

TRANSACTIONS OF THE PHILADELPHIA ACADEMY OF
SURGERY AND THE NEW YORK SURGICAL SOCIETY

Conjoint Meeting Held February 8, 1928

DR. ASTLEY P. C. ASHHURST, in the Chair

DR. CALVIN M. SMYTH, Recorder

POST TRAUMATIC ANKYLOSIS OF SCAPULA TO RIBS

DR. J. TORRANCE RUGH presented a man aged forty-two years, who was first seen April 6, 1925, because of limited movement in the right shoulder and some pain on attempted work. February 10, 1925, while working, he fell, striking heavily on his right shoulder and back. The arm was said to have been dislocated and promptly reduced by a physician and the arm bandaged for a while. An X-ray was taken which showed fracture of the sixth and seventh ribs under the lower portion of the scapula but under adhesive strapping these promptly healed. When the bandages were removed and mobilization of the arm and shoulder was begun, the scapula was found to be fixed though scapulo-humeral movement was fairly free. When the reporter first saw him, an X-ray made nearly six weeks after the accident, showed a dense area of bone deposit under the scapula and over the site of the rib fractures. This area measured about 4 cm. vertically and horizontally and was of equal density throughout. He also presented several deep scars in the skin on the right side of his spine between the scapula and the vertebral spines which the patient said came from abscesses in that part following typhoid fever at the age of nineteen years. Careful inquiry revealed that there had been no limitation of shoulder and scapular motions and that he had played ball for years, pitching part of this time. One would naturally be suspicious that the abscesses rather than the injury might have caused the fusion but the very clear and positive history of free use for the intervening years seems conclusive. Attempts at mobilization of the scapula were made by masseurs but failed. May 15, 1925, a curved incision with the base external was made about the scapula, the skin reflected back about two inches and a flap of fat then lifted with the base toward the spine and ventral to the posterior scapular border. The fascia and the rhomboid and latissimus muscles were then loosed from the scapula, and directly beneath the scapula was found a plate of bone holding it to the ribs. With a broad osteotome, the scapula was first loosed from the bony mass and lifted upward and then the plate of bone was cut loose from the ribs. It was about four cm. in both directions and one cm. in thickness. After smoothing both denuded areas, a flap of fat was slipped beneath the scapula and held in place by several sutures. The latissimus and part of the rhomboid were then sutured in place and the skin closed. Recovery was uneventful and in two weeks mobilization and massage were begun. Improvement has been gradual and steady until now the arm has even more free action than the left one.

The interposition of the subscapularis, the serratus magnus and coarse areolar tissue furnishes most effective protection against fusion between the scapula and the ribs, but the only explanation in this case is that the rib fractures must have penetrated the muscle structures and injured the under surface of the scapula as well.

DR. FREDERICK BANCROFT, of New York, said that the formation of bone may be divided into repair of bone following injury and infection, experimental extra-skeletal bone, and pathological bone. Experimentally bone has been produced in animals by ligating the renal vessels and placing omentum over the kidney. In one or two months sections of the kidney show areas of true bone formation and areas of calcification occurring in the kidney parenchyma. This bone is true lamellar structure with bone cells and Haversian canals. In rabbits it may be produced by scraping the adventitia of the aorta and painting it with either silver nitrate or copper sulphate. Doctor Neuhof, working in the surgical research laboratories of the College of Physicians and Surgeons of Columbia University, has shown that in placing fascia lata transplants to cover defects in the bladder, bone is almost universally formed in these transplants. This tissue, both microscopically and chemically, resembles skeletal bone.

Bone is born pathologically in almost every region in the body. It occurs in the ovaries, in the lymph-nodes, in the adventitia of arteries, and in thyroid tumors. It frequently occurs in old hæmatomata. If then we are to produce any theory for bone formation, it must be broad enough to cover repair of bone following injury and infection, experimental and pathological extra-skeletal bone. There are three main theories for bone repair: 1. Periosteal and endosteal formation of bone. 2. Osteoblastic formation of bone. 3. Deposition calcium salts on the connective tissue stroma. The periosteal theory cannot account for the extra-skeletal bone formation. It is true that periosteum is an ideal site for bone formation. It has an outer fibrous layer and an inner layer of areolar tissue with finely divided blood-vessels. In the speaker's study of microscopic sections of bone repair he found that bone is laid down in areolar tissue in the extravascular areas. One will see a small blood-vessel surrounding which is an area of areolar tissue, and at the perivascular area is new bone. The osteoblastic theory assumes that osteoblasts are set free from the bone lacunæ, that they multiply and secrete new bone. It is difficult to account for the localization of these osteoblasts in fascia lata transplants of the bladder, such as seen in Neuhof's work. If fibroblasts may turn into osteoblasts by a process of metaplasia, all types of bone formation may be accounted for. The third theory assumes that through the change of the hydrogen-ion concentration calcium salts are deposited on the stroma or connective tissue, but the cell, the fibroblast, is only a passive agent in the production of new bone. The fibroblast then becomes a bone cell through functional adaptation. This theory, Doctor Bancroft believes, is the most convincing—and the simplest. It means that if the proper environment is created, bone formation will inevitably follow.

In Doctor Rugh's case, the etiological factors were trauma—resulting in the fracture of ribs—and extensive hemorrhage in the surrounding muscles, diminished blood supply due to the Velpeau bandage, which produced diminished expansibility of these tissues, as on one side there were ribs and on the other side the scapula. These factors are ideal for the formation of bone.

UNDESCENDED TESTICLE

The advance in our knowledge of bone formation is going to come through bio-chemical studies rather than through the microscope. In the microscopic study of bone repair there is no clear differentiation of the cellular elements. One sees definitely connective tissue and cartilage cells, bone cells and connective tissue cells, but in the intermediary areas it is difficult to tell whether a cell is a connective tissue cell or a bone cell, a connective tissue cell or a cartilage cell, and a cartilage cell or a bone cell. It is for this reason that it is hard to assume that there is any specific cell in bone production.

UNDESCENDED TESTICLE—OMBRÉDANNE'S OPERATION

DR. ASTLEY P. C. ASHHURST presented two lads on whom he had operated, by Ombrédanne's method, for undescended testicle.

CASE I.—Was fifteen years of age. His right testicle lay in the inguinal canal visible as a small swelling. Operation June 29, 1927, at the Episcopal Hospital. After making the usual incision for inguinal hernia, and dissecting the testicle and cord free from the internal ring and inguinal canal, a second incision was made transversely into the left half of the scrotum, and the scrotal septum incised just enough to permit pulling the right testicle through into the left scrotum. The opening in the septum was closed snugly around the cord just above the testicle, and the scrotal incision closed; the inguinal canal was closed without transplanting the cord after excising the sac of the indirect inguinal hernia.

The patient now presents a well formed scrotum, both testicles lying loosely in its left half. The boy is unable to tell on palpation which of the two testicles is the right. The testicles lie more or less one above the other, and as the upper testicle is smaller, it is probable that this is the right testicle.

CASE II.—The second patient, aged seven years, had both testicles undescended: the right could be felt in the inguinal canal, but the left was not palpable; the scrotum was undeveloped. Operation October 12, 1927, at the Episcopal Hospital. Both inguinal canals were opened: on the right the epididymis was found at the external ring, with the testicle in the inguinal canal; on the left the testicle (smaller than normal) was adherent at the internal ring. There was a well formed hernial sac on the right but none on the left side. After dissecting both testicles and spermatic cords free from the inguinal canals and internal rings, a transverse incision was made across the front of the small scrotal pouch, exposing both sides of the septum separating the left from the right sides of the scrotum. This septum was then perforated, and the left testicle pulled through the perforation into the right side of the scrotum and the right testicle through the same perforation into the left side of the scrotum. The opening in the septum was then closed snugly, around the crossed spermatic cords; the incision in the scrotum was closed; and both inguinal canals repaired as in the first case, after excising the hernial sac on the right, and repairing the parietal peritoneum on the left where it had been opened to permit bringing the testicle down toward the scrotum.

The boy, who is otherwise well developed for his age, now presents both testicles normally mobile in a well developed scrotum. The left testicle (lying in the right scrotum) is still somewhat smaller to palpation than is the right.

