result by such treatment was seen in some of the one hundred cases previously mentioned. A bandage was ordered for nineteen patients in whom the history indicated a congenital origin; five were much relieved, ten a little relieved and four experienced no relief. About 25 per cent. thought it worth while to wear a bandage. Drugs may be employed, as iron, nux vomica, physostigmin, and also laxatives, of which the most effective is rhubarb. Now and then sedatives of mild form, as the bromids, sumbul and valerian, may be judiciously employed.

We must pause a moment to consider the congenital visceroptosis, on which acquired physical conditions are engrafted, which lead to obstructive symptoms, chronic constipation and its secondary disorders. A different condition confronts us. Hence the judicious surgeon or internist must estimate the relative effect on the organism of operative procedure, and of a continuance of the abnormal conditions. I am free to admit that the presence of inflammatory adhesions, of undue dilatation or of obstruction, demands the intervention of the surgeon.

Here also a word may be said of the patients with visceroptosis who cannot have the opportunities of hygienic treatment which I have spoken of. Such are unable to carry on their usual avocations and are practically helpless; for them a chance must be taken, and it may be wise to resort to surgical procedure.

The acquired visceroptoses are most amenable to surgical treatment. If judicious abdominal support, the repair of losses of external support and indirect and hygienic therapeutics are not of avail, resort to surgical procedure is necessary.

What I have said regarding operative procedure in congenital ptoses may have to be qualified with the turn of a night. The argument that the enteroptosis should not be treated by surgical measures because other congenital states exist, and notably those of the nervous system, might be applied to other congenital conditions. It might be said for similar reasons that one should not operate on hare lip or cleft palate. If we could recognize congenital ptoses early and before the neuroses develop we might be able to forestall the ill effects of insufficiencies. Who knows but that in the near future such early recognition will be possible, and early remedial surgical relief applied?

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THE X-RAY DIAGNOSIS OF ENTEROPTOSIS *

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The x-ray diagnosis of enteroptosis is at once a simple procedure with definite conclusiveness. The x-ray furnishes a method to determine with exactness the position of the large and small bowel within the abdominal cavity.

This examination does not demand an x-ray equipment above the average. A 12-inch coil, with electrolytic interrupter and a tube capable of standing a primary current of 20 amperes for thirty seconds will suffice.

On account of the comparatively equal densities of the abdominal contents, it is necessary to render the

colon transparent or opaque in outline. The following means may be used to adapt the colon to Roentgen examination:

1. Inflation with air, per rectum. This method is not satisfactory because the air-pressure within the colon is unequal, and, further, does not give an exact record of the lumen of the colon on the fluoroscopic screen or negative.

2. The distention of the colon with opaque emulsions, injected per rectum. Distention by injected emulsions produces a colonic distention with uniform filling pressure when properly conducted.

The technic of the rectal injection is as follows: The patient, having had an intestinal cleansing previously, is placed at ease on the left side, with hips elevated. There should be complete relaxation of the abdominal musculature. A soft rubber tube, about one-fourth inch lumen, is inserted, and the emulsion allowed to flow gently, as the first portion of the injecta may produce colonic contractions that would foil our purpose. The pressure of the flow should be about 8 to 20 inches. The injection should require about thirty minutes for 2 quarts of emulsion. The examination within the next hour will disclose the filling of the large intestine to the ileocecal valve. The average capacity of the adult rectal ampulla is 1 pint, and of the large bowel 3 quarts.

3. Distention of the colon with opaque substances ingested with food. By this method the residue of a bismuth meal is radiographed in the colon, sufficient time (usually sixteen to twenty-four hours) having elapsed since its ingestion to insure its presence in the colon.

Opaque substances of radiographic usefulness include, first, the bismuth salts—subnitrate, carbonate, subcarbonate and oxychlorid. Of these, the oxychlorid is best, not having any deleterious effects and not undergoing chemical change. The subnitrate has been discarded because of some unfavorable reports and the care necessary in its selection commercially. Second, the iron preparations, including manganate of iron.

For ingestion by mouth, these opaque substances must be held in suspension by a gruel, or porridge of rice, milk and bread, meal of peas, oatmeal, etc. I myself use about 2 pints of porridge, into which one or two ounces of bismuth oxychlorid is thoroughly mixed, flavored with raspberry syrup or grape-juice.

For an injection per rectum, I use an emulsion of 2 ounces of bismuth oxychlorid in 32 ounces of milk, with 4 drams of acacia to sustain the bismuth, or an emulsion of olive oil and bismuth oxychlorid. It is worse than useless to draw diagnostic conclusions from the injection of simple bismuth in water.

