CHEEVER (D.W.) et al

IRREDUCIBLE HERNIA;

A DISCUSSION.

BY

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At the Annual Meeting of the Massachusetts Medical Society,
June 10, 1890.

[and others]

IRREDUCIBLE HERNIA.

Dr. C. W. Galloupe, of Lynn:—The great importance of this subject would not be a sufficient reason, on this occasion, for the reiteration of established rules, or the repetition of recorded facts, without the addition of something new in principle or interesting in personal observation. To most practitioners the subject of old incarcerated hernia is not particularly fascinating, and an overgrown suspensory bandage, or an æsthetic pink abdominal belt would be the limit of their treatment, while their gloomy prognosis tends to confirm the discouraged patient still more in his despair of relief. But to cure the incarceration and transfer the contents of the hernial sac to the abdominal cavity where they can be held by a truss is certainly a result worth every effort.

The appropriate treatment for any case will depend, of course, largely upon the age, health, and social status of the patient, but more especially upon the nature of the obstacle to reduction. This may be due to adhesions between the sac wall and its contents, so that the gut or the omentum becomes anchored in its new location; adhesive bands may form near and across the ring, causing a partial obstruction to the return of masses of any size, while not preventing the escape of the abdominal contents, which is favored by the constant, steady pressure of the abdominal walls, and aggravated by the movements of the diaphragm in breathing and coughing, while the peristaltic motion tends to push the intestine through the ring, after a knuckle has been insinuated, in the same manner as it propels the feces. This outward pressure is opposed by the resistance of the abdominal wall alone.

Again, the deposit of fat in a piece of extruded omentum may increase its size and make it irreducible; a fibrous or glandular growth in the mesentery may do the same.

These processes are more or less chronic in operation, but an easily-reduced rupture may at any time quickly become irreducible through impaction of fecal matter, through peritoneal inflammation, or through the congestion and swelling of acute strangulation. Other accidental causes may prevent reduction:—hydrocele of the sac; ascites; the growth of abdominal tumors; a permanent contraction of the abdominal cavity which would not allow the return of a large hernia of long-standing; or, in the case of children with large congenital herniæ, a lack of commensurate growth of the abdomen.

Incarcerated hernia presents, accordingly, many problems to the surgeon, and the treatment must vary with the prominent features of the case.

Acute strangulation requires about the same treatment in old as in recent hernia, with the exception that palliative measures and temporizing are more allowable in the old. Inflammation of the hernia demands rest, hot or cold applications, opiates, and regulation of diet. Fecal infarction call for poulticing, copious enemata of water, oil, glycerine, etc., with kneading and judicious administration of purgatives, especially salines. Hydrocele of the sac and ascites call for tapping or aspiration, while obstructing tumors must be removed or displaced.

As a preliminary to any active measures the patient should be put to bed, with a good hair mattress for his own comfort and a high bedstead for the surgeon's, lying on his back as much as possible, with the foot of the bed elevated, so that the force of gravity may be utilized to create a constant pressure of the contents of the sac upon the ring; by the same means the sac is emptied of ascitic fluid, and the sac wall of œdema. The bowels should be freely opened, and the diet restricted so as to prevent large fecal accumulations, and favor the absorption of fat. In a stout person I have found Ebstein's system of dieting to rapidly reduce the fat deposits of the whole body.

Returning now to our proper subject, old incarcerated hernia, the obstacles to reduction are mainly three: gluing together of the contents, adhesive band or anchorages, and fatty, glandular, or fibrous growths. An accurate diagnosis in each case is not always possible, nor is it strictly neces-

sary, as the treatment follows the same line. The size of the hernia, and the length of time that it has been irreducible ought not to deter us from attacking it. The problem becomes mainly a mechanical one, and the prognosis will depend upon the ingenuity of the surgeon.

The consideration of a special case will best indicate the treatment.

CASE.—My patient is a large-boned, heavy man, 46 years of age. At the age of 17, while in the act of lifting a cask weighing 825 pounds into the rear end of a wagon, his foot slipped a little on the snow, and he felt a sudden, stinging pain in the left groin. This pain continued, and at the end of a week or ten days he noticed a swelling in the groin as large as the end of a thimble. He kept constantly at work, however, until at the end of two years his father noticed that he seemed weak and disinclined to lift. He then explained the cause of his laziness, and at that time examination disclosed a bunch the size of a hen's egg.

An iron truss was applied by a country practitioner, which was discarded the next day on account of the pain it caused. In five years from the date of injury the hernia had dropped down into the scrotum, and he was then fitted to a knitted bag, which acted as a suspensory. The rupture had increased constantly but slowly up to a year ago, when it was about the size of a cocoanut.

At that time he jumped from a horse-car and felt a sudden yielding, while the tumor doubled in size in an hour's time. Since then it has steadily increased and has prevented him from doing any active work. There has been but little pain, but a constant pull and drag that have made him an invalid and have led him to indulge freely in alcoholic stimulation.

At the time I first saw him, March 28, 1889, the hernia measured 25½ inches in circumference around its base, 30 inches around its largest part, and its length from pubes to perineum was 17 inches. It was of the left inguinal variety, but, on account of its size, and the fact that it had dissected up the skin from the lower part of the abdomen and from the upper part of the thigh, the ring could not be felt nor the contents mapped out. He was placed supine on a hard bed with the foot elevated ten inches, the bowels

evacuated, and the diet restricted to concentrated and digestible foods. At the end of forty-eight hours the œdema of the scrotum had subsided sufficiently to disclose the nature of the contents of the sac. The upper portion contained many coils of gut, while the part nearest the ring and below was solid and nodular. Efforts at reduction were made and a considerable part of the intestine returned. A cotton bandage was then applied in circular turns to form a pedicle to the mass, and three sand bags, of three and five pounds weight, laid on the top, while a broad sling over the shoulders and around the neck held the mass vertical. On the fifth day the intestine could be all reduced, and the mass measured 21 inches in circumference by 14 in length. The residue was omental, the chief obstacle being a hard, solid cake four inches in diameter and two inches thick. The ring could be easily felt, admitting three fingers. From the outset the cotton bandage was applied once or twice daily, and after a few days a rubber bandage outside the cotton. No attempt was made to exert pressure by bandaging across the top, as the effect of this was to gradually squeeze the mass out under the ring of bandage and cause the whole apparatus to slip off. For the same reason the sand-bags were of but little value, the chief reliance being placed upon daily manipulation to break up the omental lumps and dilate the ring, while the tight circular bandage caused an internal tension which constantly tended to squeeze out the contents of the sac. No pain was felt at any time unless the rubber bandage were too tight. If applied directly to the skin it would roll up and cut in uncomfortably, so that the following plan was adopted: ten yards of cotton bandage, two inches wide, were wound around close to the abdomen, including the penis and testicles, each turn approaching as near as possible to the abdominal wall, so as to form a hard constricting collar four inches wide; outside of this was wound the rubber, being worn about three hours at a time.