DOCTOR ASHHURST added that this method of operation for undescended testicles was described by Ombrédanne in 1911, but it seemed to have attracted

little attention in this country. He was impelled to put these cases on record because of the report by Dr. K. P. A. Taylor at the December, 1927, meeting of the Academy of an operation done in two stages: the testicle first is sutured to the patient's thigh, to keep it from retracting into the inguinal canal; and is cut loose from the thigh only after some months. Doctor Ashhurst had found it difficult to keep the testicles well down in the scrotum after operations on cryptorchids, until he had adopted Ombrédanne's method, which has the advantage over that just mentioned (known by the name of Torek) of being completed in one stage, besides being just as efficient.

DR. DEWITT STETTEN, of New York, said that personally, he had had no experience with Ombrédanne's operation for undescended testicle because he has always been quite well satisfied with the method described by Davison in *Surgery, Gynecology and Obstetrics*, in March, 1911. This consists in complete division of the posterior wall of the inguinal canal, including ligation and division of the deep epigastric vessels, thorough isolation and mobilization of the spermatic vessels and the vas, and a lowering of the entire cord by a reduction of the looping of the vessels and vas to their straightest and most direct course possible, a Ferguson hernioplasty, and then subsequent gentle elastic traction on the testicle in the scrotum by a rubber band. At the Lenox Hill Hospital a number of the surgeons, notably Doctors Torek, Eggers and H. W. Meyer, have been using the Torek two-stage operation, or as it is sometimes called, the Keetley-Torek operation, with exceptionally good results, as Doctor Meyer has reported in *Surgery, Gynecology and Obstetrics* in January, 1927. They had not been very enthusiastic over the Bevan operation, particularly since Moschowitz showed experimentally that the vitality of the testicle was jeopardized by ligation of the spermatic vessels, and that, practically, atrophy of the testicle was not an infrequent sequel. Further, they had had at least one case at the Lenox Hill Hospital several years ago, in which there was a complete sloughing of the testicle following this operation. Two theoretical objections might be offered against the Ombrédanne method of transscrotal transplantation of the testicle through the septum to the opposite side of the scrotum, are: 1. In unilateral cases it tends to displace the normally situated testicle somewhat higher than it should be, and, 2. In bilateral cases it requires an operation on both testicles at the same time. This latter feature the speaker considers particularly objectionable as he believes that one testicle should be operated on at a time to see what the end result will be, particularly as regards the vitality of the gland, before the operation on the other side is attempted. If necrosis of the testicle occurred after the first operation, which is by no means impossible, then it would be inadvisable to risk operating on the other side—for, although it is generally conceded that the possibility of eventual spermatogenesis in even a reduced ectopic testicle is doubtful, it is also more or less agreed that such a testicle is not without value in influencing the sexual development of the individual through its internal secretion. If there is a lack of development of the scrotum, the Ombrédanne method is definitely contraindicated. This applies particularly to the bilateral cases. This lack of development of the scrotum

is especially well taken care of by the Torek operation. A serious practical objection that has been advanced against Ombrédanne's technic and that has led a number of surgeons to abandon it, has been that in cases in which the transscrotally transplanted testicle becomes necrotic, an infection may develop which may involve and threaten the normal testicle.

DR. FRANZ TOREK, of New York, said that these two cases show that the testicle which was brought out of its former place has remained in the scrotum; but the result in these two cases is not ideal. In the case of the larger boy, the transplanted testicle is at a position about midway between the position of the normal testicle and the pubis, too high up for an ideal position. In the case of the smaller boy, both testicles are very high up, close to the pubis and especially the right one which can scarcely be felt. It is probably a case of atrophy which no surgeon can control by any operation. The ideal result of operation is one which brings the testicle down into the bottom of a well-shaped scrotum. The speaker never practices the Ombrédanne operation. Looking at it from a clinical standpoint, as Doctor Stetten has pointed out, it has occurred that the transplanted testicle occasionally becomes gangrenous; that ought not to happen, but nevertheless it has occurred a number of times. If a testicle is transplanted, that will become gangrenous, into the opposite side—where there is a normal testicle—the risk is taken of also destroying the other testicle by infection, and this may be a theoretical objection to the operation. In the case of both testicles being undescended, as in the smaller boy, there is practically no scrotum, or very little, and the testicle cannot be expected to be well down in the scrotum, if there is no such receptacle to hold it. There is no better way of making a scrotum than by attaching the scrotum to the thigh, as in the Torek operation. The fact that the testicles are crossed can not form a better scrotum. The cases operated upon by the speaker's own method have been perfect operative successes. One cannot make a sterile person function again—although in one case the operation was done on a married man who eight years afterward became the father of a child, so that there is a possibility that the nutrition given by the attachment to the thigh may be of some value.

DR. FRANK S. MATHEWS, New York, said that it would be to the advantage of any surgeon interested in the general subject of testicular descent and the function of the scrotum to consult an article by Carl Moore in the first number of the *Quarterly Review of Biology*, called "Biology of the Mammalian Testis and Scrotum." The question of the migration of the testis into the scrotum in some animals and its retention in others has always seemed difficult to explain. Comparative anatomy does nothing to clear up the subject. Moore's paper, covering previous work and his own contributions to the subject, make interesting reading. It seems demonstrated that the scrotum is a heat-regulating mechanism, the absence of fat, abundance of sweat glands and the cremasteric reflex facilitating its functioning. Differences of temperature in the scrotum and abdomen have been recorded from one to five degrees centigrade. A thick covering has been applied to the

scrotum in animals and, on killing them a short time afterward, all the cells (except the Sertoli cells) lining the tubules are found disintegrated. Testes of adult animals transplanted under the skin of the abdomen always show disappearance of spermatic cells. If the transplantation has not too long continued, replacement in the scrotum will end in regeneration. Wagenstein in the March, 1927, *Archives of Surgery* has added something to the subject. He has shown that there is comparatively little growth in the testis from birth up to ten years. After this, when maturation has taken place, if the testis is either replaced in the abdomen or even under the skin of the abdominal wall, the degeneration which results cannot be recovered from by returning the testis to a normal scrotum. A Japanese transplanted both testes under the skin of the abdomen and constructed a cooling apparatus which he applied to one of the testes with the result that degeneration in the tubules was prevented on the side to which the cooling apparatus was applied. It would seem as though in transplanting the human testis into the thigh of the child by the Torek method, no great harm to the organ would be done but that if the same operation is performed after puberty, that spermatogenic function would be destroyed.

BURN SCARS OF CHIN AND NECK. TUBE-PEDICLE FLAP

DR. ROBERT H. IVY presented a man, aged thirty, referred by Dr. Calvin M. Smyth, Jr., September 8, 1927, with marked scarring and contractions of chin, lower lip and neck, resulting from burns when he fell into an open fire-place eight years before. He had already had about twenty-five operations. The chin was still bound to the chest by dense scars, obliterating the profile of the neck entirely, and causing some prolapse of the lower lip. He has been operated upon in several stages as follows:

September 16, 1927. Preparation of tubed pedicle on left side of back along inner border of scapula.

September 30, 1927. Flap raised on back at lower end of tubed pedicle and sutured in original bed for delayed transfer.

October 14, 1927. Excision of scar tissue beneath chin and flap from back swung by tubed pedicle over left shoulder and sutured into raw surface on front of neck.

November 4, 1927. Proximal end of tubed pedicle severed and swung around into chin and lower lip above flap on neck.

November 18, 1927. Loop between two ends of transferred tissue divided and sutured smoothly in place. By this means the contracture of the neck was abolished, the profile of chin restored, and the lower lip brought up into place. The flap from the back has proved very satisfactory in this and another case in furnishing the desired amount of tissue from a concealed part of the body. It was unnecessary to fix the head and chest by a plaster case during the transfer, but in a child on whom a similar operation was successfully performed plaster-of-Paris fixation had to be used.

BONE GRAFT OF LOWER JAW AFTER RESECTION FOR TUMOR

DR. ROBERT H. IVY presented a man, aged twenty-eight, who gives a history of having a large portion of the left side of the mandible resected by Dr. John B. Deaver at the age of eight for a tumor. When first seen he presented a healed defect of the left side of the lower jaw three inches in length. There remained on the left side a small portion of the ascending ramus.

