tion. She was mentally clear in thirty-six hours. Dr. Draper and I have thought this sudden change suggested strongly a relationship of this toxemia to the nonbacterial form shown by us to occur after duodenal obstruction.

DR. J. SHELTON HORSLEY, Richmond, Va.: I recently had a case in which I believe the operation of Dr. Brown saved the patient's life and naturally I feel kindly toward it. The patient had multiple papillomas of the colon which had become ulcerated and were discharging blood and mucus. Under the Brown operation he picked up wonderfully, though he is not yet well. Dr. Brown says he uses the lower stump of the ileum, but the abstract of his paper in the program refers to the cecum as the point at which he inserts the tube for irrigation of the colon. I think the ileum has many advantages: First, the ileocecal valve prevents the back flow from the cecum. Second, if later the fecal current is to be reestablished through the colon it can be done through the distal stump of the ileum if 6 or 8 inches of it are left, and so the beneficial effect of the ileocecal valve in preventing the flora of the large bowel from having free access to the ileum will be maintained. If the ileum is cut across close to the cecum and the cecum opened it would be necessary in reestablishing the fecal current to anastomose the ileum directly to the cecum or colon.

DR. JOHN YOUNG BROWN, St. Louis: We insert the tube in the distal gut and through the ileocecal valve. It is retained by a purse-string. In the proximal bowel, half of a Murphy button is fastened into the rubber tube. This is inserted after the bowel has been drained. The button is simply used to retain the tube in the proximal gut. One of the most astonishing things following this simple operation is the rapidity with which the excluded large bowel clears up. By the use of the rectal tube and irrigations through the distal tube, the excluded bowel can be cleansed thoroughly in a very short while. In regard to accurate diagnosis in obstructive lesions of the sigmoid, colon and rectum, this is made with great difficulty. The same conditions present themselves in this locality that are found in the upper abdominal tract. Yesterday Dr. Crile reported three or four cases of pyloric obstruction in which, at the time of operation, with the pathology in his hand, a diagnosis of malignancy was made. Following gastro-enterostomy these cases cleared up, proving conclusively that there existed no malignancy. The same thing we find in the lower colon. The high mortality in intestinal obstruction is due to three causes: First, late operations; second, too much surgery, and third, improper treatment prior to operation and the bad handling of these cases after operation.

LIPECTOMY AND UMBILICAL HERNIA *

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The fact that umbilical hernia is a dangerous abdominal condition, if allowed to exist without an attempt at relief, is sufficient reason for calling attention to this defect of anatomy. The radical treatment by the overlapping, or Mayo method, is so well known that it seems almost superfluous to mention it, but it is valuable enough to stand repetition.

After birth there are several changes that take place in the closing of the umbilicus. Bickham says:

1. Contracture and shrinking of the umbilical ring, dividing by its closure the umbilical vessels running through the ring;
2. Clotting of the vessel contents, proliferation of connective tissue, and contraction of the muscle fiber of the vessels, as a result of this, a firm fibrous scar is thus formed at the site of the umbilicus.

We can easily understand that the scar tissue may remain weak for some time, and also may be subjected

to strain, and later give rise to hernia, which usually comes by way of the umbilical ring, or may even come through the abdominal wall in the vicinity of the ring. Women are more subject to this hernia than men, the proportion being about twelve to one. The relaxation of their abdominal muscles, especially distention due to pregnancy, tends toward this condition. These hernias often reach a very large size, and may contain omentum, stomach and large intestine. Usually it contains the former, and when of long standing has numerous pockets or sacs; is often irreducible and painful, and always a source of danger from strangulation. I had one case in which there was a complete diastasis of the recti muscles. There was an enormous mass hanging down, consisting of intestines, omentum and a distended gallbladder. The trouble began after pregnancy, and was given no attention till after the third child was born, when the extreme protrusion, discomfort and pain caused the patient to seek aid. Belts and pads were used in vain, and she finally came for operation. The adherent structures were separated with difficulty, the gallbladder was opened and a large number of stones removed. The gallbladder was closed without drainage (at present I would do a cholecystectomy) and gave no more trouble. The diastasis was closed by overlapping the fascia, and a continuous Cushing mattress suture was used. The patient made a good recovery and had no sign of recurrence after ten months.

Before the advent of the overlapping method in ventral hernias, the treatment of these conditions, especially when of large size, was very unsatisfactory and often meant a recurrence within a very short time. When muscle was used it formed a weak point of resistance to abdominal pressure, and we know that fascia is essential for support in these cases, for the aponeurotic structures are very strong, and by the overlapping we have a splendid plane of resistance. The technic is too well known to need any description before this section.

