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⁷ Lentz and Tietz: Eine Anreicherungs-methode für Typhus und Paratyphusbacillen. Münch. med. Wochenschr., 1903, 2139.

⁸ Klinger: Ueber neuere Methoden zum Nachweise des Typhusbacillus in den Darmentleerungen. Arbeiten aus dem Kaiserlichen Gesundheitsamte, 1906, xxiv, 35.

⁹ Lentz and Tietz: Weitere Mitteilungen über Anreicherungs-methode für Typhus- und Paratyphusbacillen mittelst einer Vorkultur auf Malachitgrün-Agar. Klin. Jahrb., 1905, xiv, 495.

¹⁰ Loeffler: Der kulturelle Nachweis der Typhus bacillen in Faeces, Erde und Wasser mit Hilfe des Malachitgrüns und die Verwendung von Malachitgrün-Nährböden zum Nachweise und zur Differential-diagnose der Typhusbacillen und verwandter Bakterienarten. Deut. med. Wochenschr., 1906, 289.

¹¹ Leuchs: Ueber Malachitgrün-Nährböden zum Nachweis von Typhus- und Paratyphusbacillen. *Ibid.*, 1330.

¹² Királyfi: Ueber den Wert der Malachitgrün-Nährböden zur Differenzierung der Typhus- und Colibacillen. Centralbl. für Bacteriologie, 1906, xlii, Originale, 276.

¹³ Jorns: Ueber die Brauchbarkeit des Malachitgrün-Nähragars zum Nachweise von Typhusbacillen. Hygienische Rundschau, 1904, xv, 713.

¹⁴ Kayser: Cited by Lentz and Tietz, Klin. Jahrb., 1905, xiv, 499.

¹⁵ Hertel: *Ibid.*

¹⁶ Reischauer: Ueber den Nachweis von Typhusbacillen in den Darmentleerungen mit Verwendung der neueren Anreicherungs-methoden. Centralbl. für Bacteriologie, 1905, xxix, 116.

OBSERVATIONS ON SIX CASES OF ACUTE PERFORATING ULCER OF THE DUODENUM.*

BY E. A. CODMAN, M.D., BOSTON.

RECENT active experience with operation on six cases of acute perforating duodenal ulcer, and two cases of the same disease operated on in a subacute condition without definite perforation, as well as recent passive experience in the same disease, have stimulated my interest in duodenal surgery. For much of the active experience and some of the passive experience I am indebted to Dr. Harrington. There are a number of observations which we have made in connection with these cases, which have led us to conclusions which, though by no means proved, we are sufficiently convinced of personally to bring up for discussion and for further support from the experience of others. For those conclusions which are correct, Dr. Harrington is responsible; for those which are incorrect, I am responsible.

As time will not permit of the arrangement and presentation of evidence, I shall simply state what seem to me important points on this subject and trust to giving more elaborate evidence in a future paper. First, concerning cases of acute perforation: I believe that in the past (and even in the present) we have been operating on these cases supposing that they were peritonitis from appendicitis, and that we have sometimes removed the appendix as a scapegoat because it was inflamed and covered with fibrin *externally* and have not observed that *internally* there was no ulceration or gangrene of the mucosa. The cases have lived or died without our thinking of duodenal perforation in connection with them. Of course, it is well known that appendicitis is the usual pre-operative diagnosis for acute perforation of the duodenum, but I further say that we have allowed it to be our operative and post-operative diagnosis as well. It is only three years since I showed my second case at one of these clinical meetings. It was the first case at this hospital which had been diagnosed at the operation and had recovered, although my first case had lived two months after being successfully

sutured. Both of these, before operation, I mistook for appendicitis. I pointed out then that previous cases in the records, with one exception, had only been diagnosed at autopsy. Since that case I have had three more cases at this hospital and one in private practice in which I have made a provisional second diagnosis of duodenal perforation and thus the operation greatly aided. Three of these have recovered. During the last five years I have operated at this hospital on 5 cases of perforated duodenal ulcer and 82 cases of acute appendicitis and general peritonitis from appendicitis, a proportion of about 1-16. During this same five years all the other seventeen surgeons together have operated on 12 cases of perforated duodenal ulcer and 1,130 cases of acute appendicitis and general peritonitis from appendicitis, a proportion of about 1-100. During the three years previous to 1903, the proportion of all the hospital cases, including my own, was 1-580 of acute appendicitis. These figures must mean something even to the non-believer in statistics. There is little danger of these cases being confused with anything but acute appendicitis, for they simulate them almost exactly. I do not believe that it is mere accident that so many of these cases have fallen to my share. I have in all cases looked at the appendix first and believe that this should always be done. In two cases I had to remove the appendix and open it in order to convince myself that it was not the cause of the trouble, so inflamed was its peritoneal surface. On the other hand, in several appendix cases I have thought of perforated ulcer but fortunately looked at the appendix first.

