

Hypertrophic Pyloric Stenosis in Adult Patients: *

A Plea for a Simple Method of Operative Correction

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STENOSIS due to hypertrophy of the pyloric muscle in the adult is not extremely rare, and several accounts have appeared in the literature.^{3-10, 12-14, 16-23, 25} However, it is still a surprising finding at the operating table, leading at times, in our opinion, to an unnecessarily extensive procedure. Therefore, this account of our experiences is submitted to call attention to this condition and recommend a form of conservative surgical correction. As suggested by Southwick and his colleagues²⁴ we plan to discuss only those cases without concomitant ulcer, because the latter introduces another therapeutic problem. We are also omitting consideration of the mucosal stenosis described by Rhind²⁰ and muscular hypertrophy due to massive eosinophil infiltration, as reported by Lynch, Hutchinson, and Sprague¹⁵ and by Barrie and Anderson.¹

In 1950, North and Johnson¹⁸ summarized 59 cases collected from the literature and added five of their own. They presented an interesting historical account and briefly discussed theories of etiology. Similar studies can be found in papers by Greenfield⁹ and by Runyeon, Hoerr, and Hazard.²¹ Therefore, these topics will not be repeated here.

According to Bockus² the symptoms caused by this condition are found in three main groups of patients: 1) those with symptoms dating from infancy; 2) those with complaints of long duration but which started in adult life; and 3) those in middle or late life with a comparatively brief his-

tory. The patients tell of varying degrees of epigastric distress, pain and bloating. To this symptom-complex may be added nausea, vomiting, and loss of weight. Kirklín and Harris¹¹ described what they considered a distinctive roentgenographic appearance: the pyloric canal was persistently narrowed and elongated, the base of the duodenal bulb was concave with a "striking" mushroom shape, and gastric retention could be observed (Fig. 2). These authors admitted that this picture was not pathognomonic. Bockus² states that it might also be produced by hypertrophic gastritis, pyloric ulcer, scirrhus carcinoma, and other less common diseases. Conversely, we have found that the roentgenographic appearance of simple pyloric muscle hypertrophy may simulate more serious disorders. Figure 1 is a photograph of a roentgenogram which could justifiably be interpreted as stenosis due to ulcer. In Figure 3 the appearance of the narrow segment led the roentgenologist to suspect carcinoma.

Of the 64 cases presented by North and Johnson¹⁸ a large number were treated by gastric resection (Table 1). We have been able to find 40 additional cases in the English language literature reported since then. To these, we add five of our own. Again, a large proportion were treated by gastric resection (Table 2).

The papers mentioned in the latter series for the most part did not differentiate between those cases of pyloric muscle hypertrophy with and without ulcer. Of the former, 45 cases were described. We will not discuss theories as to whether the concomitant ulcer is the cause or the result of the pyloric stenosis.^{9, 12, 21} If an ulcer is

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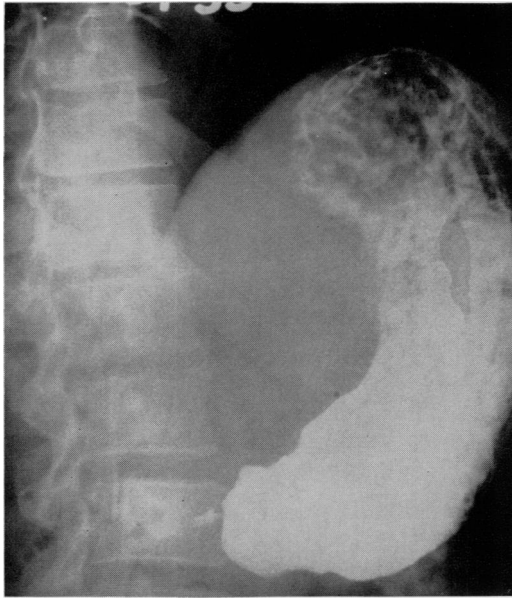


FIG. 1. Case 1. The roentgenographic appearance of the barium-filled stomach suggests stenosis due to ulcer, or possibly neoplasm.

present we believe a more extensive operation is necessary, but in the absence of ulceration pyloroplasty alone should be performed. Most authors admit that the findings at operation were unexpected. Indications for intervention usually were either obstruction or a roentgenographic appearance of malignant disease or both.

Hypertrophy of the pyloric muscle is suggested by the regular, concentric or eccentric thickening of the pylorus with a smooth serosa. With this condition in mind the surgeon should perform a gastrotomy. The appearance and feel of the mucosa at the pylorus will reassure him that he is not dealing with cancer. Extending the incision into the first portion of the duodenum will permit extensive examination of the mucosa and of a cross section of the hypertrophic muscle. A portion of the latter should be removed for histological examination. If no ulcer is present, repair is performed either according to the method of Finney or of Heinecke and Mikulicz.²² We prefer the former because of the difficulty of transverse closure in the presence of the large muscle mass. However, Brazda³

avoided this objection by coring out the greater circumference of the pyloric muscle before attempting closure.

If this condition is kept in mind by the surgeon, and complicating ulcers or other diseases ruled out, a short curative procedure may be performed instead of extensive resection.

Case Reports

Case 1. The patient was a 51-year-old white man with a history of 12 years of epigastric distress treated as peptic ulcer. For about six weeks prior to admission he noted abdominal swelling, belching, and loss of three to five pounds in weight. Upper gastro-intestinal barium study (Fig. 1) revealed slight dilatation of the stomach with elongation and spasm of the pylorus. The duodenal cap was irritable, the four-hour film showed 50 per cent gastric retention. At operation hemigastrectomy and vagotomy were performed. Continuity was re-established by gastroduodenostomy. Postoperative examination of the resected specimen revealed eccentric hypertrophy of the pyloric muscle with stenosis. The gastric mucosa was hypertrophied but no ulceration was noted. There was no evidence of scarring in the prepyloric area.