It is in connection with umbilical hernias and pendulous abdomens that I wish to dwell on the subject of lipectomy, or excision of fat from the abdominal wall. Kelly in 1910 put the operation on a firm basis, though Maylard, Schultz, and Meinhold had previously reported cases in which sections of fat were deliberately removed to restore contour and comfort to obese women, whose abdomens were large and whose fat was the cause of much discomfort. Lipectomy is a very beneficial procedure in nearly all indicated cases. We all know that when fat becomes excessive and fails to perform its functions it becomes a nuisance, and a burden to its owner. Fat has, among its uses, the preservation of structure and the aiding of beauty by rounding out or helping the symmetry of the body. An extra amount renders the usual activities of life a burden when exercise is needed, enjoyed or demanded. If sedentary habits are aided by the possession of too much fat, the vital organs are more or less affected in their power of metabolic change and the individual usually eats heartily with a continued increase in weight. When the fat is distributed evenly, we can only suggest diet, proper hygiene and exercise. Such patients need the care of a physician, and are of little general interest, for they usually pay little heed to the advice of the doctor, are often discouraged by slow improvement and become users of patent remedies, of whose virtues they read in skilful advertisements, and thus injure their systems by powerful, injurious con-

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coctions. Another class is different; here we have large areas of fat that can be removed, and give relief in most instances. Let us consider the accumulation of adipose tissue on the abdomen, as seen so constantly associated with umbilical hernia. Exercise is seldom taken in any sort of proper manner, sedentary habits lead to the usual hepatic troubles, to constipation, and more or less cardiac lesions. Hernia may or may not be present. The woman with a pendulous abdomen frequently wears a so-called form-fitting, or stomach-lifting, corset, in an effort to mold the form into a more pleasing appearance; and again these women are prone to eczema, or to chafing in the folds of fat lying in each groin. These individuals can be relieved of some of this surplus, and the folds of fat removed from the lower abdomen in sufficient amount to produce comfort and obliterate the soreness, or chafing. The operation, whether done deliberately for this purpose, or during the course of operation for umbilical or ventral hernia, is easy to carry out, and requires only careful attention to detail, such as hemostasis, careful apposition, and the provision for drainage at each end of the large incision, as there is oozing of serum and fatty debris for several days. If the abdomen is seized above and below, we find a large amount of tissue can be raised between the hands, which when brought together will give an idea of how much should be removed. The incision is elliptical, beginning well over on the side and extending to the corresponding point opposite, while its center below is a few inches above the pubis, and the upper above the umbilicus. It should go to the fascia, and then the whole amount of tissue in the area should be removed. The closure is easy and should be done with deep catgut sutures, reinforced with silkworm gut. We usually wipe out the wound with 3 per cent. iodine before closing, not forgetting to provide drainage, as already mentioned. The after-treatment, if hernia has been repaired, is rest in bed for from eighteen to twenty-five days; a semi-sitting posture is usually best. If lipectomy only is done, then a recumbent position for eight or ten days, followed by back-rest for a few more, and then out of bed. The diet is chiefly milk in small quantities and water with lemon juice. Patients frequently lose several pounds during convalescence, and if advice is followed as to diet and exercise, they will be greatly benefited for a long time. One case is reported in which 65 pounds was lost in a few weeks, including what was excised from the abdomen (Castle).

From one patient I removed nearly 16 pounds. She was a very stout woman who had an umbilical hernia. She made a good recovery, and four months later had lost a total of 30 pounds and felt better than she had for a long time. She certainly looked the part. There is little doubt but that lipectomy in properly selected cases is beneficial, and will give enough relief to last a long time, especially if postoperative instructions are followed regarding diet and exercise.

In connection with this subject there is a class of cases often trying to the surgeon, and in which a small lipectomy is most helpful. I refer to the difficulties of operating on stout patients in whom the thick wall of fat increases the distance from the surface to the parts to be reached, compelling the operator to work in a deep space with a wall of fat on each side. Some of these cases make accurate suturing very difficult by reason of this condition, and Howard Kelly¹ has made

a valuable suggestion by which the difficulties are overcome in a large measure by an oval incision of skin and fat down to the internal abdominal wall, removing the section either transversely or in a vertical direction, corresponding to, or at right angles with, the deeper incision. This removes the thickness of wall down to the fascia, and from there into the abdominal cavity the depth is not great and the opening and closing is made comparatively easy, while final closure of skin is not difficult. This also reduces some fat, though of course much less than in a regular planned excision or lipectomy.