On April 14th, the seventeenth day of treatment, while squeezing the omental cake, it seemed to separate on one edge and open out to form a crescentic mass, which was insinuated by its smaller end into the ring and by dint of steady pressure was wholly reduced, exposing an opening

which easily admitted four fingers. A graduated compress and spica bandage retained the hernia, and two days later the patient was up and around the room with a water-pad truss on. Much difficulty was found in getting a truss which would retain all the omental masses, but no intestine has escaped since the first reduction. The patient was attending to his daily work when seen in November, and had gained considerably in flesh, while the scrotum had shrivelled very greatly and the ring had closed up about one-half. May 4, 1890, I found the ring contracted so as barely to admit two finger-tips, while the scrotum was still more shrivelled. He reported that there had been no protrusion whatever, although without his truss he has walked about his rooms, and on one occasion jumped out of bed and ran down stairs in pursuit of a burglar. There is now a hard, fibrous mass the size of a hen's egg, attached to the cord about two inches below the ring. This is what bothered us at first in the application of the truss, but it is now evident that the mass does not belong in the abdomen, but is an outgrowth of the spermatic cord. There is no escape of abdominal contents, but when he coughs I can feel a large, smooth mass press against the ring like a valve. The patient now leads a most active life, has gained 20 lbs. in weight, and has given up his rum.

An incarcerated hernia of this size was not a very promising case to undertake, more especially as it had proved itself unyielding to many physicians during the past thirty years;—but having had the privilege of tending a number of such cases under Dr. J. Collins Warren in the Massachusetts General Hospital, I was encouraged to try it by the method of treatment proposed by him.

In considering the mechanics of this treatment we may represent the hernia diagrammatically by a rubber bag filled with fluid, resting upon a rigid ring of less diameter than itself. The problem is to force the ball through the ring. The first aid we have is gravity, obtained by the supine position and elevation of the foot of the bed; next the bags of sand or shot, which adapt themselves to the shape of the hernia and exert a constant pressure; third, the direct pressure of the hands in daily manipulation. In addition to these means of direct pressure we have the constricting

band, which to my mind is the most important feature. If pressure be exerted upon a body of fluid, it is transmitted equally in all directions, and with no loss of power except from the internal friction of the molecules of the fluid. If a cord be bound around a rubber foot-ball with a pressure of ten pounds, there will be exerted at every point of the surface a force of ten pounds, minus the friction of the fluid, which is very trivial. The ring of rubber bandage around the hernia exerts a pressure proportionate to its elasticity, equally in all directions, but this is opposed by the rigidity of the sac wall everywhere except over the ring, where there is no obstacle. Consequently a pressure of ten pounds by the bandage means a direct downward pressure of ten pounds on the ring, minus the friction of the soft and easily-movable contents which obey the same laws as fluids. This is the most valuable part of the treatment. This pressure would be uncomfortable except for the broad bandage of cotton that is first put on to form the pedicle of the tumor, but, when so diffused, it is bearable for one hour or ten hours according to the tightness of the rubber. This can be applied and taken off by the patient at will, and with this pressure I consider the sand bags useless and even objectionable. Next to this, the daily manipulation of the contents assists by breaking up the internal adhesions and dilating the ring. The whole treatment of such a case requires from two to six weeks of rest in bed, which the patient readily becomes accustomed to, and there is but little pain from the manipulation, which can and should be gentle, even although considerable force is used. If, however, it appears that after the greater part has been reduced, there still remains a hard mass that does not diminish, I should give ether and force it in either by separating its substance or tearing the ring,—taking it for granted that such a tear would immediately unite. After reduction a compress and thorough spica bandage should be worn for a few days, then a perfectly fitting truss applied before the patient gets out of bed.

This mode of treatment applies to unbilical as well as scrotal herniæ, and is in that case more easy of application.

In conclusion I would say that the safety, comfort, ease and notable success of this mode of managing large incar-

cerated herniæ, deserve from the general practitioner much more attention then is at present accorded it. To relieve acute obstruction by a skilful though hazardous stroke of the knife, is a gratifying act; to relieve a patient of the long-endured burden of an old irreducible hernia, together with the pain and danger of accidental strangulations, and this by a process comparatively painless and free from danger,—to do this is equally gratifying to the patient and to the surgeon.

Dr. J. C. Warren, of Boston :—This is a subject which has interested me considerably, and to which I have given attention for some years, and therefore I feel authorized to make some remarks on this occasion. In the first place, a word about the development of irreducible hernia. Irreducible hernia is very apt to follow the general life history which Dr. Galloupe has sketched for it in his case. During the most active period of life, from 17 perhaps to 25 years of age, is the period when irreducible hernia first shows itself. For some reason or other, at that time there are difficulties in returning the hernia and treating it as an ordinary reducible hernia should be treated. I think that is what we find in cross-examining the patients with this affliction—that, owing to its being omental, perhaps, in character, or owing to great carelessness on the part of the patients themselves, the hernia has not been returned habitually into the abdominal cavity.

Some of these hernias, in their early stages of development, are exceedingly obscure. Many cases that I have questioned have stated that the diagnosis was not clear; that some surgeons had thought it was varicocele, others a hydrocele of the cord, and others a hernia. There would be a fullness, a more or less well-developed mass in the inguinal region, and an inability to displace it. In one case that I have had, an operation for varicocele was done by a French surgeon, with the idea of curing the case.

As the patient advances in life, business pursuits divert his mind, and he is unwilling to sacrifice the time which is necessary in order to devote himself to the proper amount of treatment required for cure. He tries a truss, and the truss fails to do its work. He satisfies his conscience by

wearing the truss part of the time each day, although it is doing no good, and probably is doing harm. As he reaches the obesity of middle life, the hernia begins to increase in diameter, with the fat deposit that is taking place in all parts of the body. The force of gravity is a force which is constantly acting during the day time to draw the omentum or the bowel out of the abdominal cavity, in addition to the natural intra-abdominal pressure which always exists. The consequence is that when the man has reached the height of his business activity, in middle life, in the forties, he is afflicted with a very large, bulky hernia. An irreducible hernia cannot last through a period of twenty years without becoming also a large hernia. Then we begin to have various little complications, as well as big ones.

Among the little complications is the external irritation to which the patient is subjected. An eczema of the scrotum, in a stout individual who is very active, will become sometimes so great a source of annoyance as to lay the patient up for a considerable portion of the year. That is, one patient of mine was obliged to stay in bed for from 24 to 48 hours each week, in order to allow the congestion of the part to be relieved, and the irritation of the skin to subside, so that he could get about the rest of the week and do his work.

Then of course we have the various complications which you are all familiar with in irreducible hernia, viz., the tendency to become inflamed, the tendency to become incarcerated; I might add, also, the tendency to become strangulated, but that is a rare complication of the type of hernia which I am describing. A hernia which has reached so large a size has a large ring as well as a large sac and large contents. The ring is probably sufficiently large to admit from three to four fingers. Now such a ring as that can never be constricted sufficiently to stop the circulation in the larger vessels which are furnishing the contents with the necessary blood supply. Therefore this fact perhaps it is well to keep in one's memory, that strangulation of these large hernias is not likely to occur. They are more liable to have what is called incarceration, by which are generally understood an obstruction and a local peritonitis, periods of inflammation which are accompanied by local pain and ten-

derness, and perhaps vomiting,—symptoms pretty severe in character, but which do not terminate in gangrene of any portion of the hernial contents.