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The right side of the jaw and chin had been drawn over toward the left side with marked asymmetry of the face, and the remaining lower teeth were drawn inward and backward. It was possible by traction to pull the main segment of the mandible forward and to the right into fairly good relationship and fix it in position by means of metal splints fastening the upper and lower teeth together. These splints were made by Dr. E. F. Axt, of the University of Pennsylvania School of Dentistry, who specializes in this work. The small ramus fragment on the left side was left free without splinting. On December 9, 1927; nearly nine weeks ago, by an incision beneath the left side of the jaw, the ends of the mandibular fragments were exposed and freshened, and a gap three inches long found between them. A bone graft from the crest of the right ilium was placed in the defect, in good contact with each fragment, and fastened in place with fine brass wire sutures passed through holes drilled in the bone. The wound healed without trouble. At the end of twelve weeks the splints will be unlocked, and it is expected that union will have taken place. It will then be possible to insert artificial dentures to supply missing teeth, restoring function of mastication and also improving the appearance of the patient.

Of all sources of bone graft for defects of the mandible, the crest of the ilium has been most satisfactory in at least twenty-five cases.

DR. GEORGE SEMKEN, of New York, remarked upon plastics after removal of extensive cases of cancer of the mouth and chin and after severe burn cases. He believes the ideal method is to use a sliding flap because the blood supply is preserved and œdema avoided. Another advantage is that instead of having four sides of scar tissue there are only three and the fourth is for future growth. This is important in young patients, because in a child a square of scar tissue remains unchanged throughout life, and as the skin grows about it, it will cause the flap to raise and puff out. It is important to place these flaps behind the line of motion, so that they do not interfere with motion and will not produce a keloid growth. Doctor Semken has tried to systematize a procedure whereby with one operation, the case can be completed. This is not possible in such severe cases. Where possible in work of this kind, the grafts are taken from the skin of the anterior chest which is almost like that of the neck and face in character and will not grow hairs and on which large sebaceous follicles will not appear, and which is more nearly like what the patient has lost. If the arm can be raised to the head the pedicle is brought to the face and the blood supply remains intact; this is more difficult with a long pedicle, because the longer the pedicle the less liable it is that the blood will go through. It is desirable to have the flap placed behind the lines motion. Dental prostheses have proved of great assistance in securing better results in these cases.

Regarding the bone graft in the second case, the speaker has been impressed at the ease with which a transplanted bone graft will heal and functionate. It is not so difficult to produce fixation but to produce it where the bone has been destroyed.

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DR. JOHN H. JOPSON presented three patients operated upon for gastric ulcer by the Balfour method, cautery excision of the ulcer and posterior

gastro-enterostomy. He also made brief reports of three other cases treated by the same operative technic. The present drift of surgical opinion is decided toward a partial gastrectomy in the treatment of gastric ulcer. He did not wish to be understood as advocating the Balfour method as a general substitute for partial gastrectomy. The problem was a different one from that of duodenal ulcer, and he believed that Philadelphia surgeons were, as a rule, satisfied with the conservative measures in the treatment of ulcer of the duodenum. His own limited experience coincided with that of surgeons like Moynihan and Balfour, who, working in large clinics with abundant material, observed satisfactory results following gastro-enterostomy for duodenal ulcer, with cures in 85 per cent. of their cases, and either with or without direct attack upon the ulcer itself. While subtotal gastrectomy has been advocated and extensively practiced in Europe for both gastric and duodenal ulcer, there is, as Balfour says, a wave of reaction against the sacrifice of large areas of a healthy organ as an indirect attack upon a benign lesion not situated in the stomach itself. This in spite of the fact that the mortality of partial gastrectomy is admittedly low in experienced hands.

With gastric ulcer the case is different. It must be remembered, as Moynihan has emphasized, that one is dealing with a much rarer lesion. The percentage of recurrences after conservative methods has been high. These include simple excision of the ulcer, a posterior gastro-enterostomy, and a combination of the two, using knife or cautery to remove the ulcer. Sleeve resection he would reject. A few undoubtedly recover after gastro-enterostomy alone; excision alone is probably less beneficial. A combination of the two, and use of the cautery for excision, is superior in its results to either alone. The cautery should not be used for puncture only in accessible ulcers, but should be used as a cautery knife to remove the ulcer and its inflamed edges as well. The greatest indication for its use as a substitute for gastrectomy which is the operation of election in the majority of cases, would seem to be in those ulcers on the posterior wall and lesser curvature close to the œsophagus, where gastrectomy would be difficult, and where oftentimes the portion of stomach remaining would be exceedingly small. In such cases the radical operation partakes of the nature of a total gastrectomy, and trial of less radical measures certainly seems justified. On the other hand, small accessible lesions, easily mobilized, are considered by Balfour himself as favorable instances for the same treatment, by excision and gastro-enterostomy. Doctor Jopson was familiar with the objections urged against conservative treatment by Lewisohn and others and with the mortality statistics in which the deaths ranged from 1½ per cent. to 7 per cent. after subtotal gastrectomy, but he thought that it would be a good deal higher in the hands of surgeons whose experience in this field was not as large.

Of the three cases shown, all males, one was well after one year, and one after two years. The latter was a bleeding case, was transfused before operation, and had a subacute perforation on the posterior wall. During convalescence, the abdominal wound reopened because of deficient healing power, due to the patient's poor condition pre-operative. It was successfully closed by the technic of Shipley of Baltimore. The third case, first operated upon four and one-half years ago, relapsed, and was again operated upon in October, 1927. The ulcer was then very large, greatly indurated, on the lesser curvature, and close to the œsophagus. Sections removed by the cautery showed it to be nonmalignant. It was sutured with difficulty, and an enterostomy established for post-operative feeding. He has done well since, after a course of treatment by the Sippy method, and at present is in fair health, without gastric symptoms, so long as he adheres to a simple diet.

Two other cases are well. One, a woman, had a cholecystectomy at the same time the stomach was operated upon. A sixth case, also a woman, reported as working most of the time and with some symptoms, controlled by diet. She also was a transfusion case, had a decided tendency to hour-glass contraction at the time of operation, and today would be treated by gastrectomy and not by the conservative operation, if her condition permitted.

DR. RICHARD LEWISOHN, of New York, said that his experience at Mt. Sinai Hospital, has gradually forced him to adopt more radical procedures after having tried all the conservative methods, because the conservative methods were not satisfactory. He did local excisions a great many years ago and got recurrences; he did them without gastro-enterostomy and with gastro-enterostomy and found that the results were equally bad. He then tried sleeve resections and did not obtain very good results either. A large percentage of cases got hour-glass formation of the stomach and came back with recurrence of symptoms. Thus he was forced to adopt partial or subtotal gastrectomy for gastric ulcers and has been highly pleased with the results.

Local excision does not change the acidity of the stomach, and the patient still has the same underlying cause. The cautery method is based on the assumption that an acute perforation causes a cure of the gastric or duodenal ulcer. The speaker's statistics on that point indicate that suture of an acute perforated gastric or duodenal ulcer with or without gastro-enterostomy fails to cure the patient in 39 per cent. of the cases; in other words nearly half of the patients were not cured and still had ulcer symptoms. Partial gastrectomy not only removes the ulcer, but the ulcer-bearing area with the accompanying gastritis and while the results from partial gastrectomy for duodenal ulcer have not been 100 per cent., Doctor Lewisohn is willing to state that in gastric ulcer they have been perfect. The procedure is not difficult if confined to those ulcers which are situated near the reëntrant angle; in the very high ulcers, at the cardia, it is wise to be conservative, because a total gastrectomy is certainly a very serious operation and not often attempted. Partial gastrectomy does not remove a normal organ, but a diseased organ and does something for the patient which no other method can do, *i.e.*, it establishes post-operative achlorhydria, which seems to be the best means to prevent the recurrence of the ulcer. Doctor Lewisohn demonstrated lantern slides of a very interesting case, illustrating the life cycle of an ulcer. This patient was explored in 1922 for a large gastric ulcer, located right at the cardia. It was thought that the ulcer was carcinomatous and inoperable and nothing was done. The slides show that between 1922 and 1925 the ulcer disappeared. X-ray pictures taken in February, 1927, show a recurrence of the ulcer. Röntgenograms taken six months later show no evidence of an ulcer. Had gastro-enterostomy been done on him or if he had been subjected to a Sippy diet, one would have thought that surgical or medical treatment effected the temporary cure.