Kelly,² in speaking of these cases, says in part:

I wish to emphasize the value of removing wedges of skin and fat in patients who are not troubled with obesity, but simply and solely for getting rid of part of the thickness of the abdominal wall and making the field of operation more accessible.

And as regards lipectomy itself he says:

I do it regularly whenever I have a patient who has a heavy pendulous mass of fat on her abdomen, or in whom the mass of fat is sufficient to make a crease in the lower abdomen and stands in the way of her taking proper care of her person. I consider the operation one of sufficient importance to be done solely for the relief it offers in appropriate cases.

In bad cases of umbilical hernias a valuable modification of the Mayo operation is made by carrying the incision through the fascia on both sides all the way to, or beyond, the outer border of the rectus muscle. This gives a strong, lasting, lateral support and takes the strain off the middle operation at the weakest point of the tissue (Kelly). Wells³ reports seven cases of umbilical hernia with lipectomy; one patient died from embolus on the seventh day. The latest statement of Dr. Kelly was in March, 1916, in which he says:

I do lipectomy constantly, either in conjunction with abdominal operations or simply to relieve the patient of the pendulous load of fat. I have often seen the results several years afterwards; one recently of five years' duration, in which there is no recurrence, and the abdomen remains with a straight front and well supported.

W. L. Estes states that he frequently makes use of lipectomy, and especially the removal of a section, or wedge, to facilitate easier work in the deep structures.

Dr. John G. Clark⁴ says that "where there is an excessive accumulation of fat in the anterior abdominal wall, and where it is giving a great deal of inconvenience, especially in association with a ventral hernia, we invariably take an oval wedge transversely out of the abdomen." Clark⁴ further reports the case of a woman who weighed 340 pounds, short in stature, and whose abdominal wall reached below the knees when she was standing. She was unable to walk on account of this mass, blood pressure was 180 mm. of mercury in one arm, and 240 in the other. She insisted on operation, though she was a bad surgical risk. He removed a wedge weighing 32 pounds. She was toxic for a short time after operation, but ultimately recovered, and went home.

Dr. T. C. Cullen⁵ reports a case of umbilical hernia in a woman, aged 35, weighing 464 pounds. The abdomen hung down to her knees, forcing her to keep off her feet as much as possible. She was becoming a semi-invalid, and insisted on having some relief. It was decided to do a lipectomy, as advocated by Kelly,

2. Kelly, Howard: Personal communication to the author.

3. Wells: *Am. Jour. Surg.*, 1916, xxx, 107.

4. Clark, John G.: Personal communication to the author.

5. Cullen, T. C.: *Diseases of the Umbilicus*.

1. Kelly, Howard: Removal of a Skin Fat Wedge, *Ann. Surg.*, liii, 364.

in connection with removal of the hernia. The size of the area removed, when measured, was 36 inches from side to side, and 19 inches from above downward. The omentum in the sac was so intimately blended with the walls that this portion was cut off and removed, together with sac and redundant tissue. The hernial opening was closed by the Mayo method, kangaroo tendon being used for mattress sutures. The abdominal wound was brought into apposition by silver wire and silkworm gut. Drainage was provided. The final result was excellent, and the abdominal incision contracted to 27 inches. Eight months later the patient was in excellent health. It is interesting to note that Cullen⁶ describes seven separate conditions of disease or hernia of the umbilicus, namely:

1. Hernia into the umbilical cord.
2. Amniotic hernia.
3. Congenital ripping off of a hernial protrusion.
4. Small umbilical hernia at birth.
5. Serous umbilical hernia.
6. Umbilical hernia in the adult.
7. Cysts of the umbilicus.

Simmons⁶ reports the end-results in seventy cases of umbilical hernia operated on in the Massachusetts General Hospital. He states that small hernias in children and thin adults may be cured by any operation that removes the sac and closes the defect in the wall.

Umbilical hernia in stout adults is difficult to cure, the Mayo operation giving the best results, and by other methods the percentage of recurrence is 46.4 and usually takes place in less than one year.

Our own patients whom we have been able to follow have shown recurrence in about 12 per cent. of cases, and these were in stout persons; but since the routine practice of lipectomy the cases having a return are fewer.

John H. Gibbon⁷ of Philadelphia reports a case of lipectomy in a woman, 47 years of age, weighing 315 pounds. The section removed weighed 21 pounds, and the incision was 38 inches long. Six months later this patient came under the care of Dr. McCrea, and again weighed 315 pounds. Under medication and diet she was reduced to 265 pounds, and she has managed to keep it down and is quite comfortable. Gibbon further states that he has several times combined lipectomy with the operation for ventral hernia or for some intra-abdominal condition.

