5-1-1934

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VISCEROPTOSIS

(A general consideration of the condition.)

SENIOR THESIS

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April 4, 1934
VISCEROPTOSIS

INTRODUCTION and HISTORY

Visceroptosis is a term applied to thoracic and abdominal viscera, which are situated below an arbitrary standard which is considered normal. Before the use of the x-ray the normal was drawn from examination of cadavers. At present those relations have been discarded, following the examination of normal people by the x-ray, after an opaque meal. The normal relation is considered much lower than was previously thought (35).

This paper will be limited to the consideration of the abdominal viscera. The kidney will be referred to from time to time because of its close relation to part of the abdominal viscera, particularly in regard to support.

Visceroptosis is not a specific disease entity, but is a condition resultant to extreme variation in the position of the viscera. This condition was first recognized as a symptom complex in 1887 by a Frenchman named Glenard. Four years later Stiller published a similar article relating the symptoms, etc. Since that time it has been frequently recognized and discussed.
In 1768 de Haen (60) published wood cuts showing abnormal position of the viscera and drew attention to the atypical symptoms met with. Early in the 19th century Esquiral described the prolapse of the transverse colon that he found in a number of mental cases. Fleishman noted the frequency in cadavers and at autopsy of misplaced viscera and suggested that the corset had an influence on the position and form of the viscera. Virchow (2) in 1853 called the change due to "Chronic partial peritonitis" and considered it a very important condition. He observed that nervous and dyspeptic phenomena were frequently met with in patients with movable kidney. This was thought to be the seat of the trouble and in 1878 Martin published an account of the first nephropexy. In 1881 Landan associated the movable kidney with the relaxed and bulging of the anterior abdominal wall below the umbilicus. Kussmaul described the dilated and prolapsed stomach and associated it with frequent symptomatology.

Glenard's work, published in 1887, linked the various conditions together as one syndrome. Stiller first associated the condition as being congenital. Since that time there has been much written as to the prevention and treatment. Due to the fact that Glenard
first described the syndrome, it is frequently referred to as Glenard's disease.

In this paper I will deal with the various theories as to the etiology of the condition. Then I will discuss symptomatology and results of such a condition found in an individual, when it produces symptoms. Then we will consider the prophylaxis and treatment, and general management of patients with this condition.

VISCEROPTOSIS

ETIOLOGY:

Practically everyone who discusses visceroptosis divides it into two definite classes, that which is congenital, and that which is acquired. Glenard (31) when he first described it, considered it as an acquired condition. Shortly after this Stiller (62) published his article with the congenital theory dominating. He related the condition with a floating tenth rib and considered it a definite diagnostic aid. At the present time this finding has been definitely discarded.

Cawadias (17) presents a theory dividing the condition of visceroptosis into four definite divisions, as follows: 1st, the constitutional gastro enteroptotic form, or Stiller's syndrome; 2nd, the neurotic gastro
enteroptotic or Adler's syndrome; 3rd, the organiz gastro enteroptosis, or Glenard's syndrome; 4th, gastro enteroptosis complicated by perivisceritis.

Stiller's (62) syndrome relates the gastro enteroptosis to a definite constitutional form. He considers there is a particular psychophysical construction of the individual. It is not a morbid condition grouped as to morphological features. It is termed a hypervegatative constitution. This type has a stature below normal. Fat is scanty and the blood pressure is low. The stomach is elongated, the lower pole dropping into the pelvis. Psychologically these people tend to be interverts. They are prone to certain diseases because of an associated endocrine, vegatative and physical inadequacy, and to dietetic upsets and infections which tend to localize in the gastro intestinal tract. The endocrine imbalance is considered partly the cause of the maldevelopment.

Alder's syndrome sets out the individual with a similar make up as to the one in Stiller's syndrome. They differ from the patients in Stiller's group in that they are free from symptoms. As children they are weak, nervous, and poorly nourished. They will have nervous flare-ups at puberty, marriage, and at the menopause. The patient will have a poor appetite and
after eating will have a feeling of weight on the abdomen. In this patient the symptoms are not relieved by lying prone or by Glenard's test (discussed later). This patient will tend to restrict her activities and eat less because of this feeling of weight, and will thus increase her condition by a poorly nourished endocrine and vegetative nervous system and thus create a vicious cycle.

Glenard's syndrome patients have an organic type of digestive tract, according to Cawadias (17). We will find a similar symptom complex as produced in the other types. The other is similar to Glenard's type, but there is complicating low grade infection.

Later Mills (47) presented a classification which is based on the body type of the individual. The heavy, powerful individual is considered to have a powerful body and a good tone to the alimentary organs. In the frail, slender individual the tonus is poor, which allows the stomach to dilate and descend into the pelvic region. Also in the heavy subject more food is demanded because of the basal requirements of the individual which add to the greater tone. Mills (47) gives as a classification of body types the following: sthenic, hyperstenic, asthenic, and hyposthenic. The sthenic is the short, stocky individual and the asthenic is the tall, thin,
poorly nourished individual. This is the type Stiller described.

Seward (9) adopted this classification and found a fairly constant relation between body type and the size, position and motility of the viscera.

Coffey (18) presented the idea that four forces were used to hold the organs in place: 1st, a shelf above the psoas muscle; 2nd, the shape of the abdomen, and the abdominal muscles which tend to mold the organs; 3rd, prenatal fusion of the parietal peritoneum; and 4th, extra and intraperitoneal fat. The abdominal cavity is shaped like an inverted pear.