The x-ray diagnosis may be made by (1), fluoroscope, or (2), radiograph.

1. The fluoroscopic examination should be conducted in a room of absolute darkness, on a good protected fluoroscopic screen of a size (11 by 14 or 16 by 20 inches) sufficient to cover the entire field of inspection. The fluoroscopic outlines of the opaque colon may then be charted on the glass covering to the fluoroscopic screen and this transferred to paper for a permanent record. If the physician or Roentgenologist is provided with fluoroscopic apparatus that protects the patient and operator, this examination may be conducted expeditiously and without the tedious detail of the radiographic exposure. But without good fluoroscopic apparatus, one is confined to a radiographic technic.

* Read in the Section on Obstetrics and Diseases of Women of the American Medical Association, at the Sixty-first Annual Session, held at St. Louis, June, 1910.

2. The radiographic examination should be made with a plate not less than 11 by 14 inches in size, usually 14 by 17. The plate should be placed with the emulsion surface against the abdomen, the umbilicus having been marked with a copper cent, attached with adhesive, and the tube opposite the fourth lumbar vertebra and at a distance of 20 to 22 inches from the plate. The use of the usual x-ray plate will usually give sufficient detail with an exposure of ten to thirty seconds, with a primary current of 20 amperes, through a 12-inch coil and a tube of medium penetration. The topographic outlines of the colon alone being sought, it is quite satisfactory to shorten the exposure and increase the contrast by means of an intensifying screen, especially the new Gehler-Folie or Sinegram screen, which produce negatives relatively free from small flecks.

The interpretation of the radiographic and fluoroscopic shadows is greatly enhanced by study and experience. Before examining by the fluoroscope, the observers should remain in absolute darkness for ten minutes to secure an ocular accommodation. This is especially advisable to one unfamiliar with fluoroscopic shadows.

The landmarks of our x-ray picture are the umbilicus and ensiform cartilage, marked by pieces of metal, and the wings of the ilium. The shadow of the cecum should be within the wing of the right ilium. We may then trace the colon to the hepatic flexure. In a well-filled colon we may see the hepatic angle completely filled with the emulsion, but sometimes the apex of the angle will show some transparency produced by retained air. The splenic flexure is higher than the hepatic, and also shows a sharper angle with air at the apex. The shadow of the transverse colon should be noted in its relation to the umbilicus and its movability noted by direct abdominal manipulation. To determine the movability of the colon in radiographs, it is necessary to take two exposures; one with the patient standing, the second with the patient in the Trendelenburg or prone posture. The study of the movability of the colon and possible adhesions thereto is best accomplished by the fluoroscope.

The hepatic and splenic flexures of the colon may appear sharply angled with possible kinks. This is usually faulty interpretation, as what appears to be an angle is really a curve, the upper portion of the ascending colon being overshadowed by the first part of the transverse; likewise, the first portion of the descending colon may be overshadowed by the distal portion of the transverse colon. If there be a kink that obstructs, there is a damming up of the opaque emulsion on the side from which the emulsion was introduced.

To avoid errors in the estimation of the distance of the transverse colon above or below the umbilicus, it is necessary that the direction of the x-ray delivered from the x-ray tube strike the fluorescent screen or plate at a perpendicular, and at a point on the back opposite the umbilicus, about the fourth lumbar. In the study of a particular portion of the colon, where adhesions are suspected it is desirable to diaphragm down to the area on the fluorescent screen. This is not necessary in radiographs, as the entire colon may be studied at leisure, but without the advantage of continued observation under manipulation that the fluoroscope affords.

CONCLUSIONS

Having rendered the lumen of the colon opaque, it is possible to record exactly, either by fluoroscope or radiograph, the position of the colon in its relation to the

umbilicus and bony skeleton. The fluoroscope will give diagnostic information beyond the radiograph, in that changes in position of the colon, due to manipulations and adhesions, may be studied.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. SKINNER, MUSSER, OCHSNER AND SMITH, FORMING A SYMPOSIUM ON ENTEROPTOSIS