DR. A. O. WHIPPLE, of New York, said that he had observed five patients in the Presbyterian Hospital in New York, who illustrate a point

which he thinks should be borne in mind, *i.e.*, too much credit should not be given to any one particular form of therapy for a lesion in which several forms of therapy give good results. In these five patients it was thought for one reason or another that it would be unwise to operate. They all showed definite penetrating ulcers in the lesser curvature; some were high and some were slightly lower. They were placed under treatment; in two cases very thorough medical treatment and in the other three cases very spasmodic treat-



FIG. 1.—Serial tracing of an ulcer of the lesser curvature, treated by rest in bed.

ment—and in all five cases the ulcers disappeared. Three of the cases later came to the post-mortem table—this does not mean that they died from the ulcers—one patient committed suicide because of financial losses, another died in a Sanitarium for the insane, and a third died of carcinoma of the bronchus. The other two patients have apparently remained symptom-free. In the three cases which came to post-mortem, one showed complete healing of the ulcer, nothing remained of the previous lesion; in another there was a definite defect in the mucosa which undoubtedly if it had been watched for some time might have showed what Doctor Lewisohn has shown.

The speaker has not had a very wide experience with the

Balfour method but has had some remarkably good results in five out of eight cases. One case which has been operated upon by the Balfour method without gastro-enterostomy is free from symptoms after six years; on the other hand, three out of the eight cases have not shown good results; two have been reoperated and subtotal gastrectomy performed. Two cases had previously had gastro-enterostomy. The speaker regards the operation as a valuable procedure in the cases which do not lend themselves to a subtotal gastrectomy after a thorough course of medical treatment. If an exploratory operation is done and removal is attempted, Doctor Whipple believes that subtotal gastrectomy gives a better result than the cautery method. If the ulcer is high or massive, the cautery method is an excellent procedure.

DR. FREDERICK BANCROFT, of New York, said that he had seen several cases diagnosed by Dr. L. G. Cole at the Fifth Avenue Hospital, where there has been

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a large lesser curvature ulcer. Doctor Cole advises putting these patients in bed without any specific dietary treatment, and they are X-rayed every three days. It is interesting to note the way these ulcers repair. There is a gradual ingrowth from the edges of the ulcer, producing a type of constriction. (See Fig. 2.) After this constriction occurs, repair proceeds by diminishing the depth of the ulcer. From the study of these cases we have formed a precept that if there is no diminution in the size of the ulcer after three weeks' rest in bed it becomes surgical. In six out of seven cases so observed, healing is shown by the X-ray to have occurred within four weeks' time by rest in bed and medical treatment.

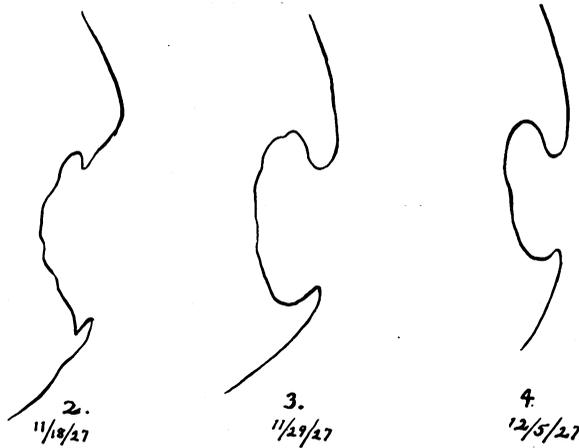


FIG. 2.—Serial tracings of an ulcer of the lesser curvature, treated by rest in bed.

DR. JOHN H. GIBBON recalled that two years ago before the joint meeting of these societies, he presented a man upon whom he had performed a gastro-jejunosomy some years before and who had had subsequent bleeding. At that time Doctor Gibbon thought that the patient had a jejunal ulcer. No jejunal ulcer was found, the old duodenal ulcer had apparently healed. Pylorotomy was done at the time. Doctor Lewisohn said that the patient would not be well, he thought, until a subtotal gastrectomy had been done. Today the patient

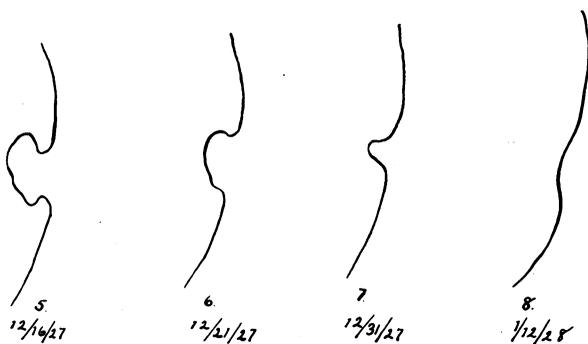


FIG. 3.—Serial tracings of an ulcer of the lesser curvature, treated by rest in bed.

is perfectly well. He had no medical treatment. With Doctor Whipple, the speaker agrees that it is a mistake to try to have one operation to cure many things. Subtotal gastrectomy is the best procedure in gastric ulcer but there are cases where smaller ulcers can best be excised by the cautery.

DR. JOHN H. JOPSON said that if these cases are so diseased, as Doctor Lewisohn says, it is remarkable that they can do so well without treatment of any sort. There were two more patients in this series, who were unable to be here; one a woman operated upon in 1926, and another, a man operated upon by this method who later returned with recurrence of symptoms; he

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was given bicarbonate of soda and cascara and is at present symptom-free. One other patient had had an ulcer for fifteen years and now has hour-glass constriction of the stomach and should have a partial gastrectomy.

SURGERY OF THE PITUITARY LESION

DR. CHARLES H. FRAZIER read a paper with the above title for which see p. 1.

CLEFT LIP AND CLEFT PALATE

DR. WARREN B. DAVIS gave a résumé of 425 cases which he has recently reported in detail for which see the ANNALS OF SURGERY, vol. lxxxvii, p. 386.

DR. F. S. MATHEWS, of New York, said that the presentation of these cases showed the wisdom of having harelip and cleft palate cases operated on by specialists. The number of cases throughout the country is not sufficient to give all surgeons an adequate training and it is much better that one or two surgeons in each city should give special attention to the subject. The bearing of heredity in the etiology has received much confirmation. Davenport, in his "Heredity and Eugenics" illustrates this with a number of family trees. That the cause is inherited, is practically demonstrated by a number of cases where identical twins have shown the same defect. Ritchie and Davis have advised a change of nomenclature which involves abandoning the old name of harelip. It is in the interest of clearness of description to speak of cleft lip, cleft alveolus and cleft palate, qualifying these terms by the adjectives complete or incomplete and unilateral or bilateral. The cleft in the alveolus is the matter of first importance and where the alveolus is cleft, it makes it advisable to close the lip, not because of the importance of the lip in itself, but because the closure of the lip aids so much in moulding the alveolus and in closing or narrowing the entire length of the palate cleft. Doctor Mathews has used a wire suture in the alveolus to narrow the cleft there as much as possible, closing the lip at the same time to increase the effect of the alveolar suture. Following Moorehead, of Chicago, he has spent ten or fifteen minutes in digital manipulation of the alveolus immediately preceding the operation in very young infants. He has several times operated on the lip and alveolus in children only two days old. When they are two or three weeks old, they have usually lost more weight than normal children. In former years when he saw one of these children underweight and with sub-normal temperature, it was his custom to send them to the pediatric division of the hospital to improve their nutrition before operation. This never worked. They always ran down and they often died with intercurrent affections. Now he sends them home with the advice to build up their general condition and then bring them back to the hospital. He was glad not to hear any recommendation of Brophy or Lane methods. He thinks they have had their day. He believed the point emphasized by Brophy that these clefts are not associated by any deficiency of tissue is incorrect. In some cases, he thinks the lack is considerable. This is rather conspicuous in cases of bilateral cleft lip. When all the tissue available in the palate is used, we often have a

thin palate and one far too short to close off the pharynx. Lane's method has been abandoned pretty generally because of poor speech results. The thing to be kept prominently in mind in treating these cases is to so reconstruct the alveolus that chewing and nasal breathing will be possible and thus by establishing function, favor normal growth.

DR. FENWICK BEEKMAN, of New York, said that on the service of Dr. Carl Burdick, at Bellevue Hospital, they have gone through the many stages of operative procedures on harelips and cleft palates and have finally come to the conclusion that the type of operation which they now do and which is similar to that described by Doctor Davis, is the one which gives the best result. Without any doubt the time to operate is when the child is young for at this time of life the alveolus can be moulded. The alveolus in those individuals with single clefts usually has the normal curve in the side of the cleft. The other side has a curve which is less acute than normal and consequently the end of the cleft on this side of the alveolus is far in front of that of the other. This can be corrected by moulding it to the proper curve.