The ascending and descending colon are fused with the parietal peritoneum up to and internal to the lower pole of the kidney. The organs are held on the psoas shelf by the action of the abdominal muscles. In 20% of the people the ascending and descending colon are not fused with the parietal peritoneum to this point. In this group of cases the colon, instead of resting on the psoas shelf or incline is suspended by a direct drop from the kidney, through the nephrocolic ligaments. All cases of visceroptosis are in this class or 20%. Coffey (19) also found that in a patient who had a moderate amount of fat and loses considerable weight, there will
be a tendency for the viscera to dilate because of the negative pressure created by the loss of fat. The dilation will take place so that an equilibrium between the intra and exterior abdominal pressure will be reached. The intestines which have dilated to equalize the pressure will be filled with gas and there will develop an atonia and an upset in the secretions as a result. This will continue until the abdominal shape has changed. The x-ray examination of these individuals will show a dilated stomach and colon with a decreased peristalsis because the dilated viscera gives a secondary atonia. Wagoner (13) found by experimental work on laboratory animals that the peristalsis is in a large measure dependent upon the relation between the pressure within the abdomen and the pressure within the intestines.

Osgood (53) stated that Dexter reported a series of cases in which the peritoneum and mesenteries varied widely at birth. He did not consider them abnormal. Martin (45) gave the idea that the condition points to an embryological arrest or reversion to a lower type. Victor (69) made a complete study of premature and mature children in regard to splanchnoptosis. He concluded that the evolution of the human body was not complete at birth; that changes and variations in developmental processes may be observed in operation in various periods.
of life. He concluded that individual variation in the location of the lower border of the liver are found at all ages from the fourth month on. Locations found at term are found in early fetal ages and locations found predominating in early fetal ages are also found persisting at term. The sigmoid colon has definite variations which can be classified along four definite lines, and are due to migration and displacement of the loops of the bowels. These loops have no secondary fixed bases. Obstructions due to gas are common at term.

This produces an anatomical explanation for the development of mechanical bases on which stasis are demonstrated. This line of the fixed prenatal disposition of the colon around the periphery of the posterior abdominal wall is varied greater or less depending on the amount of basic redundancy of loop formation in the pelvic sigmoid colon during fetal life, thus explaining Coffey's 20%. Five anatomical locations for redundancy and mechanical obstruction are found in all cases examined. These are: in the neighborhood of the left psoas, at level of brim of pelvis, the proximal side of the splenic and hepatic flexures, and the cecum. The body of the prenatal shows two shapes to the stomach, I. E., the quadrangular and pyriform, long axis downward and to the left, and it
unites at an acute angle with the atrium of the duodenum. After distention of the stomach with gas he found an obstruction with the 2nd part of the duodenum which disappears after releasing the distention. Novak (57) states that frequently we find an abnormally high placed and fixed duodenum that leads to partial obstruction.

Becher and Lanhoff (30) did some original work as to body form and visceroptosis which has been rather widely accepted. They worked out an equation in regard to the distance from the suprasternal notch to the symphysis, divided by the circumference of the waist, divided by one hundred gives the body index. This was worked out on a large number of persons, the average being about 77. Those less than 75 negative and those over positive. The greater the index the more probable the chance of ptosis. Galland and Baker and Pinchoff accept this as a fairly good index.

Gallant (30) divides the etiology in five clases: 1, developmental; 2, post partum; 3, postoperative; 4, traumatic; and 5, nutritional. The developmental is artificial at puberty. The girl ceases her healthful exercises as they are expected to be custom. She is not expected to run and exercise at this age. At this time she starts wearing tight clothing, which in itself will produce dyspeptic spells and constipation, nervousness,
and sleeplessness. This is not as much of a problem at present as it was when Gallant wrote his article in 1905. The postpartum is due to over distention of the abdominal muscles, due to uterine enlargement. After delivery there is an immediate decrease in pressure and also some loss of weight during nursing. This will allow the viscera to drop from its normal location as suggested by Coffey (19). Gallant developed a method of examination in which, first the abdomen is measured with the patient standing, and then lying down. He found a difference of from three to five inches in the visceroptotic cases. Gallant used palpation, percussion and transillumination in his examination. The Glenard test was to support the lower abdomen with the hand, from behind the patient to relieve the pain. If this gives relief the pain is due to visceroptosis.

Martin, in 1908, made a thorough study of the support of the viscera. He made the statement that the normal individual was absolutely free from any visceral prolapse or displacement. The perfect physical specimen was arrived at by measuring a large number of college people. The normal person has lordosis in the region from the tenth thoracic to the first sacral, the maximum curve being at the level of the third lumbar. In the
underdeveloped women the forward curve is lost to a slight or greater degree. There is also a slant to the rib which is not normal, because of the sagging of the shoulders. There are remarkable devices furnished for the maintaining of a range of approximately normal location and at the same time allowing an unlimited freedom of action in the performance of the relative functions of the various organs. Martin states that there are a number of shelves in the peritoneal cavity which definitely immobilize and maintain the organs in their position. He considers them not as ledges, but as broad surfaces of attachment. In these locations the peritoneum is replaced by connective tissue to support the organs. He describes the various ligaments as supports and shelves that hold the viscera, also shows that they are for the most part attached to a rather firm and fixed portion of the body. The peritoneal surface of the movable anterior belly wall divides into a number of shallow fossae, representing spaces between the abdominal aponeurosis lines which tend to help the mesenteries in their support. The fat between the layers tends to stiffen the constituency, protect the vessels, and support the organs.