The complications, however, are sufficiently grave to make it very important to urge upon the patient some effort at relieving himself from so severe an incumbrance. At the present time, when antiseptic surgery and abdominal surgery have placed us in an attitude towards the forms of disease which we were not in you may say even so short a time as ten years ago, it may probably suggest itself to your mind that the simplest operation would be an incision, laying open the sac and dissecting off the adhesions, excising the hypertrophied bars of fatty tissue which represents the omentum, and returning the bowel and sewing up the ring,—the ordinary operation, in other words, for the radical cure of hernia. That operation undoubtedly is done, and can be done a great deal more frequently in surgical practice than we formerly advised. But that operation is not adapted to all cases, and is not indicated in quite a large number of them.

In the first place, the patient shrinks from going through the ordeal of the operation. In the second place, we cannot conscientiously assure the patient that we are going to have a radical cure by that operation, and the probability is that in these large hernias, whether they are inguinal or umbilical, the majority of them will recur to a greater or less extent after a certain length of time. I do not mean to decry this operation. I think it is one of the great benefits that antiseptic surgery has given us—the opportunity of relieving suffering manhood from such a disagreeable affliction as this one. We can undoubtedly relieve the principal symptoms by the operation. We can put the patient in such a position that a light truss will enable him to go about as comfortably as any individual with a small reducible hernia, and I have at present more than one patient who reports to me from time to time, with great satisfaction, his condition after such an operation as I have mentioned.

But perhaps it is more interesting to the general practitioner to know about the class of cases in private practice which Dr. Galloupe has described in the case which may be

considered a typical one of the kind in question. The class of patient adapted to this particular kind of treatment is in the first place the active, busy man, who perhaps dreads the operation, fears that he may be laid up a long time, does not wish to run the risk of an operation, and will consent to treatment without the use of the knife. You know it is a much more seductive proposition than the operative mode of treatment, to the average man.

Then we have another class of patients with organic disease. One of the first cases of large hernia I had to treat had most pronounced Bright's disease of the kidneys, and it would have been manifestly highly improper to perform laparotomy on that patient. His weight amounted to over three hundred pounds. It would have been fatal, undoubtedly, if the radical cure had been attempted. Old people and enfeebled individuals are not good subjects for abdominal surgery of this kind. Perhaps a simple laparotomy for ovarian tumor, with a clean incision, with the relaxed abdomen afterward might be followed by the best results. We know that it is done successfully, even in the aged. Cases have been reported where patients over eighty have had ovariotomy performed, and with satisfactory results. But here we are dealing with a different problem. We are pushing something back into the cavity, and making the cavity fuller, more distended, than it was before. There is always more or less shock after a radical cure of hernia, more than after an ordinary laparotomy in the median line, and I am inclined to think that feeble and large persons, the subjects of organic disease, are not suitable for the cutting operation.

Then again, the treatment is not always applicable, on account of the situation of the patient and his surroundings. The general practitioner is not prepared for the complications of laparotomy. The patient is unable, perhaps, to travel, or to reach some hospital where the operation could be conveniently done, with all the modern conveniences and advantages. Therefore it seems as if the mode of treatment which has been sketched out already was adapted to a very considerable number of cases.

Now, in regard to the treatment. It is not a new treatment. Dr. Galloupe has kindly alluded to me as having

taught him some points about this mode of treating irreducible hernias. Dr. Samuel Cabot, and others of his contemporaries, undertook this method of reducing large and irreducible hernias, over thirty years ago, when I was a medical student, and the method, if I am not mistaken, was derived from the French surgeons; and it was here that the elastic bandage was first used as a therapeutic agent.

The hernia, which we will assume for the time being is a scrotal disease, was caught up by the hand around its pedicle, and formed into a pediculated mass. The bandage was then wound around the neck of this pediculated tumor. If we wind a bandage around the scrotum with hernial contents, the moment we have the bandage wound around we find that it collapses and that its contents have disappeared, not into the abdominal cavity, but rather into the loose fatty and cellular tissue of the perineum or abdominal wall, escaping of course from the grasp of the bandage. It will escape wherever the pressure is relieved. If there is an absence of resistance just around the outside of the ring, we lose the effect of this mode of pressure. Dr. Galloupe supplied this pressure by first winding a linen or cotton bandage around the tumor, and making thereby a pedicle. That is the technical expression—first make the pedicle. He made a cylindrical collar of cotton, which opened at one end into the hernia, at the other end through the ring into the abdominal cavity.

The old French method was to grasp the hernial sac, make a pedicle, and then take one or two very tight turns just above the hand, so as to make a pedicle; then, when that was once made, continue winding the turns over the sac itself, in order to force it back. But the moment you have taken one or two other turns around the bandage, it requires a good deal of courage to leave the bandage there, for it must be so tight, in order to hold the part, that it is practically a tourniquet, and the whole tissue turns such a color that it requires a good deal of courage, as I say, to leave it on there sufficiently long. Of course, venous congestion is relieved by continuing the pressure all over the fundus of the tumor with the wound bandage. That being held in position for several hours will materially diminish the size of the tumor and sometimes will force it

back into the abdominal cavity. In order to get up a firm pressure, which would avoid the danger of mortification of the part, I devised a bag, some years ago, for a particular case. While it was being prepared, the patient was going through the line of treatment that has been sketched. The foot of the bed was raised, so that the force of gravity would act from without inward. The scrotum was held up and weights applied, so as to give a moderate pressure. After that treatment, pursued for several weeks, the tumor diminished about two-thirds in size. There was left a large ball of fatty tissue, which represented the omental part of the tumor, to be disposed of. The bag was made in the shape of a balloon, with an opening about three inches in diameter. It was made of two layers, the inner one being a soft flexible one, and the outer an inflexible one. Being blown up between the layers, the flexible one produced pressure on all sides. This bag was put on like an ordinary rubber bag capable of inflation with air. After it had been strapped down firmly and held to the ring by a large number of figure-of-eight turns in all directions, so that it was buried up with bandages, the pressure was brought to bear by blowing it up with air or water. The pressure was left on for fifteen hours, and when it was taken off the hernia had been reduced. The hernia was about the size of that pitcher [a medium-sized one] originally, having lasted twenty years, and had resisted the efforts of a large number of surgeons. The patient was a victim of Bright's disease. He was comfortable for the remainder of his life, which lasted seven or eight years after the treatment, and he died of Bright's disease. The hernia was kept back by an ingenious strap truss, which he devised himself. I have since then reduced a number of cases in that way, and then succeeded afterward in retaining the hernias.

There are a certain number of hernias which have very large openings, and which after reduction come out again. They cannot be held back by any apparatus. The patient is unable to use the amount of ingenuity and brain work which is necessary to apply and keep in position a truss, or there are inherent difficulties in the problem. In these cases I am content with using a very large, stout, jean-cloth suspensory bandage, and with that form of apparatus the

hernia will be made so much snugger and more manageable and smaller that patients are as a rule satisfied with it. I have an old man, over eighty years of age, who uses such a support, and has used it for ten years, with very satisfactory results. He would never have been able to wear any kind of truss, he was too old for a radical cure, and this seemed to be the best method of treating his case.