Brophy's operation by narrowing the palate did not overcome this deformity. For several years the speaker has been moulding the alveolus and holding it in place by passing a silver wire far back above the alveolus and around through the frenum of the lip, thereby holding the moulded alveolus in place. The lip is immediately repaired. The wire is removed in twenty days. The importance of early operation, that is at the time when the alveolus can be moulded, was demonstrated recently by a child with a large cleft in his alveolus, five years of age. In this case the alveolus could not be moulded and had to be fractured, wiring the fragments in to proper position. We have had the same experience as Doctor Mathews has had. A large number of the infants sent to the pediatric service having died from pneumonia.

DR. GEORGE M. DORRANCE said that he had had over 1000 reports abstracted and had gone over each and every one of them; all the operations in question are described three to five times. In the particular operation which Doctor Davis describes, the first part is after the method of Dieffenbach, and the second part after the method of Buhl. Many authors make the statement that they have used a particular operation in the past but have given it up. Very few say why they have given it up, with the exception of Passabaum who definitely states that if the soft palate is not long enough to touch the posterior wall of the pharynx when sewed together, then the operation is a failure and it would have been better never to have touched the palate, but to let a dentist put in an appliance which would have given a better result than a faulty operation. Concerning these cases with a short palate, Doctor Dorrance had seen three cases in one day where the palate was normal but could not touch the posterior wall of the pharynx. In such cases the speaker frees the palate all the way around to the alveolar margin and cuts the tensor palati muscle, allowing the constrictor muscle to pull the palate back. This leaves a hole in the front part of the palate which can be closed with a plate. But these cases can speak.

DR. ADDINELL HEWSON said that from an anatomical viewpoint if the process is broken so as to allow the tensor palati muscle to act in a straight line, it will have a tendency to bring the soft palate back toward the pharyngeal wall. It does another thing by relieving the ligaments to which are attached the superior constrictor of the pharynx and the buccinator muscle. The pterygo-mandibular ligament being freed from the sphenoid allows the lateral wall of the pharynx to come forward. It also allows the tensor palati muscle to bring the soft palate back toward the pharyngeal wall. Under these circumstances it would appear that the outline Doctor Davis has given should help materially in bringing the palate and pharyngeal wall together.

DR. WARREN B. DAVIS said regarding the choice of time for operation, that it should be done as soon as the child's condition warrants, from ten days to three or four months. The speaker has been doing these operations since 1914, and certainly the best articulation is in those cases in which the operations on the lip, alveolus and palate were completed before the child was two years old.

COMPLETE URINARY RETENTION IN A CHILD, NECESSITATING
CYSTOTOMY, EXCISION OF VESICAL ORIFICE OBSTRUCTION,
NEPHROURETERECTOMY AND RESECTION OF BLADDER

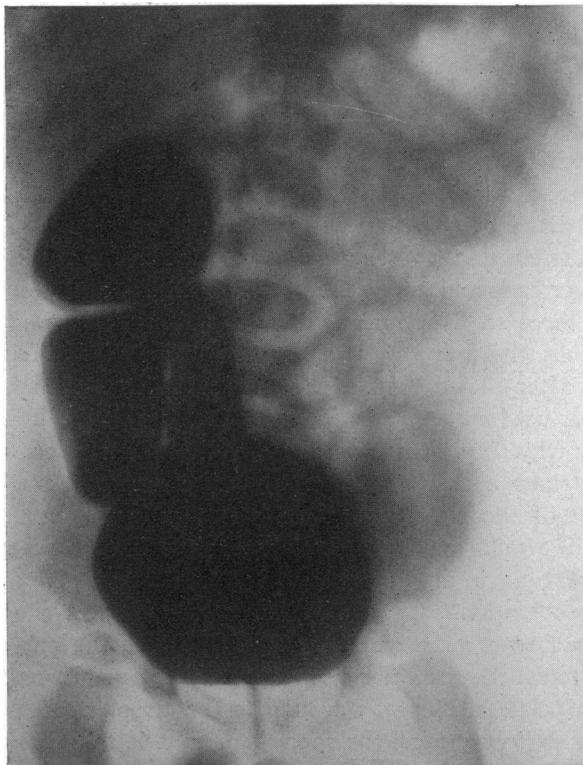


FIG. 1.—Urogram displaying large hydronephrosis and hydroureter, also dilated bladder.

DR. B. A. THOMAS reported the case of a male child, aged two years and ten months, who was admitted to the service of Dr. Charles A. Fife at the Presbyterian Hospital, October 13, 1927, and transferred to the genito-urinary service four days later. The case demonstrates extensive pathology, which is not infrequently found in children with urological lesions, the importance and feasibility of a complete urological investigation, and the successful result following rather extensive surgical intervention. During the past three months two other cases of complete retention of urine in infants had come under the speaker's care, one a two and a half weeks old female at the Babies' Hospital, in which the retention was the result of pressure from a

URINARY RETENTION IN A CHILD

greatly distended vagina, due to an imperforate hymen; the other a male six hours old requiring external urethrotomy, at the Graduate Hospital of the University, for a congenital stricture or impassable obstruction of the urethra.

The case under report was brought to the out-patient department of the hospital because of inability to urinate. The previous medical history was negative; the birth being a twelve-hour non-instrumental labor first pregnancy at full term. The family and social histories were also negative.

For two weeks prior to admission the child had some frequency of urination, associated with constipation, requiring milk of magnesia to insure a bowel movement. A week later the urinary difficulty became marked and the child passed no urine at all for two days previous to admission. Stools were possible only with enemas. There had been no vomiting, but appetite had been poor for a week or two, and the child was languid. A slight fever had existed for five days. The child had not complained of pain, but stooped over when he had a desire to urinate. He had lost some weight and on admission weighed not quite twenty-nine pounds.

On admission temperature was $101\frac{1}{5}^{\circ}$ F.; pulse, 128; respirations, 36. The child although well nourished and developed had a strained expression on his face. He constantly bent his trunk and held his lower abdomen, as though he were in great discomfort. The head, ears, nose, eyes and mouth were negative, except for pallor of skin, mucous membranes and hypertrophied tonsils. There was slight adenopathy of postcervical lymph-nodes. Lungs and heart were normal. Abdomen was distended and tympanitic and bladder dulness extended upward to umbilicus. No masses or enlarged organs were palpable. Peristalsis was present. Extremities and reflexes were normal.

Urination was impossible without catheterization, and that was successful

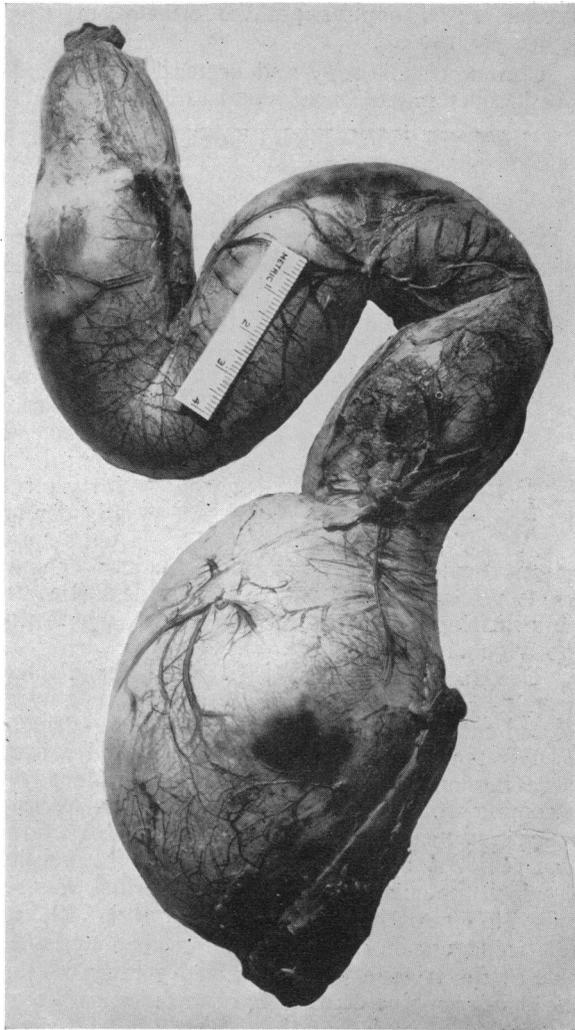


FIG. 2.—Hydronephrotic deformed kidney and hydroureter removed at second operation.

only with a metal catheter, evacuating a cloudy urine, loaded with pus and bacteria; otherwise negative.

