TRANSACTIONS
OF THE
PHILADELPHIA ACADEMY OF SURGERY

Stated Meeting, Held January 8, 1917

The President, DR. CHARLES H. FRAZIER, in the Chair

MULTIPLE MOVABLE BODIES IN KNEE-JOINT

DR. T. TURNER THOMAS reported the following case: Man, fifty-one years old. Health has always been good except for trouble in right knee of about thirty years' duration. At twenty-one years of age had scarlet fever which left him with a severe inflammation of the right knee. This kept him in bed or on crutches for about eighteen months or two years. At twelve years of age had a severe injury of the soft tissues about the left knee, but he has never had any trouble with this knee since then. The right knee was very stiff after the crutches were given up, but normal motion gradually returned and for many years he experienced no trouble in the use of the limb. About four years ago, this knee suddenly became fixed in flexion, with severe pain and a sense of a giving way of the limb under him. This kind of attack has recurred many times since, sometimes as often as once in every block walked, sometimes not for several days. Frequently, following an attack, the knee swells and then cannot be fully extended. On palpation numerous bodies can be felt moving about in the joint and the femur, tibia and patella are considerably deformed (Fig. 1).

Operation (December 15, 1916).—At the Stetson Hospital. An incision was made on each side of the joint, running vertically alongside of the patella and turning backward along the joint line to its posterior limit. It extended through all layers into the joint. This was essentially the Jones incision for the removal of the semilunar cartilages. Twenty foreign bodies were removed. Most of them were completely detached. Two large, irregular ones were attached. Just below the patella, under the synovial membrane, were two small bodies which were cut away. Above the patella, under the synovial membrane, in the roof of the suprapatellar bursa, were two other small bodies, which were seized with forceps and pulled away. Another was attached back of the external condyle and was pulled away with some difficulty. The wound was closed in layers by catgut, a dress-

FIG. 1.—Movable bodies in knee. Lateral view.

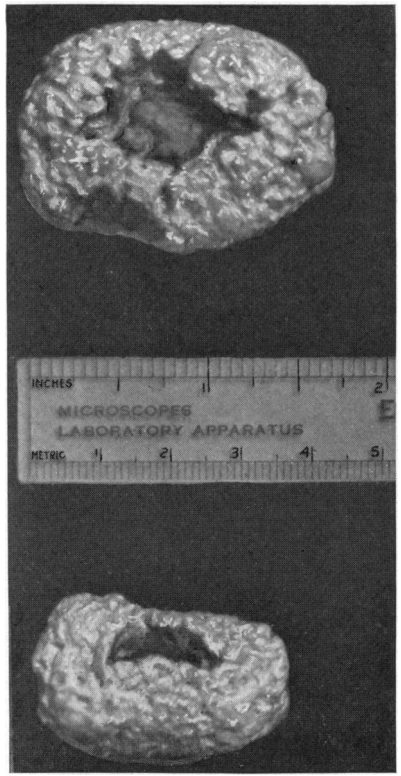

FIG. 2.—Photograph of specimen removed from knee-joint.

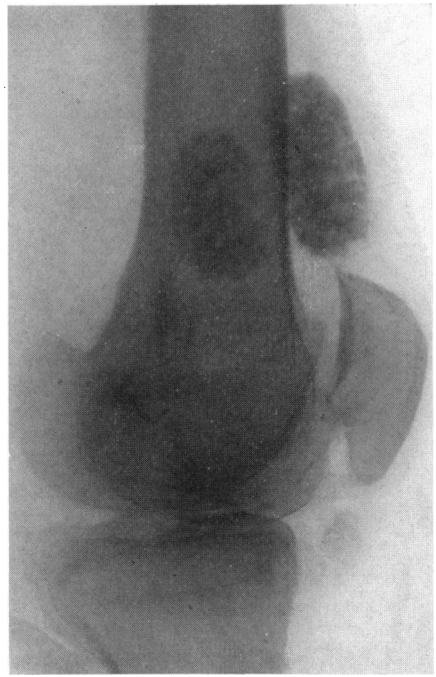

FIG. 3.—Röntgenogram of same specimen as Fig. 2.

ing and plaster case applied. Primary healing. Was out of bed in ten days and left the hospital in three weeks, wearing a split case for support and using crutches. As the lateral ligaments of the knee on both sides were completely divided, it is intended to allow them to unite strongly before the case is put aside entirely, which will be done about six weeks after operation.