Dr. G. W. Gay, of Boston:—In preparing the few remarks I have to offer upon this subject, I have assumed that it was particularly desirable to bring forward our experience in treating cases of old irreducible ruptures, such as heretofore have been accustomed to roam about from hospital to dispensary, or from one physician to another, until falling into the hands of some enterprising man having plenty of time and an abiding faith in antiseptics, they have been subjected to a thorough and prolonged, if not a very successful method of treatment. In other words, the duration of the affection is an element, and an important one, in the classification of the cases which come under our consideration to-day.

In numerous instances, though the rupture has existed for months or even years, yet it has been irreducible only a few days. The symptoms of strangulation are not yet developed, but from the tenseness of the tumor and the discomfort of the patient, they may come on at any moment. The adhesions of the contents of the sac in these cases being comparatively slight, the treatment is more simple and the results are more favorable than in the next class.

The greater number of old irreducible herniæ are brought to the surgeon's notice by reason of a recent strangulation either of the original contents of the sac, or of fresh acquisitions to the same. In many instances an irreducible omental hernia gives very little trouble, until a knuckle of intestine comes down and gets entangled in the meshes of the omentum, when symptoms are pretty sure to declare themselves in a very short time. In looking over the records of the Boston City Hospital for the past ten years, I find that the majority of cases of irreducible hernia come under these two classes: the recently descended, but not strangulated, and the descent of bowel behind the omentum.

A third and rarer class of cases are those large, unwieldy, unmanageable ruptures of long standing, which have heretofore been the bane of the out-surgeon, and a no very welcome guest to the visiting surgeon of our hospitals. They are bundensome from their size, as well as from the colicky pains and various discomforts to which they give rise. No sort of truss or other appliance is very satisfactory in preventing their slow and sure increase in bulk and weight. They may be composed of bowel, or of omentum, or of both together. The adhesions are apt to be very firm and unyielding, the parts out of all natural proportions, and the different structures enlarged, thickened, and changed in various ways. He who undertakes to relieve these cases by operation, should make up his mind to a long, tedious, and oftentimes puzzling dissection, and not allow himself to be surprised if he is unable to accomplish as much as he would like. These operations require patience, perseverance, and a strong back.

A brief résumé of a few of the cases treated by the surgeons of the City Hospital during the past ten years may be permitted at this time.

I.—A woman, 48 years of age, had an irreducible omental hernia of one year's duration. Five days before coming under Dr. Cheever's care a small knuckle of intestine came down, causing pain, but no other symptoms of strangulation. Herniotomy. Omentum firmly adherent to sac; cut off even with ring. Discharged in seven weeks wearing a truss. Five years later this patient was admitted to the hospital again, with symptoms of strangulation in the old hernia. It was reduced under ether by taxis, and as she was found to be suffering from chronic nephritis nothing further was attempted.

II.—A young woman of 17 had an irreducible femoral hernia, the size of an egg, for one year. Operation by Dr. Gay. Omentum cut off. Well in five weeks, and wearing a truss. Has been under observation over four years, and is now wearing a truss. The rupture has never returned.

III.—A man, aged 33, had an inguinal, omental hernia, of moderate size, for fourteen years. Irreducible for some time, not definitely known to patient. Herniotomy by Dr. Gay. Able to leave the hospital in seven weeks wearing a

truss. Was free from rupture a year and a half later, but did not dare to leave off the truss. These two cases are reasonable cures.

IV.—Direct inguinal hernia in a man aged 21 years. Irreducible for several years. Operation by Dr. Cheever. Omentum removed. Recovered in a month. No truss worn on leaving the hospital.

V.—A woman, aged 52, had an omental femoral hernia for eight months, size of a lemon. Irreducible four days; no signs of strangulation. Herniotomy by Dr. Gay. Omentum ligated and cut off. Recovered in a month, but could not wear a truss.

VI.—Dr. Gay operated upon a woman 52 years of age for an irreducible omental femoral hernia of eight years' duration, in October, 1880. As is very often found in those old omental ruptures, a knuckle of bowel had come down and become entangled in the meshes of the omentum the day before the operation. There were no signs of strangulation. The bowel was returned, and the ring was plugged with the stump of the severed omentum. Wound healed in six weeks.

VII.—A man with an irreducible inguinal hernia of two years' duration, after being treated for a month by compression and position, was operated upon by Dr. Burrell. Omentum firmly adherent to sac. Patient died in three days, and the autopsy revealed fatty kidneys.

VIII.—Two days before entrance, Mr. M.'s hernia (inguinal) came down; taxis failed to reduce it. Dr. Homans did the "minor" operation successfully (sac not opened). Patient discharged well in three weeks. A few months later he returned to the hospital and was operated upon for strangulation at the site of the former operation. Feces escaped from the wound a few days during convalescence. The wound was nearly healed in three weeks, when he left the hospital.

The two following cases occurred in Dr. Cheever's private practice.

IX.—A man, aged 68, had a femoral rupture irreducible for years, size of a small egg. Sudden strangulation; herniotomy. Intestine and omentum in sac. Former returned; latter adherent, dissected off and cut away. Stitches

of boiled silk slowly ulcerated out in two months. Wound then healed; tissues firmly contracted. Patient wears a truss, and is comfortable. A good result.

X.—Man, aged 62, scrotal hernia size of a large fist, irreducible for years, steadily increasing in size, and attracts patient's attention constantly by the discomfort. Operation. Large amount of omentum and eight inches of bowel, both firmly adherent to sac, and to each other. All dissected up and freed, but reduction was impossible until the inguinal canal had been slit up an inch and a half, when the whole was returned with much difficulty, due apparently to the want of room in the abdominal cavity. Wound closed with four boiled silk sutures. Usual antiseptic precautions. Abscess on the sixth day followed by sinus. Slow extrusion of stitches for period of four months. Wound is now nearly healed, but it is to be observed that during all this time the hernia has been solidly held in place by the heavy cicatrix. No impulse, and no truss. Patient goes about.

The result obtained in this last case is the same as is sought by Dr. McBurney in his operation, namely, a closure of the canal and rings by a large solid mass of cicatricial tissue.

XI.—Nearly a year ago Dr. Cheever operated upon a woman, aged 49, who had an umbilical hernia the size of a cocoanut. It had existed 17 years, and had been irreducible several weeks. Patient confined to a sitting or recumbent position for 8 or 10 months, as nothing retained the rupture without producing excoriations and inflammation of the deeper tissues.

The entire sac was removed by long elliptical incisions. Bowel dark colored. Omentum adherent to ring, which admitted three fingers. Contents of sac returned, and wound closed with one catgut, three button (wire), and several superficial silk sutures.

The patient suffered great pain after the operation, which was only relieved by removing the deep wire sutures.

She sat up in three weeks, and left the hospital in a month. She is now wearing a belt; follows her vocation as a cook, and is very comfortable.

An old woman was brought to the hospital a few weeks since with a moderate sized hernia in the umbilical region.

It was gangrenous, covered with blebs, and the patient was in a partial collapse. She had been ill at least three days, but had had the rupture for years. A very little ether was given; sac opened by Dr. Gay; bowel adherent to ring; latter cut open an inch and a half; healthy portion of proximal intestine stitched to ring; artificial anus made of the gangrenous portion, which included about ten inches. Patient rallied well from operation, and was very comfortable for the remainder of her life. She died in about two months of starvation, due to limited area of bowel surface from which absorption could take place. Resection and suturing the bowel would undoubtedly have ended fatally upon the operating table.