Bacteriological examination revealed staphylococcus aureus in pure culture at first, later mixed with the colon bacillus. Tubercle bacilli negative. Blood count: Reds 3,710,000; whites 10,250; hæmoglobin 70 per cent.; small lymphocytes 24; large lymphocytes 7; polymorphonuclears 63; basophils 1; transitionals 1; eosinophils 4. Wassermann, negative. Blood urea nitrogen 17 mgms. per 100 c.c.

Chromoureteroscopy and ureteral catheterization were done October 19. The bladder mucosa was found to be greatly inflamed, œdematous, very red and covered with flakes of inflammatory exudate. In the region of the right ureteral orifice there was a large opening very suggestive of a diverticulum, but later determined to be the opening of a greatly dilated ureter.



FIG. 3.—Stump on lower end of ureter removed at third operation.

Indigocarmin, intravenously, appeared from the left normal ureter in twelve minutes; none appeared from the large opening on the right side. Both sides were catheterized: the urine from the left side was normal and sterile, that from the right contained thirty-five to forty pus cells to the field and culturally demonstrated the colon bacillus and staphylococcus aureus. The most

conspicuous abnormal condition in the bladder was a marked protrusion of the whole vesical mucosa on the right side below the large ureteral orifice, the same infringing on the bladder outlet, which presented a bar or lipping at the trigonal apex.

Urography was done two days later displaying the remarkable pyelouretero-cystogram shown in Fig. 1, defining a hydronephrotic kidney, a greatly dilated and kinked ureter and a much over-stretched bladder.

For ten days the child had not voided a drop normally, catheterizations were intolerable and had become a battle royal daily, urinary fever was becoming worse and the child more toxic. October 26 suprapubic cystotomy was performed and the bar or tissue obstruction at the neck of the bladder was removed by punch. The protruding or elevated floor of the bladder, in which the enlarged right ureteral orifice was situated, was definitely determined to encroach upon the vesical outlet. The usual pathology of a ureterocele could not be determined; it seemed that the whole mucosa of the right side of the trigone was flabby and greatly redundant and moved down upon the bladder sphincter, causing obstruction of the outlet. The rectum was found to contain about a handful of very hard feces (enteroliths). These were removed and the operation concluded.

The child made a very satisfactory recovery, picked up greatly in weight and strength and two weeks later, November 9, a nephro-ureterectomy was performed. (See Fig. 2.)

The gross specimen as described by Dr. John Eiman is as follows: "Specimen consists of a kidney and ureter. The pelvis of the kidney and the ureter are tremendously distended. The diameter of the ureter varies from 3.8 to 4 cm. It is kinked on itself so that it has assumed a sigmoid shape. The walls are a fraction of a millimeter thick. The pelvis of the

URINARY RETENTION IN A CHILD

kidney measures roughly 9 x 6.3 x 6 cm. The wall is paper thin. The kidney measures 7.8 x 2 x 3.8 cm. Some fat is adherent to the capsule. The kidney is smooth and glistening and purplish-red in color. Over the distended ureter and pelvis is seen a network of large and small purplish veins. The kidney, pelvis and ureter measure 19 x 10.5 x 6 cm. in their greatest dimensions. Contents of ureter and distended pelvis, clear straw colored urine. Specimen preserved intact.

During the operation the child's pulse most of the time was uncountable, and following the operation his temperature reached 105, but again he made a very satisfactory recovery. He was given all the time necessary to regain his health and strength before his next operation. During this time his bladder

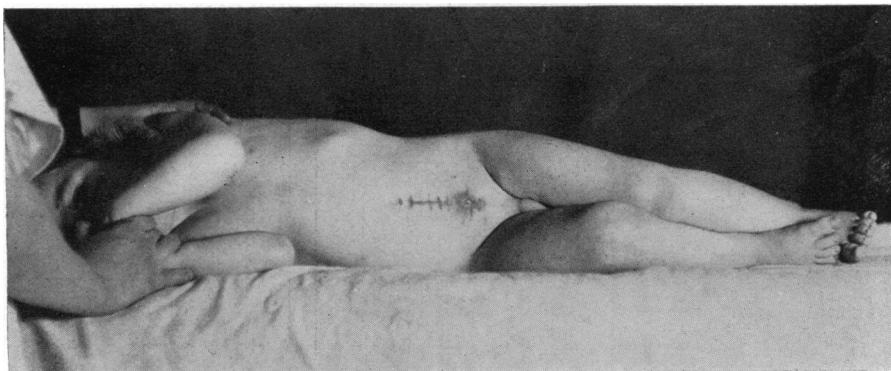


FIG. 4.—Ventral incision closed three weeks after final operation.

was drained suprapubically by a catheter, realizing that if the urine was not deviated in this manner, he would probably be unable to void because of the existing vesical pathology. However on December 21, his final and most serious operation, mainly removal of the lower end of the greatly dilated ureter with resection of the bladder, was performed as follows: As in the preceding operations, the anæsthetic was ether. The scar of the former suprapubic cystotomy was excised. The bladder was dissected free from the scar tissue of the former wound and mobilized, and the fistula enlarged. The right ureteral orifice about the size of the little finger tip was seen to be surrounded by redundant and very relaxed bladder wall, permitting bulging in the direction of the vesical outlet, which was obstructed, not allowing of the introduction of the tip of the little finger, and seemed to present a fibrous bar at the trigonal apex. This was removed with the punch. Marked granulations on either side of the vesical orifice were removed with the electrocautery. After packing the ureteral stump and bladder with gauze, they were freely mobilized. The bladder was then incised posteriorly and the ureteral stump removed by block resection of the adjacent portion of the bladder through all its coats. The posterior incision was closed by a Connell suture. The anterior incision by a running over and over suture about a large rubber tube. Another rubber tube, inserted on the right side of the bladder drained the resected area. The abdominal wound was closed in layers. The ureteral stump is shown in Fig. 3. Although the child's pulse was countless most of the time during the operation and his temperature reached 105 $\frac{3}{5}$ ° afterward, he nevertheless passed through a most satisfactory convalescence. Three weeks later the child began to void naturally. January 21, the suprapubic wound closed permanently and sounds Nos. 10, 12 and 14 F. passed

easily through the urethra into the bladder. The child's condition today as shown by photographs (Figs. 4 and 5), and weight curve (Fig. 6), is normal, except for a few pus cells in his urine and he is about to leave the hospital.

Comment.—There is no evidence to prove that this is a case of true ureterocele, caused by prolapse of the ureteral mucosa or of the entire lower end of the ureter into the bladder. Indeed, if so, it is certainly very atypical.



FIG. 5.—Lumbar incision prior to discharge from hospital.

In fact, congenital insufficiency of the ureteral orifice or regurgitant ureter, associated with an anomalous condition of the trigone and obstruction of the vesical orifice, could explain the pathology better. The thought of extensive congenital malformation is further borne out by the deformed remnant of renal tissue surmounting the hydronephrotic sac.

DR. H. BEEKMAN DELATOUR, of New York, said that this is a rare and unusual condition which he had never seen before. This case shows the importance of not being satisfied that one pathologic condition covers the entire case. Had Doctor Thomas simply removed the ureter and kidney and made no

further attempt at investigation, the patient would probably have dragged along for a time without the suprapubic wound healing and probably if at a later date the subsequent operation had been performed, the removal of the obstruction to the ureter would not have been so easily or so successfully carried out.

DR. EDWIN BEER, of New York, remarked that many of these cases of children with obstruction to the outflow of urine due to disturbances at the neck of the bladder are not recognized until examination discloses a large globular mass in the hypogastrium associated with residual urine. If undetected, these cases pass gradually into uremia, and are then thought to be cases of chronic nephritis. If infection complicates the picture, many of these cases are diagnosed as cystopyelitis.

In the case presented Doctor Thomas states there was pyuria and twenty ounces of residual urine, which can only be explained by an obstruction somewhere between the bladder and the external urinary meatus. Most of these cases occur in males. Usually the back pressure leads to a bilateral hydro-

GASTROSTOMY IN CARCINOMA OF THE ŒSOPHAGUS

ureteronephrosis, and cystograms which show the reflux up both ureters are diagnostic of the condition when it is well advanced. Cystoscopy is particularly valuable in these children, and is always indicated in cases of persistent pyuria in infancy. About five years ago, three of these cases were reported by Doctor Beer in which excision of the posterior lip of the neck of the bladder, where the obstruction to the outflow of urine happened to be, led to complete relief of symptoms and cure of the patient.