It does not follow from the fact that a case recovered after removal of the appendix and drainage of the peritoneum that the case was not one of perforated ulcer, for drainage alone may be sufficient to let the ulcer close and seal with fibrin. I believe that such cases have occurred occasionally at this hospital and are to be found now in the records as appendicitis. I can recall cases of my own, before I learned to recognize perforated duodenal ulcer, in which the condition of the appendix seemed hardly sufficient to account for the trouble, and which have recovered. I am inclined to think, however, that most cases need suture of the ulcer to be successful. Another reason that leads me to make this statement is, that most of these cases absolutely deny previous stomach trouble and only describe vague symptoms on the most careful questioning. As Weir has pointed out, the reason for confusing it with appendicitis is that the direction of least resistance is downward toward the right iliac fossa along the outer side of the colon, and that absence of previous gastric symptoms is the rule. There is not nearly so much danger of confusing the diagnosis with perforated gastric ulcer.

The following points in the severe cases would make me suspicious of duodenal ulcer instead of appendicitis:

1. Onset of pain more sudden and violent and more initial shock.

* Presented at the Clinical Meeting of the Massachusetts General Hospital, Jan. 10, 1908.

2. A contracted *concave* boardlike abdomen. This seems to be very characteristic, though some cases of appendicitis have it, too.

3. Tympany over the normal area of liver dullness. This is by no means the rule, but when present is almost diagnostic. Gas may not always be noticed when the peritoneum is opened.

4. The vague symptoms of duodenal ulcer elicited by careful questioning.

5. Most of the patients are males between twenty and forty years.

6. Location of tenderness and pain is very deceptive.

There are a few points of technic which I should like to speak of.

1. If perforated ulcer is suspected, it is well to be sure that small, curved, round needles are on hand, for one is much embarrassed with straight needles in suturing the perforation.

2. Make high appendix incision and examine condition of appendix first. Take it out if necessary, to be sure of the mucosa.

3. If appendix is not perforated or gangrenous, carry incision up rectus high enough to see whether there is fibrin about the pylorus. If there is, carry incision up to actual margin of ribs. One needs plenty of room to do suture quickly.

4. One obtains the best view of the duodenum by pulling gall bladder out with one hand and hepatic flexure down with other. Most ulcers are easy of access.

5. Suture the ulcer *before* washing out the abdomen.

6. Unless the ulcer is large and indurated or extends beyond the pylorus to the stomach, or there is stenosis of the pylorus, or the history shows severe pain and distress in the past, I should not do gastro-enterostomy. It seems to me the remedy is worse than the disease.

The problem is quite different from that of gastric ulcer, for, as I hope to be able to show, the prognosis of duodenal ulcer is better, and the important obstruction may be at the lower end of the duodenum instead of at the upper.

7. In operating for acute appendicitis the surgeon should always inspect the mucosa of the appendix unless perforation or gangrene is obvious.

The most interesting clew which these acute cases have given us has been in directing our attention to non-perforating small peptic ulcers similar to those which do perforate. What proportion do perforate? If so many of the perforated cases have few symptoms before peritonitis sets in, may there not be many which give few or no symptoms at all?

Somewhere between simple pain from hyperacidity and the classical duodenal ulcer with violent pain and tarry stools there lies a relatively unknown disease—the small peptic ulcer. I do not believe we have obtained a fair view of this disease from the autopsy end, because it may be that most of the cases get well. We do not know what proportion of them heal nor how long it takes them. We do know a few things about

these ulcers: that they may perforate into the general cavity; that they may cause adhesions to neighboring organs; that they may cause cicatricial stenosis of the pylorus and the symptoms of gastric stasis; that they may cause adhesions to the gall bladder. (And, by the way, I believe many of the adhesions blamed to the gall bladder have been due to the duodenum.) Besides these we must admit another division: those that cause few or no symptoms and which are confused with hyperacidity and nervous dyspepsia. The first question is, then, What proportion do perforate? It is generally supposed a large proportion; I believe but a small proportion. The next question is, How are we to recognize those that have no intention of perforating? I believe the cardinal symptom is "hunger pain," two to four hours after meals, if *unassociated* with ordinary indigestion and stomach stasis. The quality of the diet makes little difference. I believe that such little ulcers will seldom show blood in the stools.

Now I have a theory to offer as to the cause of duodenal ulcers and duodenal symptoms. There seems to be a general impression that as soon as food has gone into the duodenum it has a free pass along the rest of the route. But those that think this forget the cause of gastro-mesenteric ileus. Under certain conditions may we not get a subacute condition of this kind and have stasis of duodenal contents from partial obstruction where the superior mesenteric vessels cross the duodenum? In other words, I want to suggest to stomach specialists another disease,—duodenal stasis from chronic gastro-mesenteric ileus. They probably know it already. There are a number of things in connection with our cases which make this hypothesis at least worth investigating. Any one who has seen acute gastro-mesenteric ileus would not laugh at it. Probably the stasis is of secretions, not of food.

P.S. Since writing the above I have read a most interesting article on acute gastro-mesenteric ileus by Bloodgood in the November *Annals of Surgery*. This article is mainly a discussion of three cases of acute dilatation, but in connection with the suggestions I have offered the final paragraph is very appropriate.