In 1912 R. R. Smith (60) made an intensive study
of cases of visceroptosis. What he vlassed as the primary or essential group, which was similar to Stiller's (62) syndrome or the sthenic type of Mills (47) The first impression this patient presents is one of frailness, expressed in the body contour and form. She is slight and angular with little adipose tissue. The muscles are thin and flabby. There is a general underdevelopment and lack of vigor, associated with this, and depending on it we find the patient has a long neck, small chest, showing signs of under development. The abdominal wall is lax and tends to protrude. The chest change takes place largely during growth of the child to maturity. These changes are relatively permanent and difficult to correct. There is a muscular insufficiency, and a decreased lordosis and rounded shoulders. They have comparatively good health, but little resistance, fatigue easily and have frequent back and groin pains. A careful history reveals all the marked cases had their starting in early childhood. They were thin, frail and more or less nervous. This led Smith to examine a series of children. In the ptotic people a palpable kidney was usually present. In the children this condition was rare. He concluded that the kidney was not congenitally displaced, but later developed. As contrasted with the adult, the stomach was
well up in the abdomen and the hook at the lower pole, so common in entroptotic stomachs of the adult, was seen in but few instances, and then only to a slight degree. Even in the tall, frail girl the prolapsed stomach was rare. Smith considered the "ideal stomach" as being that of a cow horn shape with its lower border on a level with the pylorus. This is a mechanically correct stomach. It is found only in vigorous individuals; and the dilated, elongated stomach is found in the frail, relaxed individual, depending on the degree of relaxation. The conclusion of this work was that the entroptotic habit of adult life finds its counterpart in frail children presenting the characteristics of lack of fat, slenderness of muscles and lack of vigor in development. The prolapse of the kidneys, stomach, colon, and intestines, which accompanies entroptotic habit of adult life is not displayed in children under twelve years. The habit itself is far more important in women than the prolapse which accompanies it. Her lessened ability to fulfill duties imposed on her, the limitation on her by her lack of ability and unhappiness due to the state of fatigue endured, are a serious matter. The frail child should be recognized and the possibilities of the above developments fought against. It was next
shown that these children, as a type, were more prone to infection. There is usually a tendency to backwardness in physical development, as to poor nutrition and an unstable nervous system. A lack of nutrition and flabbiness of tissue is considered the chief cause of visceral displacement.

Ochsner (52) found visceroptosis in children which he operated for hernia. He considered it due to gaseous distention, constipation, phymosis with urinary obstruction, chronic cough or severe crying. When distention was relieved the enteroptosis would completely heal in many of the cases.

Coffey (19) thinks the pendulous cecum does not empty itself properly, but does not produce symptoms until puberty at which time constipation develops. He states that at this time a pericolic membrane appears as a result of stasis and low grade infection. This membrane which is frequently demonstrated across the cecum and ileum is harmless until the hepatic cecum drops down and produces definite kinking. At this time we find a partial obstruction. The right sided ptosis may pull down the right side of the stomach, kinking the second portion of the duodenum. Lane was the first to describe these bands and gave evidence they will produce severe
pain, which will be associated with constipation and stasis. The kidney is pulled out of place in these cases by the ptotic colon through the connection of the nephrocolic ligament. A palpable, movable kidney develops only in cases of ptotic hepatic colon (19). There also may be a bond developed that pulls across the gall bladder, producing symptoms referred to that organ.

Midline colon ptosis produces stasis only when the normally fixed points at the second portion of the duodenum or at the splenic or hepatic flexures have not fused. Midline ptosis is an acquired condition, developing from the combination of the effect of a chronically looped colon or an over distended stomach, causing pressure. Any form of localized ptosis may, by producing a mechanical stasis with intestinal toxemia, be the direct cause of developing atonia. Seward, on the other hand, thinks that the failure of the mesentery to fuse, as described by Coffey, has less effect than the poor blood and nervous supply, and lymph drainage which the unfused portions receive. Moore and Wheatly (49) substantiate Coffey's idea that the ptotic colon may obstruct the duodenum and also will cause much of the bile to flow into the stomach and thus account for many of the gastric attacks. This will give a dragging sensation and a back-
ache, and fullness after meals.

In respect to children studied, Wheatly and Moore examined 84 school girls and classified them in respect to posture, etc. They made x-ray studies of the stomach in each, first in inspiration and then in expiration. After two years of extensive physical training the girls were x-rayed again in a similar manner and the relative position of the stomach studied. They found that the girls in good posture showed no visceroptosis, and that physical training tends to correct the ptosis present in some children.

In regard to posture, Sever (58) considered that poor posture should be corrected, but it was not a cause of ptosis in children. On the other hand Goldthwait studied frozen sections, demonstrating that certain relaxed types favor sagging viscera. He concludes that derangement of this sort would predispose the mechanical and faulty action of the viscera. Swain (63) showed that out of 3000 patients examined there were only 20 well postured individuals.

Levy and Kantor (42) states that visceroptosis is not congenital, but certain people predispose to revert to a more primitive type. They consider that acquired cases exist, but that they form a small percentage of the
total cases. Faulty dress, corsets, repeated pregnancy, and loss of weight play but a minor part in the etiology. Loveland (43) states that the course begins with heredity, the individual having an inherited neurosthenic tendency, she is highly sensitive, slightly built, ambitious and quick acting, and easily encouraged or discouraged. Age also is an important factor. The condition usually develops between fourteen and twenty-four years of age, when the individual assumes the burden of life. This brings forth the neurosthenic tendency and also the abdominal ptosis becomes apparent. Loveland, Levy and Kantor consider ptosis common in single women. It is suggested as one of the causes of sterility. Symptoms may be explained partly by the mechanical displacement and consequent nerve traction which may excite reflex disturbances and secondly by the lack of tone or elasticity resulting in a decreased intra abdominal tension which allows the accumulation of gas and stasis and more gas. This causes the abdomen to be distended and tends to stretch the anterior abdominal muscles and they also lose their tone. Conybeare (20) considers that the constipation is usually due to the lack of abdominal tone, and when associated with the atonic colon has insufficient power to give complete evacuation.
White (71) made a study of posture, as related to visceroptosis and considered two postures, the active, which is especially most typical during working or effort and the passive as shown by the relaxed individual. The first is characterized by a straightening out of the curves of the spinal column, and an elevating of the chest, the head carried well back, the upper part of the abdomen as prominent as the lower. The second has a marked spinal curve, the head drops forward, the chest approaches a position of full expiration, while the relaxed abdominal muscles and diaphragm drag down. The low position of the chest results in a descent of the viscera with a change in configuration.