In connection with some of these cases of unilateral megaloureter and hydronephrosis the question arises, is this due to back pressure, as in the case

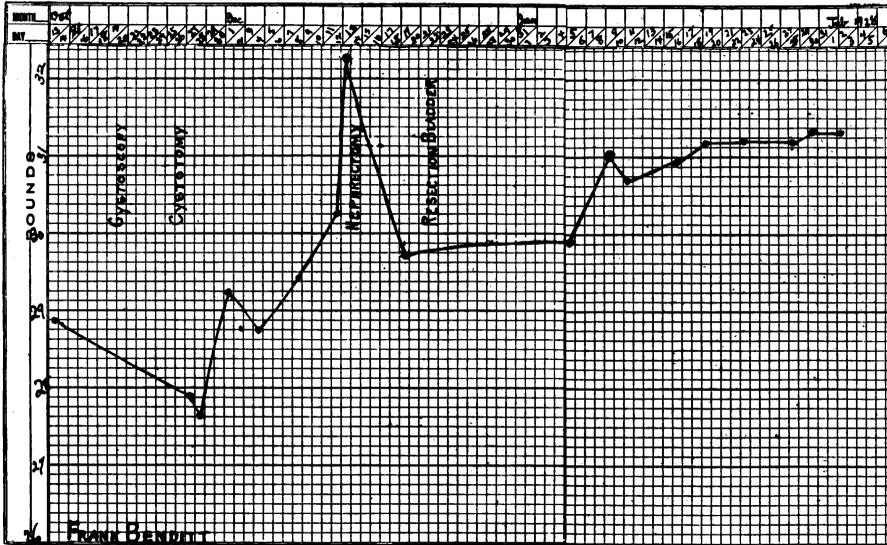


FIG. 6.—Weight curve from time of admission until discharged from hospital.

reported, or is it caused by a congenital disturbance in the anatomical development of the ureter and its orifice in the bladder. Some of these cases present in adult life, and it is difficult to decide the origin of the megaloureter. It must be borne in mind that it is just possible that in some of these instances a ureteral stone, blocking the lower end of the ureter in infancy (as has been seen by Doctor Beer in the first three months of a baby's existence), may lead to a hydronephrosis; and when the stone is passed later on, this permanent megaloureter remains, and is only recognized in adult life when an operation is done for infection of this dilated tube. One is then liable to think he is dealing with a congenital deformity, while the condition is really a disease which originated in the early months or years of the patient's life through such a process as just outlined.

GASTROSTOMY IN CARCINOMA OF THE ŒSOPHAGUS

DR. GEORGE P. MULLER read a paper with the above title for which see p. 48.

DR. WILLY MEYER, of New York, recalled a patient with malignant stricture of the œsophagus, who, after gastrostomy and forced feeding,

gained five pounds in one week. The type of operation he believes immaterial; though if Witzel's or Kader's method can be carried out, they will probably show best results. Gastrostomy is clearly indicated in these cases so long as radiologists cannot definitely prove that treatment by radium has brought about recovery. Here and there in various parts of the world there have been reports of cures by radium treatment; but definite proofs of œsophageal carcinoma having been cured by rays are still lacking.

The speaker thought that with thoracic surgery in its present status, surgeons should remain aggressive. What these patients need and are craving for, is the restoration of their power of swallowing. The principal aim of the surgeon should be the restoration of the patient's power to swallow. As long as radium has not proved definitely that, with the help of gastrostomy, it can cure, the radical operation remains indicated. Early diagnosis and early operation, of course are of greatest importance. The agencies which can help both the surgeon and the patient in this direction are the American Association for the Control of Cancer and the Gorgas Memorial. They are allowed to advertise in the newspapers and to distribute pamphlets. If they would say to these patients; "If you cannot swallow properly, your case is dangerous. Do not go to a dispensary, but go immediately to a hospital where X-ray examination and proper treatment are available," doubtless such propaganda would result in the patient's coming earlier under the care of the surgeon. It is the younger generation who will see a larger number of these cases at an earlier stage, and Doctor Meyer hopes that Doctor Muller will continue to do the radical operation in the hope of doing something definite for these patients. Three cases are on record that have lived after the radical operation. Doctor Torek's well-known case died of pneumonia eleven years after the operation.

Technically, the operation is not particularly difficult if one gets these patients in time. But when they come too late and when the important surrounding structures of the œsophagus are involved, one hesitates to do radical work.

It is in the hands of the surgeons now coming up, to see that resection of the œsophagus is not scrapped, but is continued. The speaker is convinced that if air-tight drainage of the pleural cavity is added to the operation, the number of recoveries will be greater than heretofore. On early diagnosis and early radical operation depends the future of the proper treatment of cancer of the œsophagus.

DR. FRANZ TOREK, of New York, said that gastrostomy in carcinoma of the œsophagus may be done either as a preliminary to a subsequent operation or as an operation *per se*. As a preliminary to the radical removal of the carcinoma, of course its field is limited to the very early cases, and Doctor Meyer has gone into that so thoroughly that it needs no repetition. In regard to gastrostomy as an operation *per se*, it is a very unsatisfactory operation. The patients all die, some early and some late. Those who die late are the ones in whom the carcinoma of the œsophagus has not broken down and is

MORTALITY FACTORS IN ACUTE APPENDICITIS

more of a fibrous kind, while those who die early are usually the ones in whom the carcinoma has broken down, giving rise to bloody and foul discharge which practically poisons the patient. Regarding statistics, the speaker feels that if a person reports a number of cases that have lived for a long time after bouginage, you may be certain that it is in a series from an œsophagoscopic clinic, where a greater number of early cases are seen; whereas in many cases seen by the surgeon it would not be possible to pass a bougie at all. Such far advanced cases naturally are going to be operated upon by gastrostomy and will not live as long as the cases seen early in which bouginage is feasible. Theoretically, bouginage is about the worst thing possible for carcinoma of the œsophagus because instead of leaving it alone, the new growth is injured by being stretched and is thereby stimulated to more rapid development. Gastrostomy as an operation *per se* is done only in order to feed the patient and save him from starvation. No matter what the final result, gastrostomy relieves the patient for some time.

DR. HOWARD LILIENTHAL, of New York, said that because he is the only person who has successfully resected the thoracic œsophagus without performing gastrostomy he is qualified for this discussion. The speaker drew attention to the method of relief by œsophagogastronomy in cases in which exploratory operation has revealed inoperability, in carcinoma of the lower third of the œsophagus. The method was first published in Doctor Lilienthal's book called *Thoracic Surgery*—Saunders, 1925, volume 1, pages 361 to 370 and has since been described evidently independently by Sauerbruch in his second volume also published in 1925.

The procedure may be carried out extrapleurally by posterior mediastinotomy or intrapleurally. The fundus of the stomach is drawn upward through an incision in the diaphragm and a stoma is made between it and the upper section of the divided œsophagus, inverting the lower segment and leaving the inoperable carcinoma untouched. The speaker has performed this operation in but one case, unfortunately dead of pneumonia on the sixth day, but during those six days the patient was able to swallow normally soft solids without any leakage as was demonstrated at post-mortem examination. Those who are interested should look up the technic which is not difficult. The procedure is on the same physiological lines as gastro-enterostomy or ileocolostomy, performed in order to make a by-pass around an obstruction. If the pleura has been opened the phrenic nerve should be divided on the pericardium. If the pleura has not been violated the phrenic nerve should be avulsed through an incision in the neck.

MORTALITY FACTORS IN ACUTE APPENDICITIS

DR. ELDRIDGE L. ELIASON read a paper with the above title for which see p. 65.

DR. MORRIS K. SMITH, of New York, said that in 337 cases of acute appendicitis operatively treated, there was a mortality of 4 per cent., thirteen deaths.

In reviewing these fatalities one is struck by the paramount necessity, now pretty well understood even by the laity, of early operation, if deaths are to be prevented. Abscess formation in appendicitis denotes an appreciable delay in bringing the patient to operation. In the seventy-seven cases in this series in which abscess was present the mortality was 10 per cent. as opposed to 1.9 per cent. in the remaining 260. Of the five individuals who died in the non-abscess group the duration of illness was given as one day, two days, four days, five days and two to three weeks respectively. The latter possibly should not be included. She presented an unusual type of thickened inflammatory reaction in appendix, cæcum and pelvis without free pus. Both of the apparently early cases, listed as of one and two days' duration were watched overnight before operation was undertaken. Perforation, gangrene or spreading peritonitis were found in all five. Early institution of operative treatment depends on early diagnosis. Doctor Eliason has brought out some of its difficulties. The speaker believes it is better practice to take out an occasional normal appendix than to err on the side of procrastination in so treacherous a condition as appendicitis. Age is a factor in a higher mortality of the disease for one reason because of the added difficulties in diagnosis. Of the thirteen deaths, two occurred at the extremes of life. One was a child of three years who had been sick a week before her mother called a physician. She had an abscess filling the pelvis. The other was a woman of eighty with abscess who succumbed after a long illness.