In another case of a large irreducible, scrotal enterocele of long standing, I undertook to do an operation. Symptoms of strangulation had subsided, and gangrene had supervened. The patient suddenly developed œdema of lungs while taking the ether; his bronchial tubes became filled with mucus and serum, and he died before the operation was fairly begun. A cessation of the symptoms of strangulation, that is, pain and vomiting, with persistence of the tumor, means collapse; and I have never seen any treatment do good under these circumstances. Operation is always fatal, so far as I know.

An old man was admitted to the hospital some years ago with an enormous scrotal hernia, which was gangrenous, and had been irreducible for a long time. An opening was made directly into the sphacelated portion, with a view of giving exit to the pent-up gases and other offensive matters. The condition of the patient forbade any further efforts for his relief. He lingered several days, and died from exhaustion.

It will be noticed that in a majority of the above cases the irreducible portion of the hernia was omentum. Sudden strangulation was often due to the descent of bowel behind or alongside of this structure. The frequency of the occurrence forms a strong argument in favor of surgical interference in these irreducible ruptures. They are treacherous affections, and besides being the source of much discomfort from their size, weight, bearing down sensations, and colicky pains, are liable at any time, and with-

out warning, to become obstructed, inflamed, or strangulated, often leading to fatal results. Previous to the introduction of antiseptic methods of treating wounds, the results of operative measures were not very encouraging. As the danger of opening the peritoneum has been very greatly diminished by recent modes of wound treatment, one need not feel that hesitancy in attacking these cases that formerly existed. While experience does not justify us in promising perfect cures in a majority of cases, yet much good may be accomplished by a judicious resort to surgical measures. The tumor may be removed; adhesions severed; displaced organs restored to their normal position; various sorts of pain and discomfort gotten rid of; and the patient's mind relieved of a great and constantly increasing burden. And, finally, by being enabled to wear a truss or other support, he may thus exchange a life of invalidism and suffering, for that of usefulness and comparative comfort.

Dr. H. W. Cushing, of Boston:—My part in this discussion is to present the operative side of the question. The object to be attained is a complete and permanent relief from the affection, to place the patient in a position where he will be permanently independent. I think I can best describe this method by reading the description of an individual operation.

The patient was a boy aged 12, the victim of an irreducible hernia of four years' duration. The operation was commenced by a straight incision, extending from Poupart's ligament over the crural ring to just below the saphenous opening. The sac was exposed and found to contain omentum, which manipulation failed to separate from its adhesions to the edge of the saphenous opening. The sac was then explored from above. In order to do this the upper end of the incision was prolonged outwards, parallel to and one half an inch above Poupart's ligament, making the total length of the wound three inches. By dissecting through the subjacent tissues, the sac was exposed as it entered the crural ring. It could then be freed from within outward by gentle traction, manipulation and dissection, and, after division of the adhesions to the saphenous opening, became easily reducible. I would especially recommend this opera-

ting wound, *i. e.*, the method of exposing the hernia from above and below the crural opening, as giving a much better idea of the exact condition of the anatomical relation of the parts, and the ease with which, if possible, these adhesions are relieved. The sac was now opened with the scissors and the scalpel, and the omental adhesions of the inner surface were divided with considerable difficulty, the omental mass, measuring two inches by one and one half, was then ligated, and the stump pushed back into the cavity. A continuous suture closed the sac, which was then folded on itself, and fixed within the abdomen. The suture affecting this reduction passed through the crural ring, up through the transversalis fascia, the conjoined tendon and aponeurosis of the external oblique. The crural ring was next closed by suturing Poupart's ligament with a quilted suture. The femoral vein was protected with the retractor. When secured, the opening had apparently become impervious. The enfolded sac formed a pad which was firmly fixed against the internal opening of the canal. The pubic and iliac portions of the fascia lata were next sutured in a manner similar to that by which Macewen causes the external pillar to overlap the conjoined tendon in the inguinal operation. The operating wound was then closed. No drainage. Aseptic dressing. The patient remained in bed two weeks, his condition being practically normal during the time. Dressed on the twelfth day. A narrow red line alone marked the seat of the operation. Complete union by first intention. An indurated mass could be felt just above Poupart's ligament. No tenderness. There has been no subsequent treatment. Operation May 14, 1888. The patient, an active restless boy, has been without any apparatus or support since that time. In the opportunities which I have had to carry out the details described, the result has been corresponding to the case reported.

Dr. Walter Ela, of Cambridge:—The irreducibility of a hernia may depend:

(1) On its bulk,

(a) from the presence in the intestines of flatus, fluid, or feces, or,

(*b*) from the enlargement of the omentum or mesentery from the deposition of fat, or,

(*c*) from fibroid or other organic change, the neck of the sac being narrowed by atrophy and the seat of an hour-glass contraction, there being, in other words, a mass disproportioned to its orifice, and doubling up when pressure is applied.

(2) On more or less firm and extensive adhesions of the sac to its contents, or,

(*a*) of the latter to each other, or,

(*b*) by fibrous bands traversing the sac, associated with changes in the shape of the sac or omentum, or,

(*c*) when the hernia is cæcal, when the naturally adherent peritoneum is dragged down and becomes fixed to the tissues into which it is protruded.

(3) On some fresh descent of omentum or bowel, as when the latter is caught between folds of the omentum.

(4) On spasmodic muscular contraction which influences the size of the abdominal rings under the influence of irritation ; or, induration of the neck of the sac itself, or of the parts around.

(5) It may moreover be irreducible from other causes than those inherent in the rupture itself by being forced from the abdominal cavity by constant pressure, as by the presence of ascites. When the fluid is withdrawn, the hernia may be reduced. A large old rupture may be too bulky for the now contracted abdominal cavity.

In most cases the prime cause of this condition of irreducibility is attributable to the neglect of proper treatment of a reducible hernia by the use of a truss. When inflammation is set up a hernia may become irreducible in a very few days from adhesions.

An irreducible hernia may be partly reduced, the *intestine* being the part which slips back into the abdominal cavity, and the *omentum*, which cannot be returned.

Irreducible hernia, always a source of anxiety and danger, may produce many inconveniences by its size and weight,

which are aggravated by corpulency or pregnancy. It always has a tendency to increase in size if left to itself.

Even if small, the patient may have a sensation of weakness in the part, and dragging pains in the abdomen.

The objective symptoms if the tumor is large are self-evident; the subjective ones are dyspeptic, as flatulence, nausea, constipation from irregular peristaltic action, perhaps attacks of vomiting, and colic. The tumor is greatly exposed to external injury, and is in constant danger of obstruction and strangulation.

The first symptoms of these are, general distress, vomiting (in later stages stercoraceous), arrested peristaltic action of the bowels, want of impulse on coughing, heat, swelling, and pain in and about the tumor.

Unless these symptoms subside or are relieved, we will have gangrene, and fecal fistula if not collapse, and death.

The severity of the symptoms is in proportion to the distance of the strangulated intestine from the stomach, the nearer the rectum the less distressing the vomiting.