Ansell (1) states that Stillers asthenia universalis congenita group is the group suffering most from visceroptosis. His studies were made by the use of x-ray. He made a complete study because in some cases the stomach was normal, but the colon was displaced in regard to ptosis, Ansel found that in the majority of ptotic people the barium column reaches the sigmoid in normal time (24 hours) In the ptotic individual after 72 hours the entire colon is fairly well filled with the opaque meal, which proves stasis. In ptotic patients the marked change must be remembered, complications must be located
or only temporary relief can be expected from treatment. A gastric hypertonus, together with hyperperistalsis should be suggestive of duodenal ulcer. Many times apparent deformities of the pylorus and duodenal cap result from extreme ptosis and lack of tone. The deformity occurs when the cap is normally located, but the stomach is ptotic. Terminal ileum stasis at 24 hours is rare in viscerophtosis of any degree.

As the viscera drops in the abdomen below their normal position, there is a tension on the blood vessels supplying them, both arterial and venous. The most marked result is a venous congestion because of increased height through which the return must be raised, and also due to the veins having thin walls. There is also kindling and twisting and a poor muscular tone, probably for the same reason the intestinal tract has poor tone. Brewer (12) gives this as a cause of many of the vague symptoms. An organ that is displaced always gives symptoms to the location which it normally occupies.

Thomas R. Brown (13) presents a new theory as to the etiology. His work and that of Keith sets it out as a result of vibration of respiration and they would classify the condition as a respiratory disease. There are three points in his theory. First, the contraction
of the diaphragm is the factor which produces displacement of the viscera in enteroptosis. Second, before displacement can occur the thoracic support of the diaphragm must yield to the antagonistic abdominal muscles. Third, the bonds which fix the viscera to the wall of the abdomen are of a minor importance.

Fiddian (28) claims that cecal stasis in practically all cases have an abnormally low and floating cecum and that stasis in the normally placed bowel does not give symptoms. The question of the cecum has been increasing in importance since 1908 at which time Wilms pointed out that appendectomy in diagnosed chronic appendicitis does not relieve symptom, if cecum is hyperactive or low. Fiddian found the right cecum securely fixed to the right parietal peritoneum in only 75% of the cases. Treves found it floating in 26% of bodies examined, Pirie in 30% of bodies of children. Larimore made radiograms of children one day old, and found the mobility of the colon similar to that in older children. Houghton (35) presents a new idea in relation to enterop- tosis and the endocrine system. This had previously been suggested, but had not been worked out. He claims it a constitutional deficiency of chromaffin, due to disease in the mother, as tuberculosis or lues; or to a
streptococcus or acute illness in the first year of life. He states that evidence has been presented to indicate that the clinical condition of visceroptosis and the pathological syndrome of status lymphaticus recessive or lymphatism are usually identical from a clinical viewpoint, and that the differentiation between the two is impossible. It is also evident that the word vagatonia simply emphasises the part played by the autonomic nervous system imbalance, and refers to the same complex. The entire condition should be called "Chromaffin deficiency disease". Various changes in the tonus and position of the colon diagnosed by such terms as coloptosis, megocolon, mobile cecum with formation of kinks, etc. are other enteric anomalies of like character, and probably pathognomonic of lymphatism after puberty.

Certain body types, including visceroptosis, are found with status lymphatism stagnata (3). The condition is congenital or perhaps better a predisposition to revert to a more primitive body type. Bloomer considers it a general constitutional asthenia of a congenital character, due to an inherent weakness of the tissue supporting the abdominal viscera.

Bortz (11) made a study of a large number of cases of visceroptosis. He classified them according to the
type presented by Mills (48) in 1916. The largest percentage of the patients are from the age of 20 to 30. Of 100 patients with visceroptosis 32 were males and 68 females.

<table>
<thead>
<tr>
<th>Years</th>
<th>Number of cases</th>
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<tbody>
<tr>
<td>from 10 to 20</td>
<td>4</td>
</tr>
<tr>
<td>from 20 to 30</td>
<td>32</td>
</tr>
<tr>
<td>from 30 to 40</td>
<td>16</td>
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<tr>
<td>from 40 to 50</td>
<td>24</td>
</tr>
<tr>
<td>from 50 to 60</td>
<td>20</td>
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Sixty-nine of these patients were under weight and 15 were over weight. Botz (11) also included over work and worry as etiological factors in developing of visceroptosis. Saner (57) classified the acquired cases of ptosis into two groups: permanent and temporary. In the first group the main cause is pregnancy, and repeated pregnancy. The temporary group may be brought about by such cases as a prolonged febrile illness, toxic absorption from some septic focus, or overwork, which may produce an exhaustion of the gastro intestinal tract, with consequent dropping and stretching, which as a rule are transient in nature.

It has always been the general idea and has been
accepted by practically everyone that a ptotic and atonic stomach was physeractive in its secretory activities. This question was doubted by Vandorfy (68), who made a study of 1100 ptotic patients to determine whether it was true or not. The congenitally lessened distensibility of the musculature and the connective tissue leads to the development of ptosis atonia, the congenitally decreased resistance of the mucosa toward external injuries favors the development of a state of irritability in the gastric mucosa. This leads to hyperacidity, and the condition appears only in a limited number of cases. Some ascribe the hyperacidity to the irritation of the gastric contents. In one-third of the cases examined a hyperacidity was found. Vandorfy considers this, in most cases, due to a gastric catarrh. This is not produced by the ptosis. The frequent finding of secretory disturbances in cases of ptosis, indicates that there exists a definite relation between the ptosis and the secretory activities.

Thaysen (65), after a careful study of normal and ptotic individuals, came to the conclusion that coloptosis was not a cause of obstipation. He dealt with strict coloptosis and not with patients that showed other signs. The condition was based on strict x-ray finding. It is his belief that obstipation is not due to the low
location of viscera, but is on a strict functional basis.