If all patients could be operated upon within the first twenty-four hours of the attack, the mortality would be very low but the factor of high virulence of the infecting organism or lack of resistance on the part of the patient would still account for a few fatalities. A young man operated on the second day of his illness presented a perforated appendix and generalized peritonitis with no walling-off adhesions. He was dead two days later. Although earlier diagnosis and operation might have changed the outcome yet the whole impression was one of an irresistible, rapidly progressing infection. A severe diabetic, who had at operation a retrocæcal abscess, developed a gas gangrene to which he rapidly succumbed. This is the only such complication in the speaker's series. Drainage, with little or no suturing, might have given a better result.

The factor of surgical judgment remains to be considered. It is trite to say that with a very sick patient the least possible should be done yet one is inclined to err in this regard. A girl with a large appendiceal abscess came to operation on the sixth day of her illness. She appeared toxic. The appendix was removed. She died twenty-four hours later. It is quite probable that had we been satisfied to drain alone the outcome would have been the same, yet it was poor judgment in this instance to subject the patient to the added trauma of the appendectomy. Doctor Smith's experience with enterostomy is slight, suffice to say that the one time when it was used the result was discouraging.

POST-OPERATIVE PULMONARY ATELECTASIS

CLOSURE OF THE PROSTATIC BED IN SUPRA-PUBIC PROSTATECTOMY

DR. JOHN B. DEEVER read a paper with the above title for which see p. 118.

DR. JOHN E. JENNINGS, of New York, said that there is no doubt that certain cases demanding prostatectomy can be operated upon early and can be done under spinal anæsthesia. When the preparation of the case has been very careful, spinal anæsthesia is a help. There are however some cases in which the heart will not stand any form of spinal anæsthesia; also, there are other cases which demand the two-stage procedure. With all due respect to Doctor Deaver, the speaker wished to say that supra-pubic prostatectomy, as shown by his cuts, makes him wonder if Doctor Deaver has not been deceived by the "tactus eruditus" in believing that it is the open air work which he has described. As to the preparation of these cases much has been learned from careful study of the blood chlorides, and Doctor Jennings believes the restoration of normal chlorides is an important factor.

DR. EDWIN BEER, of New York, stated that he could see no particular advantage in attempting to close the prostatic bed by suture of the mucous membrane of the bladder into the prostatic bed; if plain catgut were used, all these wounds being infected it would be absorbed long before adequate union between the suture surfaces could take place; and if chromic catgut were used, it might lead to calculus formation, and possibly in either case to stricture at the neck of the bladder. Attempts have been made by Doctor Beer to close the prostatic bed in this way, but as this is only feasible in a one-stage operation and had apparently no particular advantage except as a hæmostatic aid, he had given up this technical refinement.

DOCTOR BEER asked Doctor Deaver whether he had ever seen the result of such a suture at autopsy, and whether at that time or at subsequent reëxamination by urethroscopy there was any evidence that the suture had held, or there was any difference in the appearance of the posterior urethra from that of unsutured cases.

POST-OPERATIVE PULMONARY ATELECTASIS

DRS. WALTER ESTELL LEE, GABRIEL TUCKER and LOUIS CLERF read a paper on the above subject for which see p. 6.

DOCTOR ISADORE S. RAVDIN read a paper entitled *The Production of Atelectasis*—based upon experimental work in which Drs. Walter Estell Lee, Gabriel Tucker and E. P. Pendergrass participated, for which see p. 15.

DR. HOWARD LILIENTHAL, of New York, said that the term massive atelectasis may be employed as a compromise. Atelectasis does not mean airlessness but signifies, etymologically, absence of terminal expansion. True atelectasis can be produced only if the chest is open or if there is something within the thorax which compresses the lung such as fluid, gas under tension or other direct pressure upon the lung.

When something causes the lung to contract in the *closed* chest the same force which produces the contraction causes a filling of the air vesicles by a

kind of suction, with fluid and cells different from the exudation of pneumonia and with greater opacity to X-rays. This has been a convincing demonstration of the phenomenon known as atelectasis by obstruction of a bronchus and how the removal of this obstruction can produce a return to the normal. The atelectasis or collapse just referred to, however, seems to be due to an actual contraction of the lung. It is probably produced by some nerve influence.

In two cases recently reported by Bergamini and Shepard (*ANNALS OF SURGERY*, vol. lxxxvi, No. 1) the patients died of acute massive atelectasis and early autopsies were performed. One of these patients died on the table during the suturing of the wound in an abdominal operation. There was not time for a bronchial obstruction to have brought about the absorption of alveolar air and no obstruction was found post-mortem. Yet the pulmonary tissue on both sides with the exception of the extreme apices was solid like liver. The autopsy was performed by Doctor Symmers, at Bellevue. The diaphragm had risen as high as the fourth rib posteriorly evidently drawn up by spastic collapse of the lung with consequent increase of negative pressure.

In 1919, there appeared in the *Journal of the American Medical Association* an article which was prepared by Doctor Lilienthal for the Surgeon General of the Army, on Thoracic Injuries. It is a report of the Activities of Operating Team 39 in Evacuation Hospital No. 8. In addition to the speaker the members of the team were Dr. Walter M. Brickner and Dr. W. A. Kellogg of New York. This report states: "Atelectasis has been frequently noted by operators and we have never reached a satisfactory explanation of it. It usually occurs in the neighborhood of the wound and is something more than collapse of the lung. It is usually unilobular, the lung being contracted to a very small size, no air being in it at all. The tissues are soft and not infiltrated. We would suggest that animal experiments be carried out. . . ."

An interesting case from the clinical standpoint was that of a young man operated upon for appendicitis by Dr. Paul Livingston of East Orange, New Jersey. On the third post-operative day there was a sudden attack of coughing, bloody thick mucoid expectoration and fever which was diagnosed as a right lobar pneumonia. When seen by the speaker the physical signs suggested massive collapse and a röntgenogram revealed the classic picture, the heart being drawn entirely into the right side so that the lateral processes of the vertebræ could be seen. Two days later the lungs were clear. This was probably a case of obstructive atelectasis.

The speaker believes that in a case of post-operative atelectasis, in which the symptoms are severe and threatening, early bronchoscopy should be performed in the hope that there might be a mucus plug which could be dislodged. Pol Coryllos and Birnbaum (*Archives of Surgery*, vol. xvi, No. 2) in a painstaking and scientific paper presented 112 cases of massive atelectasis gathered from many sources and they believe that the only cause of this condition is obstruction. Judging by his own experience and that of observers

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like Bergamini and Shepard with their convincing post-mortem material, Doctor Lilienthal must disagree with this conclusion.

He suggested that in the nomenclature of the conditions these three distinct varieties of atelectasis be made: 1, obstructive; 2, compressive; 3, essential.

TERATOMA OF THE MEDIASTINUM

DR. JOHN H. GIBBON presented a young colored man who had come to the Jefferson Hospital complaining of a swelling in the chest and shortness of breath. An X-ray diagnosis of mediastinal tumor with pleural effusion was made. The chest had been aspirated several times and Doctor Gibbon plans to operate upon the patient in the near future.

DR. CARL EGGERS, of New York, said that benign tumor of the mediastinum is so rare that no one man has sufficient experience to warrant entering into a free discussion of the subject. One has to study each case individually and work out a plan of procedure, just as Doctor Gibbon has done in this case. What the pathology of the condition in this patient is has not been established, and probably will not be until operation. The fact that fluid has been withdrawn on two occasions suggests the possibility of trying to do the operation in two stages. At the first session one might cut a window into the chest wall and get some idea of the nature and extent of the lesion. The tumor might be marsupialized. Gradual evacuation would avoid the serious reaction which might follow removal of such a large mass in one stage, even if it were feasible. At a later date extirpation could be carried out. In the literature one finds numerous cases successfully handled in that way.