My experience has been derived from 103 cases of umbilical hernia, in fifty-seven of which some excess fat was removed, and in forty-six a regular lipectomy operation was done. There were eighty-nine cases with no mortality. In thirteen cases with strangulation there were four deaths. One other death occurred twenty-two days after operation; 22 pounds of fat were removed and the patient, a man weighing 325 pounds, did well till after the second week, when his kidneys began to fail and he gradually succumbed. This was the only fatality in the lipectomies, and it is possible that the four deaths recorded might have been prevented had the patients been brought to the hospital sooner; but they were late cases and given the only chance. The average amount of fat removed was from 5½ to 6 pounds. Dr. Gibbon's case shows the importance, as already mentioned, of careful diet and exercise following the removal of considerable fatty tissue, as otherwise the patient will be helped for only a short time.

ABSTRACT OF DISCUSSION

DR. W. WAYNE BABCOCK, Philadelphia: In regard to deposits of fat in the anterior abdominal wall, which are so frequent, it is important to remember that fat is somewhat like glandular tissue and stores up excessive fat within its cells. When adipose tissue is excised it does not regenerate, and so, with removal of fat there is removed from the body in that particular zone the chances of fatty recurrence, and the completeness of the fatty removal indicates the degree of freedom from fat in that particular part of the patient's body thereafter. In the abdominal wall, as Dr. Lathrop has said, the best incision is a vertical one. The older transverse type is not as well adapted because in bringing the margins together there are developed at the flanks horn-like projections which are unsightly and must be removed to secure a good contour. The vertical incision may be so curved as to give the patient any shape which her particular type of body will permit. After the removal of the skin and fat with extensive undercutting there comes also the reconstruction or the reenforcement of the deeper layers of the anterior abdominal wall. The fat not only makes the patient unwieldy but by traction across the weakened anterior abdominal wall predisposes to hernia. Most careful reenforcement is sometimes insufficient because the tissues have become stretched and the muscles attenuated. In these cases other reenforcement is to be considered, and here we may consider a free transplant taken from the fascia lata or other fascia of the body, or what I have found more helpful, some alien substance. Of the alien substances, silver, in the form of filagree, has been suggested by Bartlett. It is of great value but has the rather unfortunate defect that as time goes on the silver strands tend to fragment and possibly cause pain. To overcome this, I have within the last two years laced the deep layers left weak after imbrication and suturing with a continuous lacing, as we lace a shoe, with fine silver chain such as is employed by jewelers. That having a caliber of about No. 2 catgut has a tensile strength of 13 or 14 pounds. The lacing can be done quickly with an ordinary needle. Sometimes after the reduction of, for instance, a very large scrotal hernia we find that the patient dies because the abdominal cavity has not become adapted to the sudden increase in tension. In one of my cases the tension resulted in cardiac failure the third day after the operation. In two cases the patient developed glycosuria which was accompanied by somnolence and symptoms of impending diabetic coma. Under large doses of alkalies both patients recovered, but the possibility of producing pancreatic diabetes from undue tension must be considered.

DR. H. O. MARCY, Boston: Horatio R. Storer of Boston did a great deal of excellent surgery. The first case of umbilical hernia operated on in Boston with recovery was by him in the early sixties. He was condemned by many and some said he should not be permitted to practice surgery. From that day to this there have been great changes. I wish to call your attention to a method of mine used many years ago in which instead of overlapping, I do what you might call flap splitting. I have never seen the abdominal wall give way when I have reconstructed the abdominal parietes in this way. Removal of fat is certainly a very interesting and profitable sequence to this. Most of these patients do have pendulous abdomens. I have gone one step farther; almost always one will find the omentum loaded with fat like leaf lard in the hog. This I have taken away in order to have room in the abdominal cavity for the retention and function of the abdominal organs. Having lost two patients from the greatly increased intra-abdominal pressure led me to study this all the more carefully, owing to the return of the contents of the hernial sac within the abdominal cavity. The lateral division of the abdominal wall brings the coated surfaces into a very wide union. These are held in apposition by three layers of buried kangaroo tendon sutures.

DR. W. A. LATHROP, Hazleton, Pa.: I want to emphasize what Dr. Babcock said in reference to the importance of giving alkalies in cases where a large amount of fat is removed.

6. Simmons: Boston Med. and Surg. Jour., March 9, 1916.
7. Gibbon, John H.: Personal communication to the author.