It is considered that the normal stomach will accommodate about 40 CC of fluid. When fluid collects in the stomach, it collects at the lower pole. If there is a loss of tone there will be a failure of the stomach to completely empty itself. This causes the stomach to become ptotic, because of the weight of the fluid. Leven (41) thinks this will produce a special symptomatology, which will be considered later.

This is a complete survey of the various etiological factors related to visceroptosis. Also the views of different authors as to the significance of the various theories. The work of each of them must be considered as to the value of the various symptomatology that is produced by the condition.

PATHOLOGY

In considering pathology we must give special reference to the pathological physiology of the ptotic organs.

The asthenic habitus includes:

(1) Tallness and narrowness of the body
(2) Small bones with fragile bony framework
(3) Long trunk
(4) Flat chest, drawn in at its lower part, with costal angle, sharp lower ribs often being only a couple of fingers breadth above the crests of the ilia

(5) Tenth rib floating, or at least attached only by ligamentous instead of cartilaginous attachments (costa decima fluctuans of Stiller)

(6) Abdomen sunken inwards above the umbilicus and protuberant below that level

(7) Posture, usually that of fatigue, the head hanging forward, the shoulders carried forward and the back flat with obliteration of the lumbar curve.

In the thorax, the cardiovascular apparatus is elongated and narrowed, the heart often standing almost perpendicular as the so-called "drop heart" (cardioptosis).

The abdominal findings include, in varying grades, the following: The stomach is prolapsed, sometimes being of the hammock type and descending in a median position, but more often being of the so-called fishhook type with concavity to the right, the whole of the organ lying to the left of the spine. The cecum lies either with its lower pole at the brim of the lesser pelvis or, in more marked cases, with the greater portion of its bulk within the lesser pelvis. The hepatic flexure of the colon is
usually in its normal position, showing very little descent. The liver, spleen, and left kidney are, as a rule, but little prolapsed, though in severe cases a "wandering" liver or spleen may be met with and the left kidney as well as the right may occupy a low position and be preternaturally mobile.

These findings are those commonly met with upon x-ray studies of the gastro-intestinal tract after a barium meal. The position visible in x-ray plates may not be exactly those of the viscera on fasting, or those during the digestion of a full diet. However, they approximate such positions quite as closely as do autopsy findings, and differentiate the cases quite clearly from the normal.

The association with abdominal visceroptosis pathological changes of various sorts are frequently met with in the abdomen. These include dilatation of the atonic prolapsed stomach, duodenal dilatation, intestinal kinks, especially of the ileum and of the colon, mobile cecum, ulcerative and nonulcerative colitis, especially mucous colitis, adhesions in various regions, especially in the right upper quadrant and the right lower quadrant, the formation of new membranes, congestion of ptotic viscera due to kinking of their
blood-vessels, hydronephrosis due to kinking of the ureter of a ptotic kidney, etc.

Many patients with splanchnoptosis are devoid of outspoken clinical symptoms referable to their disorder but in the more severe forms symptoms of various sorts appear, - gastro-intestinal- urogenital or nervous.

The gastro-intestinal disturbances in visceroptosis depend upon disturbances of motility and secretion or upon both. These disturbances in turn depend in part upon the mechanical conditions present, and in part upon disturbed innervations of the vagal and sympathetic nervous systems. Similarly, the urogenital disturbances depend in part upon mechanical interference with the lumina of the blood-vessels and the ureters owing to kinking caused by hypermobile kidneys, in part upon pressure effects upon the urinary passages and genital organs, and in part upon disturbed innervations. The nervous symptoms have their origin partly in local conditions within the abdomen, and partly in the congenital inferiority of the nervous system as a whole that is so common in the habitus asthenicus. Forms of visceroptosis that have been asymptomatic for years may become symptomatic owing to disturbance in nervous regulation of the gastro-intestinal functions, less
often owing to an actual increase in the degree of mechanical defect existing.

SYMPTOMATOLOGY

The symptoms produced by visceroptosis are the most variable of those produced by any medical condition. Brown (14) considered that due to the large number of organs involved, Saner (57) classified the symptoms under three heads. First, abdominal, since the symptoms are mainly the result of spasm and distention in the stomach and intestinal tract during digestion. They may simulate those of the local organ lesion, which it sometimes does. Second, toxic, symptoms such as fatigue and drowsiness, headache, and joint and muscle pains. Third, nervous, which includes the congenital majority, because they describe their condition as such. Their symptoms are erratic and irregular, and not associated with any demonstrable lesion, and these symptoms may dominate the clinical picture. Bull (15) states that the condition has known cardinal symptoms and many times no symptoms are present. In the hypersthenic there will be a sensation of weight in the lower abdomen after prolonged standing. The Glenard test of downward pressure on the abdomen increases the discomfort. There is frequently tenderness
over the coeliac axis. Cawadias (17) gave this much consideration. He considers it as a partial obstruction due to the difficulty in emptying the stomach. At certain intervals after meals patients suffer from pain, acidity, heart-burn, and sometimes vomiting. The symptoms are grouped into periods at intervals of weeks or months, as in duodenal ulcers. Pain is relieved in the horizontal position, as described by Glenard. The resulting duodenal stasis due to a ptotic stomach are late pain, vomiting, diarrhea, after painful attacks. Jaundice may be developed, due to the kinking, causing partial obstruction of the cystic duct. The individual is generally irritable and nervous and usually cachexic. Headache, described as duodenal migraine, are not uncommon. The ptotic stomach will produce a palor and sunken cheeks. Coffey (19) thinks all patients have a dragging sensation and a backache, fullness after meals, flatulency, and lethargy. He described constant drowsiness, dizziness, fainting sensation, headache, and inability to do a days work without rest.