Case 2. This patient was a 68-year-old white man complaining of pain in the pit of his stomach,



FIG. 2. Case 2. This is the "distinctive," although not pathognomonic, appearance of hypertrophic pyloric stenosis in adults.

bloating and belching of three weeks' duration. Symptoms were so severe that he became afraid of food. He lost ten pounds in weight during his illness. Roentgenographic study after ingestion of barium sulphate (Fig. 2) showed persistent effacement of the normal mucosal pattern in the pyloric antrum, which was somewhat rigid. The findings strongly suggested neoplastic infiltration to the radiologist. The four-hour film showed an empty stomach. At operation concentric, regular thickening of the pylorus was noted. Gastrotomy revealed the lesion we are discussing. No ulcer or neoplasm was seen. A chronically inflamed gallbladder containing small stones was also present. Cholecystectomy and Finney pyloroplasty were performed. The pyloric muscle was biopsied. Microscopic examination revealed simple hypertrophy. Postoperatively the patient achieved relief of his presenting symptoms.

Case 3. This patient was a 70-year-old white man whose symptoms were of approximately one month's duration. They consisted of epigastric fullness and distress with vomiting for the most part shortly after meals. The vomitus contained undigested food and was never bloody. He complained of increasing weakness and loss of appetite, strength, and weight. Roentgenographic examination (Fig. 3) showed some food residue in the stomach. There was considerable elongation of the pylorus but no definite irregularity of the distal aspect of the stomach. Either ulcer or malignancy

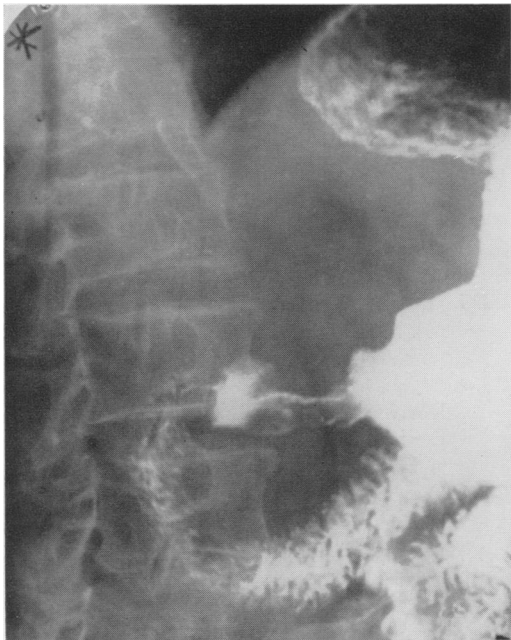


FIG. 3. Case 3. The irregularity of the pyloric canal suggests neoplasm. The radiologist also considered benign ulcer as a possibility.

TABLE 1. *Treatment of Hypertrophic Pyloric Stenosis in Adults. Series of North and Johnson,¹⁸ prior to 1950*

Gastrectomy	30
Pyloroplasty	23
Gastro-enterostomy	6
No surgery	4
Treatment not described	1
	—
Total	64

TABLE 2. *Treatment of Hypertrophic Pyloric Stenosis in Adults. Present Series, since 1950*

Gastrectomy	23
Pyloroplasty	18
Gastro-enterostomy	1
Pyloromyotomy	1
Treatment not described	2
	—
Total	45

were suggested. A 10 per cent gastric retention was seen after four hours. Operation revealed concentric stenosis due to pyloric muscle hypertrophy. Neither ulcer nor neoplasm were found. Finney pyloroplasty was performed. The patient has since been asymptomatic. On microscopic examination of a portion of the pyloric muscle hyperplasia and fibrosis were noted.

Case 4. The patient was an 82-year-old white woman complaining of intermittent nausea, vomiting, and anorexia of six months' duration. These symptoms became progressively more severe during the two weeks prior to admission to the hospital. Her weight declined four pounds in one week. Roentgenographic examination of the stomach and duodenum revealed no evidence of ulcer crater or deformity. No neoplastic process was demonstrated. Nevertheless, there was an unexplained obstruction at the level of the pylorus. There was a moderate amount of residual material in the stomach at the beginning of the examination and the peristaltic activity in the stomach was relatively ineffective in emptying beyond the obstructed pylorus. At operation there was marked circumferential thickening of the pyloric muscle leaving an opening of less than 1.0 cm. in diameter. There was no evidence of scarring or ulceration. Pyloroplasty was performed. The patient was completely free of gastro-intestinal symptoms when last seen six months after operation.

Case 5. The patient was a 54-year-old white man with a chief complaint of abdominal pain of three months' duration. He had received treatment for a supposed peptic ulcer for three years. The abdominal pain became more severe and was accomplished by vomiting. Decompression of the

stomach by Levin tube and parenteral fluid and electrolyte replacement were necessary. Roentgenographic study revealed an irregular deformity of the duodenal bulb with no ulcer crater. There was moderate four-hour gastric retention. At operation eccentric hypertrophy of the pyloric muscle was noted, thicker anteriorly than posteriorly. There was no evidence of old or recent ulceration. The pyloric muscle was biopsied and pyloroplasty was performed according to the method described by Brazda.³

Summary

The clinical picture of stenosis due to hypertrophy of the pyloric muscle in adult patients is reviewed and our own experiences presented. It is suggested that in the absence of concomitant ulcer the simple operation of pyloroplasty be performed instead of a more extensive procedure, such as gastric resection.

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