The medical treatment of a simple irreducible hernia should consist of regulating the diet, bowels and exercise. If impaction of feces seems to be an element in the case, copious laxative enemata, aided by the topical application of hot fomentations, with the patient in a recumbent position, will at times aid taxis to a successful issue.

If the hernia is strangulated, however, do not give purgatives, but opium, ice to suck, hot fomentations (or in the early stage ice if more agreeable), and time, but too much time must not be lost in the pernicious plan of temporizing by mild means. Administering medicines does not check the vomiting, but too often the means, at the suitable moment which will more likely arrest it, is rejected.

The palliative plan of treatment of an irreducible hernia, if quiescent and accompanied by no special symptoms, by applying a well fitting binder or bandage with buckles, or a bag truss, or one with a boss, or one with a hollow pad to receive and support the rupture, may be sufficient to prevent its increase and to relieve the patient, whose physical condition or age forbids, in addition, anything further than regulating the diet, bowels or exercise.

A certain amount of truss pressure is borne on the omentum, and it tends to promote absorption of that already adherent, or to cause a more complete blocking up of the hernial canal. The patient's feelings must be our guide in continuing this.

If a knuckle of intestine slips down also, there may be unusual pain and inability to wear the truss comfortably, and great care must be taken against this.

It is important, and sometimes very difficult, to decide whether the irreducible hernia is composed of omentum, intestine or both, especially if the bowel is strangulated, and often the bowel may be reduced while the omentum is irreducible and adherent, but the latter is of less consequence.

It is to be supposed that taxis has been employed before terming the hernia an irreducible one, and supposing the attempt has been unsuccessful, even under an anæsthetic, and it is desired to make a further attempt at reduction, the following plan is sometimes successful, provided we have the coöperation of the patient, who should be fairly vigorous, and the canal of whose hernia is not reduced to a mere ring.

Long-continued, supine rest in bed, the foot of which is elevated to get inward traction. The patient's knees should be flexed to relax the abdominal muscles. Hot fomentations, or the application of ice (which should not be employed if symptoms of strangulation have existed 24 hours, as it occasions the delay of more important means), are at times grateful and efficacious. The application of sand or shot bags, weights, or elastic pressure to the tumor (which should be supported if pendant) is often beneficial with the other means. This may relieve the congested blood-vessels, and the tension of the sac may be lessened, by pressing the serous effusion it may contain into the peritoneal cavity.

This old method of recumbency and pressure often does well, especially if accompanied by a low diet so as to favor the absorption of fat.

Irreducible ruptures have disappeared spontaneously in the course of a long illness. Dr. F. H. Hamilton has reported many cases in which the mechanical effect of posture and gravitation was to reduce the hernia by inward traction, and more recently Dr. J. Collins Warren has successfully

employed the same means combined with pressure in several cases. If reduction is accomplished (and it is more likely to succeed in the non-adherent omental variety), it is better than hazarding the life of the patient by a doubtfully successful operation, and if successful, the complaint is very liable to return as in Dr. Warren's reported cases of attempted radical cure.

Sometimes, moreover, the reduction of an old, irreducible hernia is a source of great discomfort to the patient, and the reproduction of the protrusion is desirable to obtain relief.

If the irreducible hernia is strangulated, or the sufferings or desirability justify the risk, and other and safer means fail, and the symptoms are urgent, the propriety of operation (which is unsuccessful as far as my experience goes) must be entertained.

Long delay and violent taxis before operation may be even more fatal than strangulation itself. If taxis is used it should be with gentleness and great care, especially if the strangulation dates more than 36 hours. So, the sooner after strangulation, if reduction has been fully tried and failed, the operation be performed, the better.

Often death results not from the operation, but because it was not performed at the right time, and the longer the hernia remains strangulated, the less the chances of recovery.

I have seen death follow in four cases which were reduced by taxis. The return of a small part of inflamed sloughing intestine is the dangerous thing which may set up peritonitis.

If the omentum cannot be reduced, it may be left in the sac, cut off, or a ligature tied around it. Of course the first or the last methods are to be preferred.

Numerous cases are recorded in which a portion of the omentum, in large and unwieldy hernias, has been strangulated by ligature, or in a gangrenous state removed altogether, without producing symptoms.

If on operation there are tough adhesions, interfering with them is attended with great risk of tearing the bowel. It is safer than that, to enlarge the mouth of the sac, and reduce as much of the protrusion as possible, allowing the balance to remain in the sac relieved from constriction.

Experience and the recorded results of all methods of operation for the radical cure of hernia, and those irreducible in particular, leave much to be desired. Dr. W. T. Bull's report of 134 cases is particularly interesting.

Dr. H. W. Cushing reports a successful case in a boy. Mr. John Wood has seen several cases where adhesions of the omentum at the deep ring have effected a complete occlusion and produced a radical cure. As a rule, if the hernia is irreducible no attempt should be made to effect a radical cure.

To illustrate what I have said, I will mention the following typical cases, most of which I have had to do with:

M. R., a fat woman, has had an umbilical hernia for years, and it is now irreducible. The tumor, which is probably intestinal and omental, is painful, and she has been vomiting for 12 hours. I saw the case in consultation, attempts having been made at reduction. Under ether I reduced the hernia mainly by squeezing together the skin over the tumor, exerting diffuse pressure on the hernial contents. A well fitting band with buckles was more efficacious than a truss pad in retaining the mass within the abdomen.

A. J., a man of 72 years, has had a hernia for 40 years, which has been irreducible for the last 15 years. It was apparently a direct, inguinal one, and as large as a peck measure. Except for its size and weight it has not incommoded him. His penis was obscured in the voluminous hernia. He wore a cloth bag for support, and died recently from an affection in no way connected with the hernia.

A similar case has recently been related to me, where a double inguinal, irreducible hernia had existed for years and years. The man never did anything for it and never wore a support, as it was not a source of great annoyance. He never had strangulation, and died of an affection of the kidneys and bladder.

An interesting case was that of an irreducible umbilical hernia, as large as five fists, which followed the operation of ovariotomy in a woman of 38 years. It was adherent to the skin and was partly omental. A well fitting swathe

alone gave relief. No attempt at taxis was made, as it was not a source of great annoyance.

The case is reported to me of a woman who had an irreducible, unbilical hernia probably omental, which was formerly reducible. She wore a flat shield held in place by adhesive plaster and a band. She had an attack which simulated strangulation, viz.,—distress, vomiting and pain, which subsided on rest, hot fomentations and opium. She had no other attack for three years, when the above symptoms were repeated accompanied by colic. The mass could not be reduced, and she died not operated on with the symptoms of strangulated hernia.

F. A. M., a man of 72 years, entered the Cambridge Hospital nine months ago for a double inguinal hernia. He had had it for 30 years, the right one being larger since a fall 18 months ago. It now measures 21½ inches in circumference. It has always been reducible until now. Taxis is unavailing. He has pain, and tenderness over the tumor and gurgling in it. No nausea nor vomiting. Rest in bed, hernia supported by a swathe and hot compresses. After a few days, the symptoms and size subsided somewhat, and in two weeks he was discharged relieved. It has not incommoded him since, and he pursues his occupation as harness-maker, wearing a bag support.