Gastro coloptosis is usually of the right colon (17). It presents an alternating constipation and diarrhea. This type of individual, according to Gallant (30) presents a very typical picture. The woman is characterized
by a peculiar voice, attitude, special body form and peculiar abdominal outline, indicating visceral prolapse, which give rise to specific and special symptoms. The patient starts off on tales of woe in a sing-song manner, quite different from the ordinary conversation. Because she has repeated the story so many times, she gives an effort to the voice in order to create sympathy and relief. This results in a whiny tone. This patient will not stand directly on both feet, but will stand on one foot, preferring to lean against something for support. Her shoulders drooping present a picture of entire lack of muscular tone and vigor. Closer inspection of her thin, emaciated body will show marked scoliosis, rounded shoulders, flattened chest, epigastric flattening, hypogastric prominence, especially below the umbilicus. There is a marked prominence of the iliac bones and tuberosities due to the lack of adipose tissue over the buttock. The patient will describe her "indigestion" with pain at the end of the sternum, between shoulders, cardialgia, palpitation, heartburns, gas, chronic constipation, intermittent colitis, diarrhea, piles and fissures. The tongue is usually coated and this is considered an indication of gastric inadequacy.

MacMahon (45) thinks that the neurasthenic trend
met with in these patients is secondary to the pain. He considers that the pain is the first appearance in these individuals. It is so constant and long lasting that it develops the neurasthenic trend that these patients have inherited.

Some authors divide symptomatology into asymptomatic type, or those presenting no symptoms and the symptomatic type, those presenting definite symptoms. Stiller (62) was the first to classify these patients as habitus asthenicus. This is the type of individual who tires easily on physical or mental exertion. They complain of lack of endurance and have tachycardia on slight exertion. This patient presents the effort syndrome or neuromuscular asthenia.

Many of these patients have a marked anorexia (65). This may be secondary to the fact that they are afraid to eat because of the distress that eating produces. It is thought by many that it is due in many cases to the decrease in the hydrochloric acid content of the stomach. It is generally accepted that the hydrochloric acid and stomach tone is the physiology of appetite and hunger.

Inman explains the nervous symptoms these patients present as being due to cerebral anemia, as a result of
the obstruction of blood to the lower parts. Coldthwait explains this by the position of the spleen. If it is ptotic, there will be a partial obstruction of the blood supply and congestion and thus blood distruotion. Brown (14) explains the condition on an inflammatory basis.

There is a definite relation between chronic appendicitis symptomatology and visceroptosis. The trouble is that the symptoms are all ascribed to the appendix and not to the generalized low grade infection which accompanies the stasis. A patient operated on will be definitely worse because of the adhesions forming a more marked stasis will be produced. Silver agrees with this and considers the stasis and low grade infection have an influence on the glands of internal secretion. There will also be bacteria getting into the blood stream and due to the low resistance this will cause arthritis to develop in many cases. Baeyer made a study of the cord conditions in visceroptotic patients, and concluded that the gastric symptoms are not due to any condition in the cord and that it plays no part in visceroptosis.

DIAGNOSIS

Diagnosis is made by ruling out all other conditions. The habitus asthenicus is easily recognizable by the experienced clinician. The tall, thin patient with long trunk, flat chest, acute epigastric angle, and floating tenth rib
sunken abdomen with protuberance of the lower part, indicates to the examiner the condition of the patient (3) (47). The patient presents a narrow aorta, and in women a small retroflexed uterus. These findings are substantiated by the psychonomatic phenomena manifested by the patient's conversation (30).

The objective signs are easily discovered by examination and roentgenological studies. It is not uncommon to find the level of the umbilicus above the greater curvature of the stomach. If on stomach distention the pylorus is found below half way between the xipheid and umbilicus, or below the umbilicus, one can consider visceroptosis is present. Radiograms must be made in the standing position to recognize the condition. The stomach is low and there is an atony. The gastric analysis is of little importance, as shown by Vandorfy (65). The duodenum may also be dilated which is an indication of ptosis and obstruction as described by Holzknecht.

The displacement of the large bowel can commonly be palpated. The best method probably being by the use of x-ray. This will give the exact position of the viscera and also show to some extent the fixation of the various organs and viscera. Thaysen does not accept a
low placed colon as having any significance in relation to obstipation and other symptoms. The consideration of nerve drags must be taken into account. A fish-hook type of stomach through the vagus, as a result of the nerve drag, induces a cardiac symptom leading to heart fault suspicion when the stomach is the mechanical secretory pathological factor.

In the constitutional form of visceroptosis the determination of the so-called splanchnoptotic index of Becher-Lennhoff may be of interest. Glenard's test of supporting the viscera is also of a good deal of importance. A demonstration of recti muscle diastasis. This is determined by having the patient lying on her back and raising her head, which produces a marked bulging between the recti muscles. The mere finding of splanchnoptosis is of little importance. The other conditions of possible pathology must be ruled out before this diagnosis be accepted as the cause of the symptomatology.

TREATMENT

In the treatment of visceroptosis we make use of measures that will restore normal nervous tone, overcome the mechanical deficiency, and of measures that will combat the functional defects and afterwards of measures
that tend to keep the patient in good physical and mental condition, and that will prevent a re-occurrence of symptoms. The methods employed to accomplish such have varied a great deal since first described by Glenard in 1887. Glenard (31) used abdominal supports in all cases and gave daily purge, massage and static electricity were employed. He also used nux vomica to tone up the intestines, and stressed the diet. Einhorn (27) in 1901 wrote a good deal on visceroptosis. In that period he was considered one of the best posted men in America. He recommended a well fitting support, nutrition, exercise, little food at a setting with frequent meals and having the patient lie down after eating. He recommended bromides, meinert, blaud pills and nux vomica. In 1903 surgical interference was common. At that time they tried other methods before attempting surgery.

From 1890 to 1910 many operations were developed to relieve the condition. In 1888 Duret sutured the lesser curvature of the stomach to the anterior abdominal wall. Blecher and Bier sutured the various mesenteries together. Lambotte sutured the colon at both hepatic and splenic flexures. Coffey devised a hammock operation, using the greater omentum to support the stomach. In 1897 B. E. Davis developed an operation for shortening the mesentery. This was the first operation of this
character. He stated that medical hygienic measures must be exhausted before surgery attempted; also use electric massage and strychnine. In 1915 Hertz stated that under no circumstances should operation be performed on patients with ptosis, except incidentally in cases of cecum when appendectomy or caecostomy is performed. Short circuiting operations have been tried many times, but Hertz considered that they are rarely indicated.