He says: "In conclusion I again call especial attention to case 3, which is undoubtedly an example of chronic gastro-duodenal dilatation or gastro-mesenteric ileus. Further experience may demonstrate that this is the common pathological condition of many cases of gastric neuroses which have not been relieved by posterior gastro-enterostomy, and which may be relieved by duodeno-jejunostomy."

I think that within a few years we shall hear much about stasis in the duodenum. In a future more detailed discussion on this subject I intend to report a private case of probable duodenal ulcer which through many years has shown a tendency to relapses. In his case it seems to me not unlikely that duodenal stasis has been the cause of repeated ulcers rather than that one persistent duodenal ulcer has been the cause of all the attacks. Finally, I would like to say that

I am much interested in this subject and would be greatly indebted to other members of the staff for opportunities to observe their suspected cases of duodenal ulcer, either at the bedside, at operation or at autopsy.

The following questions need answers: Perhaps those familiar with the literature can give them to me.

Why is duodenal ulcer a male disease?

What evidence is there to show that these small ulcers are intractable in healing?

Why may the persistent symptoms not be due to the cause (duodenal stasis) or the result (periduodenal adhesions)?

Can perforation into the pancreas cause a leakage of pancreatic juice into the intestine at the wrong time?

Why may not the alkaline duodenal secretions be responsible for some of the pain attributed to acid gastric secretions?

THE "OPTOMETRIST" AND HIS "COLLEGES."

BY JOHN C. BOSSIDY, M.A., M.D.,
Ophthalmic Surgeon, Boston City Hospital.

PRECEDING articles by the writer have aimed to show how these so-called optometrists veil a lack of general scientific or medical education in a flood of words; how their constantly repeated claim to the elevation of their "profession" means no more than a listening at occasional meetings to medical papers so abstruse that they startle scientific and medical men by their apparent depth and complexity. The acrobatic ease with which these men handle the most difficult subjects, the self-satisfied way in which they proclaim their superiority over the physician in general, and the oculist in particular, would be amusing were it not serious; for it is certainly a serious thing to see thousands of poorly or partly educated men follow the lead of a few enthusiasts into medical water so deep that even medical experts sail on them with extreme caution.

The men who nimbly do these daring things are the opticians who reason out medical cause and effect in a moment, after either securing their working training in a workshop or behind a counter in most cases, or (if they be decidedly ambitious) by an investment in a correspondence or an attendance course at one of the many optical schools scattered throughout the country.

Let us see how they give a tangential touch to both scientific and medical education and then proclaim themselves the caretakers of the most complex and delicate organ of the human body, — the eye.

From the mass of literature and great number of circulars regarding their get-educated-quick institutions and get-a-diploma-quick methods, the following are selected as truly representative:

Lake Forest Correspondence Optical School (Ill.):

"This is a correspondence course and is taught by mail by a regularly incorporated

Optical College, incorporated according to the Illinois State Laws, endowed with the power to confer the degree of Oph.D. (Doctor of Ophthalmology) upon its graduates.

"Time required to complete course is *one week*. . . . We guarantee to make all students thoroughly competent. The entire fees, including examination, instruction, graduation and diploma, are \$15.00.

"Dr. G. J. W. —"

Detroit Optical College, J. S. O., M.D.:

"By these [the college's] methods of object teaching an intelligent person may become sufficiently familiar with the eye, its defects of vision and their accurate correction by properly adjusted glasses, in a few weeks to be skillful in all the requirements of the art."

This two weeks' course comprises:

"Everything that is necessary to make students practical opticians, including a thorough knowledge of defective vision and its correction by means of the case of trial lenses and test cards, the practical application of prisms, ophthalmoscope, mydriatics, etc."

A diploma (title not stated) is given with this attendance course. Accompanying the catalogue is a letter to me extolling a correspondence course at \$25.00, giving a diploma 16 x 21 inches in size, which contains nothing "to indicate that you have taken a correspondence course."

A circular from the same college mailed later to me says:

"In response to a number of applicants, we made a special club offer for forty pupils. We have enrolled forty-seven pupils in this club, and are furnishing them our \$12.50 correspondence course in optics, for \$7.50.

"The above course consists of a book on diseases of the eye, etc., special type-written instruction; examination questions which will be criticised and returned to you, and 16 x 21-inch diploma."

They later offer a correspondence course at \$2.00 down and \$1.00 a week for six weeks, or \$6.00 cash in advance; a diploma also accompanies this course.

Chicago Ophthalmological College and Laboratory:

"This course consists of the anatomy and physiology of the eye, their relation to associated organs and the sympathetic system, physical optics, physiological optics, lens building, muscular imbalance, differentiating disease from optical conditions, and frame adjustment."

Students finishing the four weeks' course will be awarded a diploma,— title not given.

McCormick Optical College (Chicago). The *Optical Journal* of Oct. 20, 1904, has this advertisement:

"I will for \$25.00, cash with order, give a correspondence optical course that will make the others sick-degree, Doctor of Ophthalmology."