DR. MAX EINHORN, New York: I think it was in 1895 or 1896 that my paper on "Movable Kidney and its Treatment," was published in the *Medical Record*. At that time most movable kidneys that were recognized, were operated on, and I think I stood almost alone in the opinion that movable kidneys should not be operated on. It is not movable kidney alone that gives the trouble, but there is usually associated a movable stomach, or liver, or other organ. Such conditions are found more often in women than in men. Whether or not it is congenital is difficult to state. I am of the opinion that in some cases there is congenitally a tendency to develop such anomalies. That such conditions exist in normally developed children, who later develop affections that lead to enteroptosis, we have ample proof in the fact that proper treatment brings permanent cure. If the condition existed from birth this would not be so. Another point is that a strict diet is just the opposite to what is required. In all these patients, unless there is a strong contraindication, it is important to make them eat. The patient may tell you that he cannot eat eggs. If you will allow this to guide you, you will never succeed. Tell your patient to eat a little at a time, and that in two or three weeks he will find he can eat everything, and that is the only way to cure such patients.

I do not think that enteroptosis as such gives rise to great disturbance of the motility of the stomach. If you find food in the stomach in the morning with a prolapsed condition, the prolapse is not the cause of the stomach not being emptied. There may be some other condition associated. I would say that this is not a phenomenon of enteroptosis.

DR. R. C. CORREY, Portland, Ore.: It is pleasant to see an afternoon devoted to this subject in a surgical section of the American Medical Association inasmuch as many of the leading surgeons of our country have absolutely opposed surgical treatment of these cases. The first patient whom I treated surgically was one in whom I could find nothing else wrong. The patient had gone from the condition of a strong, healthy woman to a condition of severe vomiting, just as if she had an obstructive ulcer at the pylorus. I had heard of nothing at that time that had been done on the subject. I told the patient's husband what I would like to do in the case and he consented. I sutured the omentum to the abdominal wall.

The patient fully recovered and weighs 160 pounds; she weighed 80 at the time of the operation. Since then I have operated on 22 other patients for ptosis of the stomach. I think Dr. Clark has given us one of the best pieces of advice to-day: not to operate for the pathologic condition as it appears from the clinical examination, but to operate for symptoms alone. I remember that Dr. Clark, some years ago, in a paper advocated this operation in certain cases in which he had incidentally found the stomach low down while doing other abdominal operations. I am glad that he has changed his opinion. We never should operate on the stomach simply because it is low. In but two cases have I operated in which the patient was not an absolute invalid. That is the rule that we should adopt. In only three cases have I operated for general ptosis. Most of my operations have been for prolapse of the stomach alone. Four patients had displaced liver and one or two had displaced kidneys. There were two cases of general ptosis; operation was done in two stages. In one case the patient had been an invalid for five years. The stomach was also prolapsed and the uterus retroverted, as is common in these cases. I anchored the stomach, liver and kidneys, and suspended the uterus at one operation. I found the congenitally narrowed condition which had been mentioned and on attempting to close the abdomen it seemed too small. I

had then turned the fascia of the rectus in from above, leaving only the posterior portion of the fascia, thus extending the abdomen at least two inches. Six weeks later, I made two incisions, one on each side midway between the umbilicus and anterior superior spine of the ilium, and parallel to the fibers of the fascia of the external oblique. The fascia was overlapped for two inches on each side, as shown in article in *Surgery, Gynecology and Obstetrics*, thus changing the entire contour of the patient's abdomen. The patient is doing her own work and feels absolutely well. In two other cases I did the same thing.

Dr. C. P. KORSELL, Chicago: I emphatically believe in the surgical treatment of enteroptosis. I have had some little experience and endorse the view of intra-abdominal pressure being a causative factor of great importance. In seventy-four women and two men operated on for enteroptosis by a new method, sixty-three had previous diagnosis and were deliberately operated on for its relief. Eighteen of them had previously been operated on for gynecological troubles without relief. My work has been in aggravated cases, in patients prostrated, useless, and with life a burden. They have been mostly those complicated with pelvic troubles and in quite a large percentage the small intestines were principally involved, being prolapsed into the lower pelvis below the promontory of the sacrum and bent back around its acute angle, usually with the uterus pressed down, retroverted and the fundus resting on the intestines, compressing them against the sacrum. The operation is done through a transverse or the usual incision, above the symphysis. After raising the intestines and emptying the pelvis completely of intestines, packing them out of the way, an incision is made in the posterior peritoneum about one inch long just to the right of the rectum, either transversely or longitudinally; then grasping the cul-de-sac of Douglas, or, in some cases, the neck of the uterus, well down with a tenaculum forceps and approximating it posteriorly to the sacrum just below the promontory and stitching it into the cut in peritoneum with chromicized catgut or silk, a firm anchorage is secured for the uterus posteriorly and permanent suspension. The same procedure is carried out to the left of the rectum with or without incising the peritoneum. The sutures are continued on each side from these central points of suspension for sewing the broad ligaments on the same level to the sacral peritoneum, a half-inch below the promontory, until the true pelvis is entirely closed up by a diaphragm of double layers of peritoneum, which experience has shown to be of ample strength to keep the abdominal organs out of the pelvis.