In 1905 Gallant divided the treatment into three divisions: First, relieve acute and recurrent attacks of symptoms; second, improve nutrition; third, restore and support of the prolapsed viscera. The methods he employed are as follows:

A - Diagnosis, rest, replacement, and support
b - Mechanical retention or operative fixation.
c - Diet, drugs, massage, and exercise

The benefits hoped to be derived from following this outline are three-fold; first, relief from recurrent attacks; second, progressive improvement in the functions of the gastro-intestinal tract, and general nutrition; and third, a constant diminuation in the nervous instability.

The use of an abdominal support was first recommended
by Glenard and is still used. Gallant, in 1905, used a corset for ptotic kidneys. It was put in place while the patient was lying down, and her hips were elevated. The idea of this was not to compress the organs, but to have them at a higher level and maintain them at that level by the pressure of the binder below. These supports give the patient a good deal of relief, a sense of support and comfort that can be secured in no other way. With an increase in weight, the supports may be loosened, and later discarded.

In 1901 Rose (56) applied an adhesive tape belt. It is important that a zinc oxide rubber plaster spread or moleskin be used, because it does not irritate the skin and skin rashes are avoided. The bandage is left in place a month at a time. Sometime after this Page constructed a support which later became very popular. It consisted of two connected vertical bars, fitting over the sacrum with a stiff curved rod extending around either iliac crest, bent in such a way as to maintain in the supra pubic region a hard oval leather pad. The patient is fitted and following barium a check up is made with the fluoroscope. Care must be exercised so that the transverse colon does not slip down behind the pad. A fluoroscopic check up is recom-
mended every two weeks. As the stomach and colon improve the belt is replaced by a binder.

In 1928 Duncan devised a new type of abdomen support. The patient was placed in the Trendelenburg position and a plaster case moulded to the abdomen in this position. Definite moulding is done over the anterior superior spines to exaggerate to some extent their imprints on the cast. When the cast is fully set it is removed and a plaster of Paris form of the abdomen is made. This is then used as a working model and sheets of gauze aluminum are laid over it, and with a hammer worked into the abdominal shape. The aluminum case is then placed on the patient and trimmed so as not to cause pressure over bony prominences. Some changes will be required when the patient increases in weight, but these are easily made. Duncan claims this support corrects the ptosis and relieves constipation and other abdominal symptoms. He does not claim it to work on all patients.

Dr. Fossier (25) considers such drastic action unnecessary. He considers a bandage is ample support, and thinks the support is more to relieve the mind of the patient than for any other reason, but if this type is used recommends a belt developed by Dr. Lerch as the best on the market.
Fraikin (39) in 1928 wrote that ptosis to many physicians always indicated a belt, but this is an error, as it often produces a definite clinical upset. A radiological examination should be made before the physician decides as to the value of giving the patient a support. A belt should only be prescribed for patients in whom the ptosis is sufficiently reduced, when they are placed in the Trendelenburg position. After the belt is applied the patient should have an x-ray check-up. The patient should then exercise and other check-ups made to determine any variation. A barium meal should be given in this check-up. The choice of belts should depend upon the individual, no one type of belt being adequate for all individuals. Bortz (11) states that the neglect to check-up with a fluoroscope and finally permitting the patient to wear the support indefinitely will add to, rather than alleviate the discomfort. Probably no single therapeutical measure in the entire field of medicine has been so bungled as this of support for ptosis cases.

Practically everyone who has written on the treatment of visceroptosis has stressed the dietetic phase of the condition. In the original article we find Glenard stressing the dietetic importance. These patients have a low metabolic rate because of lack of exercise and the small amount of food taken, trying to cut down the pain
which they think the food produces. When metabolism is speeded up by exercise, an intake of oxygen gives the hope of improved assimilation. It is very difficult for these patients to put on weight, and it is of no use to feed them up with soluable, starchy foods. In that way they will not put on weight, but will become liable to headaches and biliousness. Bull (15) thinks it is better to keep away from the standard list of fattening foods, and not to worry with the theory of calories. He advises giving proteins, vegetables and fruits without restriction. Patients with visceroptosis are often small and delicate feeders who make their meals chiefly of starches. Sugar should be limited, also pastry, cake, pudding, etc. should be entirely prohibited. At no time should the stomach be required to entertain large meals (11). Four or five or more meals of small amounts are found to facilitate digestion and are always more kindly received. Fluids are taken only between meals. Sherman and Koenig does not express this as much as support, posture and rest. Cawadias (17) considers that food excellerates the patient's symptoms by setting up a vicious cycle which must be broken. It may be necessary to support the high caloric diet with pharmaceutical procedures. Patients will be expected to lie down after eating. The patient
should keep a record of her weight for the first few weeks. The medicine that the patient has been in the habit of taking should not be cut out all at once, but should be gradually cut down (12) (43). Insulin has been recommended for the enteroptotic individual. It has been given in doses as high as twenty units daily to increase the metabolism. Very pleasing results were obtained by its use and its use will probably be more extensive in the future (64).

Physiotherapy has long been employed. Glenard first recommended massage and exercise and it is still highly recommended. I have not read an article which has criticized this procedure. One must find out the patient's difficulties and conflicts, and endeavor to remove them. A careful study is made of the personality, but no direct psycho-analytical examination should be made. The main object is to direct the patient's attention away from himself and his own gastrointestinal tract. This is a very delicate and difficult procedure, because the patient tends to cling to his morbid condition, because it is a means by which he can satisfy his will power (17) Rough optimism such as "Pull yourself together" will not succeed. It depends on the tact and personality of the physician. The attitude of the patient to his other condition must be changed. Do this by encouraging him and promoting a different view on his condition. The
physician must not forget that the gastro-intestinal tract
is not normal, and must be dealt with. Their vegetative
nervous system and endocrine make up must be considered.
Pure psychotherapy has never been good therapy.