A man of 70 years, having a strangulated, irreducible hernia, had passed no feces for six days. The principal and important symptom was vomiting, which also had lasted for six days.

Mr. Jonathan Hutchinson made a slight attempt at moderate taxis under an anæsthetic, but from the duration and hardness of the swelling said he would not be reluctant to open the sac. The hernia was reduced and no untoward symptoms followed, and five days later he had a natural movement of the bowels.

A. F., male, 89 years of age, was seen at the Cambridge Hospital with a strangulated inguinal hernia formerly omental, but now secondarily intestinal. Always easily reducible until six months ago, when, having nausea and vomiting, under ether it was apparently completely reduced. A few days later something came down, and has been

down since, but it caused him no pain. When seen at the present attack the tumor was large, tense, very tender, no vomiting, no great pain but some would come at considerable intervals. Vomiting came on attended with more pain, tumor more tense and tender. Aspiration with no result. All thought taxis useless. Operation showed omentum adherent to sac, and a small knuckle of intestine driven behind the omentum was adherent at the neck of the sac. The intestine was returned. The omental adhesions were separated and the omentum tied high up in three parts and excised. Walls of the sac were brought together and drainage tubes inserted, one inside and the other outside the sac, and the wound closed.

He died in three days, failing gradually.

A woman of 52 years with a large, irreducible umbilical hernia, strangulated for 12 hours, had vomiting; tumor tense and hard.

On incising the sac a pint of fluid came away. Gut and mesentery were black. The ring was nicked in four places and gut returned. Then several pails of water were removed from the abdomen (ascites).

A fenestrated rubber tube was inserted and cotton and band applied. Eight days after the patient died with symptoms of peritonitis, which came on only 12 hours before death. The autopsy showed gangrenous gut but not perforated. The cause of the ascites was malignant disease of an ovary.

All the cases of irreducible hernia that I have seen operated on have been strangulated and have died. Operative procedure is very dangerous in this class. It is very difficult in some cases to decide what to do, and it must be left to the best judgment of the attending physician, and even then according to the best rules he may fail.

Dr. F. H. Thompson, of Fitchburg:—It happens that my experience in this special department of surgery, irreducible hernia, has been quite limited. In fact, I can recall two cases only that I think will be of interest. One of them was an enormous umbilical hernia, irreducible, which became strangulated and afterward gangrenous, and

is interesting as representing perhaps the formation of an unnatural anus by nature, and is a case that was reported by Dr. Richardson, at a meeting of the surgical association, two years ago. The other case, on which I operated last Sunday, was an old inguinal hernia in a woman of fifty, of six years' standing. The history is incomplete. The case is doing well, and I shall report it later.

Dr. F. W. Chapin, of Springfield:—I would like to report a case occurring in my own practice, although I know it may not at first appear to have anything to do with this subject, but which the autopsy proved to illustrate one of the dangers in the treatment of incarcerated hernia. I was called one morning to see an old patient of mine, a man about fifty years of age, who had had a hernia twenty-three years. About twelve years ago the hernia was strangulated, and was then reduced. On the morning on which I was called the summons was urgent, and I was told that Mr. C. had got his rupture down and could not get it back. I expected to find a strangulated hernia. When I reached the house I made an examination and found that the hernia was not protruding, but that he had pain in the abdomen in the region of the ring, and had just vomited. He told me he had been out in the yard, exercising in the garden, and lifted something and probably strained himself. I noticed that the left testicle, the hernia being on the left side, was drawn up close to the ring.

I told him to keep quiet, gave him morphine, and waited developments. This was on Tuesday. He continued to vomit during the day, and went on without any movement from the bowels (he had had one that morning), and continued to vomit occasionally, but not severely, and did not develop any fever. The tenderness at the ring diminished, and he did not seem to have much shock. However, I began to feel anxious, and called in counsel on the next night, 36 hours afterward. The testicle had remained close to the ring, and the symptoms of obstruction continued. At that time the vomiting had assumed a slightly fecal odor. We thought that perhaps there was fecal impaction, and used large injections of sweet oil. We continued this during the next day, and finally, Friday night (the case having begun

on Tuesday), he had a very copious dejection of fecal matter which filled the vessel once and a half. On Saturday morning he seemed almost well. The testicle had begun to descend, the hernia protruded—he had a large ring—and it went in and out with the greatest facility. I felt as if the case was all right and was bound to get well.

In the afternoon of Saturday he began to vomit again persistently, and the vomiting became stercoraceous. Thinking there was still further impaction, I introduced my hand and arm into the rectum, passing my hand up as far as possible, even to my elbow. I think I passed beyond the sigmoid flexure, examining in all directions, but I could find nothing. When the question of laparotomy was considered, we thought that he would die in the operation, and nothing was done. The man died on Wednesday, eight days from the time he was taken sick.

The autopsy revealed an old incarcerated hernia, which had been reduced in the sac and had become strangulated inside, a little neck of intestine having been forced into it in addition to what was already there, and the constriction consisted apparently of the peritoneum and the transversalis fascia, the hernia protruding through the ring with the greatest ease, and at the same time being strangulated. All this time he had almost no fever and almost no tenderness.

In another case which I have recently had, of femoral hernia, and on which I operated, the hernia had been down about thirty-six hours. The patient was a woman of about 35. The symptoms of strangulation were not very urgent, except the time, but after using taxis I felt something slip back suddenly, and believed that it was all right, and yet what was left was of such a size that I thought it could not have been all returned. I was unable to make any further impression on it, and decided to operate. On cutting down I found a cyst in the sac wall, as large as a horsechestnut. I opened the sac and found it was empty. After I had reduced the intestine, the cyst of course could not be reduced. These cases, although perhaps not strictly connected with the subject, may be interesting.

Dr. J. Collins Warren:—There are several points which have presented themselves to me in the papers of

these gentlemen. In the first place, I would not like the impression left upon their minds that I would not favor operation for hernia. What I meant to say was, that a certain class of cases, perhaps less numerous now than I should have regarded them ten years ago, could be treated with advantage without operation. I think it is valuable for the general practitioner to be aware of this fact, that it is within the power of every physician, whether he is a specialist in this department of medicine or not, to treat a certain number of these cases and give his patients great satisfaction. No especial apparatus is required. All that is necessary is to persuade the patient to go to bed and stay there for from two to eight weeks on his back, with the bed tipped up, with pressure from sand-bags or shot-bags, or from bandages. In that way he can reduce the hernia down to one-third of its original size, and then, if he does not wish to try the method that Dr. Galloupe and myself spoke of, he can give his patient ether and can push back through the ring the few remaining nodules of omentum which have not already been reduced. Some kind of truss will be satisfactory, without operation.

There are, however, of course, a large number of cases of irreducible hernia which can now be treated much more satisfactorily by the operation for radical cure, even though the patients do not stay cured; even though they are unable to do without some form of apparatus, still they are in a very different condition from what they were before. They are like the average man with a reducible hernia; they go about, and do what everybody else does. I would not be considered as saying that the radical cure is not a radical cure. We have not perfected the operation yet. It is not, in the majority of cases, I think, a radical cure. There is a large number, and an increasingly large number, of cases where the radical cure does probably take place, but the group of cases which Dr. Ela alluded to, those that Dr. Bull reported (and perhaps there is no more skilful operator than he), shows that there is a very large number of cases where radical cure does not take place. When we can all carry out great care and great nicety, such as Dr. Cushing used in his operations, perhaps we shall get more satisfactory results. There is a good deal, of course, that can be

said upon this subject, but that is hardly the topic of discussion this afternoon. I merely wish to place myself in proper position upon that point.

