field X on Figure 4.

a large postoperative defect in the middle third of the stomach, the pyloric and duodenal caps normal, and the gastro-enterostomy apparently working well. There was some delay in the duodenojejunal juncture with some moderate amount of reversed peristalsis. Conclusion: Postoperative condition.

Nov. 22, 1919, the patient was discharged from the surgical service and advised to report regularly to the Medical Out-Patient Department. Dec. 11, 1919, in the Surgical Out-Patient Department a sigmoidoscopic examination was done (Dr. Hyman). The tube was easily introduced a distance of 23 cm. and by means of distention with gas the bowel wall was visible for 5 cm. farther. The picture was entirely normal.

Feb. 19, 1920, a fluoroscopic examination was made. Gastro-enterostomy was seen to be functioning well; meal also left stomach through the pylorus; postoperative defect seen in the median third of the stomach, but no evidence of obstruction.

March 20, 1920: The patient's course in the Medical Out-Patient Department has been uneventful. Patient has gained twenty pounds in weight and is feeling well.

ETIOLOGY

Nothing definite is known about the cause of gastric polyposis. Its frequent association with other diseases, such as gastritis, hypertensive cardiovascular disease, and syphilis has led to interesting speculations.

SYMPTOMATOLOGY

There is nothing pathognomonic in the symptoms of this condition, although there are, at times, certain suggestive evidences of the disease. The fact that many of the cases are discovered at necropsy, when the existence of ante mortem gastric disease is not suspected, demonstrates its frequent silent nature. Clinical manifestations, however, when present, depend principally on several factors, namely, the size, location and nature of the growth, and particularly its relation to the pyloric region of the stomach. It is found more commonly in men past middle age.

Nonpedunculated, broad based masses on the greater curvature may remain symptomless or more commonly produce vague, indefinite symptoms of an epigastric dragging sensation, followed by a desire to belch and eventually to vomit. The onset of such disturbances does not appear to have any relation to meals, since it is as often present before meals as after or between meals. Meyer, in his careful study, calls particular attention to the type of vomitus which he regards as of great significance. The vomitus he describes contains an excessive amount of mucus of an egg-white appearance and in his case a small benign polyp (adenoma) was recovered, which enabled him to make the pre-operative diagnosis. Further, it is noted in these cases, that there is usually absence or greatly reduced amount of free hydrochloric acid, in other words, an achylia gastrica or hyp acidity.

Pedunculated and less commonly nonpedunculated growths, situated on the stomach wall near the pylorus may prolapse and present the typical clinical picture of pyloric obstruction, partial or complete. Wade¹⁰ reports a case which is a spectacular example of this variety.

Hemorrhage, slow and long unrecognized, is a frequent finding in these cases and is due to the great vascularity of these tumors of the mucous membrane. This accounts for the usual finding of occult blood in the fasting contents of the stomach and in the stools.

10. Wade, H.: Intussusception of the Stomach and Duodenum Due to Gastric Polyposis, Surg., Gynec. & Obstet. **17**:184, 1913.

The appetite is variable; perhaps, more often it remains good and for this reason is in marked contrast to anorexia so prevalent in the cases of gastric malignant disease.

The general nutrition, weight and blood picture are also variable, but, as a rule, they are less altered than in the carcinoma cases, particularly when pyloric obstruction has occurred. Careful observations in regard to these latter conditions are among the most helpful adjuncts in the final estimation of a case.

It may be said, in general, that palpable masses are more common in these cases when the growth is large and located near the pylorus, but it is surprising in how many cases nothing abnormal can be determined by abdominal palpation. Intense pain in the epigastrium is recorded in an occasional case and is in some instances the symptom which first brings the patient to the physician.

The duration of the history in these cases is, at times, significant; the fact that definite symptoms may have been present for a long time without apparent progression and with little or no change in the patient's general health is strong evidence against the presence of malignant disease, and should suggest the possibility of a benign tumor condition.

DIAGNOSIS, WITH SPECIAL REFERENCE TO ROENTGEN RAY

Gastric polyposis, as has been indicated, besides being an accidental finding at necropsy, may also be discovered in the course of surgical procedures. The early accurate roentgenographic description by Carman in Meyer's case of gastric polyposis, in which a fairly characteristic picture of the disease was first outlined, might seem to have indicated that definite roentgenographic manifestations were always to be expected in such cases. Unfortunately, this has not proved to be the case, since we know now that gastric polyposis may present roentgenographic evidence so similar to that found in cases of gastric carcinoma that not even an expert roentgenologist can differentiate the two conditions. The interpretation of the findings in benign polypoid tumors from the presence of gastric carcinoma is the prime difficulty. Many recorded instances exemplify this, and the case reported above is a typical example in which roentgen-ray interpretation was misleading both to the internist and to the roentgenologist, because the manifestations conformed more to the usual picture seen in carcinoma of the stomach than to the rarer condition of gastric polyposis. In the two cases of polyposis reported by Friedenwald and Finney,¹¹ notwithstanding the roentgen-ray studies, the diagnosis in both instances was gastric carcinoma.

11. Friedenwald, J., and Finney, J. M. T.: Gastric Polyposis, *Am. J. M. Sc.* **154**:683 (Nov.) 1917.

It would appear that when the typically mottled, fingerprint, filling defect is present in the stomach in conjunction with other evidence in the history, physical examination and laboratory findings pointing to benign gastric tumor, a diagnosis of gastric polyposis may be justified, but, conversely, it must be remembered that roentgenograms strongly suggesting malignant new growths may prove to be benign tumors.

In view of the foregoing statements, it appears that roentgen-ray studies of the stomach have strengthened the surgeon's position in regard to the advisability of exploratory laparotomy in some of the presumably advanced cases of gastric carcinoma, since in rare instances the finding of a benign tumor may be a surprise to the surgeon and a "new lease of life" to the patient. The roentgen ray affords valuable evidence in some cases and misleading evidence in others. Carman and Miller¹² state that in view of the limited number of these cases our roentgen-ray experience is still necessarily meager, and, therefore, it is not possible to lay down hard and fast rules concerning the roentgen manifestations.

Besides the roentgen-ray studies of the stomach, other helpful methods of investigation should include a careful history, a thorough general physical examination, and numerous laboratory tests. When the combined results of these procedures are evaluated and combined with the roentgen-ray findings, we have at our command the methods which offer the greatest expectation of a correct diagnosis.¹³

SURGERY

Excision of the tumor mass and such reconstructive measures as may seem indicated in the individual case offer the greatest hope for satisfactory results in cases of gastric polyposis.

SUMMARY

A case of gastric polyposis of the papillomatous type is reported in which the clinical and roentgen-ray diagnosis was carcinoma of the stomach. Exploratory laparotomy revealed a broad based benign tumor situated in the greater curvature of the stomach; this tumor was excised and following this the patient has had an uneventful convalescence and six months later has had no recurrence of his former symptoms.

I wish to take this opportunity to express my thanks to members of the various departments of the University of California Hospital, through whose cooperation and efforts the study of this case has been made possible.

---

12. Carman, R. D., and Miller, A.: *The Roentgen Diagnosis of Diseases of the Alimentary Canal*, Philadelphia, W. B. Saunders Company, 1917.

13. For a complete bibliography of the older literature see Friedenwald and Finney (Footnote 11).