It is very important not to let the patient know
about her condition. Their introspection causes them to
develop a syndrome of anxiety, neurosis, centered on their
gastro-intestinal tract.

It is essential to control body physiology (43),
particularly excretions, so as to guard against autoin-
toxication, and action through the sympathetic nervous
system. This can be done by controlling patients habits,
diet, and fluids, exercise, occupation, recreation, and
body function. Study his environment, stress open air,
time and deliberation at meals, and regular attention to
bowels and above all plenty of sleep. At the beginning of
treatment give daily soap and water enema, and gradually
diminish. Massage of the colon is important (30). It
is to be done while the patient is in a prone position,
after x-ray has outlined its location. Patient should
lie on right side after meals, so that the stomach may
empty. The nervous, run down patients and neurosthenics
are placed in a quiet, dark room. No visitors or rela-
tives are allowed to visit the patient. He is treated
strangers. The patient may resist this and great skill and influence be required to keep him in bed. Continue this for several weeks. Almost all authors agree that the foot of the bed should be elevated (30) (18) (20)(43). For the patients insomnua chloral and bromides are recommended.

Cawadias (17) Goonybeare (2) and Gallant (30) and many others recommend massage. Glenard and B. B. Davis recommended massage, when the disease was first described. The massage is usually recommended with other methods of physiotherapy, as electro stimulation. Static shock and continuous galvanic current was formerly used. One electrode to the back and one to the abdomen, and giving a series of treatments, Cawadias considers ten to twenty milliamperes sufficient when fourteen treatments are given, giving one daily. Gymnastics are very important. Various abdominal muscle exercises and general massage. Gallant recommended abdominal exercises daily. Goonybeare considers massage vastly inferior to active movement. Patient should be given a series of exercises to bring abdominal muscles into play. Breathing exercises are also very important. Smith (61) provided that proper exercise and gymnastics in children were very important in preventing visceroptosis from developing and also in correcting a
tendency to that body type. Butler considers that the condition can usually be prevented from developing if proper precaution is taken. Mac Mahon (45) considers the most important idea in physical therapy is to teach the patient to expand the lower ribs. He recommends a series of exercise to last forty minutes each day.

Many recommend the use of tonics and medication to stimulate the appetite, improve gastric secretion, and facilitate digestion. Any tonics may be prescribed. Atropine is frequently used, following meals to stimulate the pylorus to dilate. Vitamins are usually given.

Insulin and glucose have been used and definite results reported. Bortz claims medicine plays a minor role in treatment. Alkalies will relieve a sensitive gastric mucosa. As sedative bromides and phenobarbital quiet the nerves in the most pleasing manner. The excess use of drugs must be guarded against (19).

Rest is essential. It is much better in the lying down position and preferable in the Trendelenburg position. Rest is expressed by every author. They all agree that it is very essential to build up the patient. Many state that the rest following an operation does more to relieve the symptoms than the surgical procedure. Bull thinks that sepsis of the teeth and tonsils
and in women chronic leucorrhea should be corrected. It is very important to have a complete check on the endocrine glands and rule out glandular deficiency. This may have a marked influence on the patients tiredness and symptomatology.

Surgery, as a treatment of visceroptosis, has long been a question of much controversy. Bortz considers that less than 10% of cases will require surgery intervention. Hertz thinks it is never indicated, except as explained before. Crouse (31) thinks that surgery should be used quite extensively. The low fish hood type of stomach in which the radiological study shows a dilated first, third, and angulated second third of the duodenum is usually the surgical type. This form is atonic and has the slow emptying time and simulates through duodenal initiations symptoms of appendicitis should be operated on. Hertz (34) disagrees whereas Novak (57) considers this the treatment in these cases.

The inflammatory adhesive fixing type demand surgery when the chief complaint points in a symptom complex way to the abdomen; covering stasis as a lead, with its digestive faults, cardian irritability, neuroasthenic manifestation, blending into an invalidism condition. Crouse considers the selection of the operation very
important. The respiratory movement of the abdomen is considered an important factor in the secretory activity of the stomach. The Roving operation or basket operation of Coffey will prohibit this action, so should not be used, so he developed a new technique to allow movement of the organs with respiration, as well as giving support.

Coffey has a more conservative view on splanchnoprosis. He never uses surgery for the treatment of visceroptosis per se., an operation to fix a floating kidney without fixing the colon at the same time is not a sound surgical procedure. A mobile cecum should be fixed to the parietal peritoneum. Sigmoid ptosis must be treated by short circuiting or excising. Hertz considers the short circuiting operation a very poor procedure, but agrees with Coffey as to the fixing of the colon to the parietal peritoneum and has reported good results from such an operation.

The majority of the visceroptotic patients are undernourished and many are confirmed psychoneurotics. A thorough rest cure must be employed if results are expected (66) The patient should be placed on a diet which will cause her to increase in weight and if necessary glandular extracts must be used to build the patient up. Massage, Hydrotherapy and later occupational
therapy must be employed to restore the patient as near as possible to the normal and maintain her as such. Physical education as to posture, etc., is very essential. Psychotherapy must be employed with greatest care. A patient in some cases should be persuaded to enter a hospital or sanitarium so that the best influence may be employed. Medicines should be limited and discarded as soon as possible in most cases. Tonics are sometimes advisable, as well as mild sedatives. High vitamin diet should be stressed. Surgery should be limited to the rare cases and those with a congenital failure of the colon to fuse with the parietal peritoneum. If it is necessary for the patient to be up and around before adequate weight gain is made, a belt may be used until the patient has shown improvement. Mechanical appliances are usually considered unnecessary.
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