There is another point to which I would like to refer again, and that is the statement that I made that large irreducible hernias did not become strangulated. You have since heard mention of several cases of strangulation. But these are not exactly what I meant by large irreducible hernias. I mean the largest variety, where four fingers can be put into the ring. In such cases I think you will find that authorities state, and certainly it is my experience, that strangulation is exceedingly rare. It is more likely to occur in large umbilical hernias, I think, than in large scrotal hernias. Perhaps some sudden addition of intestine to the contents may bring on strangulation. Certainly in umbilical hernias of considerable size I have seen strangulation.

Dr. C. W. Galloupe:—I would like to add, in reference to what Dr. Warren just said, that I have seen a patient, a large woman, weighing 300, with an enormous umbilical hernia. It has been three times strangulated. I worked over it a quarter of an hour, and it became smaller. It increased suddenly, and yet the new accession had been reduced rapidly, and everything was all right. I have not been able to get a sand-bag on it yet, as I want to do. It remains about the same size, except that the accessions occur and disappear again.

One statement that I made I should like to explain a little. In speaking of manipulation of these tumors being necessarily gentle, I do not mean that a good deal of force should not be used, because it can be used. After the strangulation is reduced, the bowels being mostly out of the way, and the chief obstacle being adhesions, a great deal of force can be used. I have seen Dr. Warren use a great deal of force with the best results, and in these cases I do not see why the time should not be shortened very much indeed, —instead of giving it two to eight weeks, giving two weeks, then administering ether and applying a great deal of force. But this should be applied gently. Gentle force does no harm at all in these cases.

The case that Dr. Chapin reported, there being a cyst in

the case of hernia, was somewhat parallel to that which I reported, where there was a fibrous growth some two inches beneath the ring. I could reduce that, but it would pop out after the patient was about. That case of Dr. Chapin I believe would lead us to think that we need not be too particular about returning every part of the hernia, if the essential part is returned.

Dr. H. W. CUSHING :—I do not think that the method by operation has received the proper amount of attention. There is a large number of cases in which operative treatment, properly carried out, according to the methods which we have now at our disposal, is decidedly advantageous, especially in the case of children and young adults. It enables the patient to select the most comfortable time for such a procedure, and have it done under the most favorable circumstances. It is quite a different state of affairs that we get when the hernia becomes strangulated, for then the operation has to be performed under the most disadvantageous conditions. The advantages which are obtained are very great, especially where the patients are either children or young adults. If the operation is successful, they are rendered practically independent of apparatus the rest of their lives. Then, if the operation is unsuccessful, so far as a radical cure goes, the patients are placed where they are much more comfortable, and can be much more efficiently treated by apparatus. If the early operative treatment were to be adopted, I think these extreme cases which are to-day coming up would cease to appear. I would not defend a system of reckless surgery, but I think that many of these cases would be placed in circumstances where they could be much more satisfactorily treated than if allowed to continue untreated surgically.

The Chairman, Dr. D. W. CHEEVER, of Boston :—The case of Dr. Chapin, which was a very interesting one of strangulation of the sac, will be found depicted and described in Astley Cooper's great folio, and he recognized, I remember, as one of the distinct perils, that, although we may have cut up the external structures and think we have relieved the strangulation, there is still liable to be a pinch

in a certain number of cases, high up in the sac itself, and hence the rule that the finger should be passed into the abdominal cavity and freely pushed about, to be quite sure that no nipple, so to speak, of intestine, remains, which is not perfectly free from adhesions.

With regard to the size which these hernias sometimes attain, it is interesting to recall the case, considered classical, of Gibbon the historian, the pyloric orifice of whose stomach was outside the external abdominal ring, and all the stages of his alimentation were carried on in a bag between his legs. That again is a good illustration of the fact that when a hernia becomes large enough it ceases to be very dangerous. The application of the bag is very comfortable in a good many cases. I have had several such. I have one still under observation which I have been knowing to for between fifteen and twenty years. The patient gets about and leads a fairly active life. He has had no great discomfort, and has reduced his hernia considerably by the aid of a small bag which is trussed up in various directions by three or four straps of elastic webbing. In that way he can adjust the pressure, and gets on comfortably. In another case of a large hernia, where, on account of the obesity and age of the patient, and impelled also by the comfort with which this other man had gotten on, I advised a similar bag, the result was not so good. His history was interesting as illustrating the danger of these cases. He went on a journey, and was returning on the night train. The train stopped for a few moments at one of the stations where refreshments are taken with lightning rapidity. While he was eating, the train started, and he ran to catch it. He succeeded in catching hold of the rail, and at the same time felt a severe pain and an additional increase in his hernia. He got into his berth and rode all night in agony. Then he went a little farther to reach his own home. He developed symptoms of strangulation, gangrene, and died while he was being operated upon to relieve the strangulation.

These are two cases which are typical—one perfectly comfortable on account of the care which the man takes, the other dangerous on account of the want of care which the man took at that moment. That seems to me to prove

that these cases are never very safe. The measures of treatment, according to the papers we have heard read, seem three. One is to carry the hernia in a bag. The second is compression, which certainly is very successful and perfectly safe, and depends for its success, apparently, upon the patience of the victim of the hernia, who is willing to lie in bed, and the perseverance of the surgeon. The third is operation.

Now of course we shall all agree that the majority of these hernias, in the laboring classes, where they exist most frequently, do not present themselves to the surgeon until they have stoppage. Patients go about with them; they work with them; they do not mind a little difficulty, a slight attack of pain, but when they present themselves to the surgeon or the hospital it is because they have already strangulation. In these cases we have no opportunity except to operate. The cases that have been read show that the percentage of recoveries from operation is very large. Few die. Those who do, die because the bowel is already sphacelated by pressure. Almost all of them recover, and they recover with the opening closed up temporarily, if not permanently. They can work, and, if they are not cured, at any rate they are relieved so that they are perfectly safe.

It was thought, in bringing this subject forward, that the subject of irreducible hernia would elicit just that class of papers which it has brought out, and which I think are very valuable. We all know what to do for strangulated hernia; everybody knows the symptoms, and no one hesitates to use the knife, but it is this class on the border line, which are not severe enough to demand operation, to which various modes of treatment may be applied.

With reference to two of the cases mentioned, which Dr. Gay reported, where the sutures came out, I contrast them with the case of Dr. Cushing where such an admirable result was gotten after prolonged sewing up of the various tissues, and I cannot help thinking that the age of the patient has something to do with the result. My patients being 62 and 68 years of age, their powers of resistance were small. I cannot think the cutting out of the sutures was due to the material used, because the same silk, prepared in the same way, was used in two other cases, and

remained permanently in position for a period of many months. I think the age of the patient is a great factor in the chance of permanent recovery. I, too, was very much impressed by the statement of Dr. Bull, in which he gave over sixty per cent. of relapses in 134 cases, operated on in four different ways.