I have deferred reporting this work in the hope of having some of these patients come through pregnancy, but have so far waited in vain. However, I do not believe the condition produced would materially interfere or complicate natural labor, especially if one were not in too great haste. Such patients should have ample dilatation of the cervix before resorting to the use of forceps.

Dr. J. H. CARSTENS, Detroit: Prevention is the great desideratum. The illustrations of Dr. Smith show the peculiar shape of the body, which indicates the tendency toward general abdominal ptosis. This being the case, we should prevent the latter by systematic development of the body by physical exercise and not too much school work. Why do we have so much ptosis and neurasthenia? Because many of the girls at this age are ambitious; they want to learn and to become stenographers, teachers or members of some other profession, and still they haven't the right kind of brain; they learn with difficulty; they must study hard, until late at night. To make matters worse, perhaps some good aunt pays for a music teacher and they also play on the piano during this stage of development, and then when they are 18 or 19 years old graduate from the high or normal school physical wrecks, with a certain amount of mental development and with a sour and cross temper. We must prevent this condition. Such a girl must stop her education for a few years; she can make it up easily afterward, if necessary. Such a girl must be sent to the country. Let her jump over the fences, chase the cows, feed the chickens, fall in the river, swim, row a boat; in other words, be a regular "tom-boy."

With plain nourishing food, in the course of a few years she will develop into a strong, healthy woman with a virile body, with not so much learning, but with a sweet temper.

Dr. A. W. CRANE, Kalamazoo: It seems to me that the usefulness of the x-ray examination of the stomach and intestines by surgeons is greatly circumscribed. It is mentioned but little in the books, in journals and in works on the x-ray itself. It does not seem to be described in the books on general surgery and medicine. To my mind the x-ray examination of the stomach and intestines often furnishes more complete information than experimental operation. A surgeon may not be able to tell whether an ulcer of the stomach is present or not, even though he has the stomach in his hand, but he may be able to tell from the x-ray examination that such exists. It seems to me that except in emergency cases, no surgery of the stomach or intestines should be done until x-ray examination had been made.

ARTHRITIS OF GASTRO-INTESTINAL ORIGIN, ITS DIAGNOSIS AND TREATMENT *

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An obscure relationship between disorders of the digestive tract and joint affections has long been recognized by clinicians, and in the last decade some of these relations have become better understood. It is now known that severe cases of arthritis may occasionally be completely relieved by preventing absorption of intestinal contents in the large intestine. This may be accomplished by intestinal lavage, purging, regulation of diet, and by operations on the colon that cause fecal material to be discharged through artificial openings, thus putting the lower portion of the intestine entirely out of function.

Various intestinal affections may influence joints, and it is interesting to observe that typhoid fever and bacillary dysentery both are occasionally accompanied by joint lesions, while in appendicitis arthritic complications are too infrequent to seem more than mere coincidences. The few scattering cases of arthritis that occur with rarer diseases of the alimentary tract will be disregarded in this paper.

Keen¹ states that there were 84 cases of arthritis among 1,700 cases of typhoid fever collected by him, and Garrod² estimates that 3 or 4 per cent. of bacillary dysentery show joint complications. In the very common malady, appendicitis, Sutherland³ has been able to collect only 6 cases in which there have been pronounced articular pains, and these seem to be too few to indicate any real relationship. Garrod² says that he has been unable to obtain any reliable instances of joint disease occurring with amebic dysentery, but W. E. Musgrave⁴ records that chronic rheumatism both of the articular and muscular types is very frequently encountered, and in many instances seems to bear a very definite relation to amebiasis of the intestine. In comparison it should be remembered that gonorrheal arthritis occurs in 2 or 3 per cent. of patients suffering with the latter disease.

The joint lesions in typhoid fever and bacillary dysentery make their appearance after bacterial poisons have acted for several weeks. In practically all instances bacteria have not been found in the joint fluids.

* Bacteriologic examinations by Mr. Carl Ten Broeck and Mr. H. N. Jones, Department of Comparative Pathology, Harvard Medical School.

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