DR. CHARLES H. FRAZIER reports also a case in which he removed from the knee two unusually large foreign bodies (Fig. 2). The patient was admitted to the University Hospital September 21, 1916, with the following history: That he had sustained an injury to the knee cap thirty years ago, which gave him, however, very little trouble. Last winter he noticed some pain and swelling in the joint, which has continued to the present time, and he was treated for rheumatism. He also had had pain in both elbow- and both wrist-joints. In other respects the history is practically negative. An examination reveals apparent enlargement of the bones entering into the formation of the knee-joint and two movable masses can be detected in the joint on either side of the patella. The presence of these foreign bodies was confirmed by the X-ray plates (Fig. 3). At the operation an incision was made above the patella through the middle of the quadriceps extensor tendon. The joint cavity was opened and the loose foreign bodies found and removed. No others could be felt. The capsule of the joint appeared to be thick and rather œdematous. The margins of the patella presented the appearance rather characteristic of hypertrophied arthritis. The wound was closed with tier sutures and convalescence was uneventful. The diagnosis returned from the Pathological Laboratory was chondroma.

STRICTURE OF THE ŒSOPHAGUS

DR. HENRY R. WHARTON reported the following case: Robert T., two years of age, was admitted to the Presbyterian Hospital, November 21, 1915, having a few hours before swallowed a solution of concentrated lye. At this time his condition was urgent, temperature 104.2, pulse 150, respiration very rapid. His condition improved in a few days, but he was unable to swallow semisolids, although he could swallow liquids. Numerous attempts were made to pass œsophageal bougies without success. He took food readily, but it accumulated in the œsophagus and was regurgitated. Under ether anæsthesia attempts were made to pass bougies without success. A bismuth X-ray showed that the stricture was located at the gastric end of the œsophagus. As the patient was rapidly becoming emaciated, in spite of rectal feeding, his weight at this time being twenty-three pounds, on August 19 a gas-

trostomy was done and a No. 16 Fr. flexible bougie was passed,[1] from the stomach through the stricture and brought out through the anterior nares, and allowed to remain in position twenty-four hours. This was replaced by a soft rubber catheter which had a fenestrum a few inches inside the stomach wall, through this liquid nourishment was administered every three or four hours. A shot clamped upon a silk ligature was swallowed and brought out of the gastrostomy wound. By means of this ligature bougies were passed at intervals through the stricture and also a strong silk ligature was passed with which Abbe's operation was done on two occasions. Gradual dilatation was practised with bougies until a No. 30 could be passed. The gastrostomy wound healed promptly and the patient can now swallow solid food. He is now in good condition, weighing thirty-three pounds. On account of the tendency to recontraction of the stricture, bougies should be passed for some time.

CYST OF THE TIBIA

DR. JAMES K. YOUNG reported the case of a white girl, of Russian birth, thirteen years old, who came under observation at the Polyclinic Hospital in May 22, 1916, suffering from osteitis fibrosa cysticus, of three years' duration, of the lower end of the tibia (Fig. 4). There was a large mass, 5 cm. in each diameter, occupying the outer malleolus and including the entire lower portion of the tibia, there was also a longitudinal scar over this region from a previous operation performed two years ago by Dr. D. L. Despard, who incised the cyst which was found to contain a soft sanguineous mass which was thoroughly cauterized with carbolic acid and treated with alcohol, and the wound closed. After this some improvement was noticed. The examination had shown that the walls of the cyst were thin; it was sensitive to pressure and had been increasing in size. The condition was differentiated from giant-celled sarcoma, which was the condition it most resembled, by the length of time it had existed, the slow growth, and the X-ray appearance. Three methods of treatment were presented. First, a conservative treatment; second, excision and bone transplantation; third, curettement and bone transplantation.

1. Under the use of a weight sustaining apparatus and alterative treatment with local and X-ray treatments, the X-ray pictures showed a distinct change in character, becoming more dense, the cyst diminished in size and lost its sensitiveness. 2. The second method is not to be recommended, as better results are obtained by curettement. 3.

[1] Retrograde catheterization easier and more successful than catheterization from above.

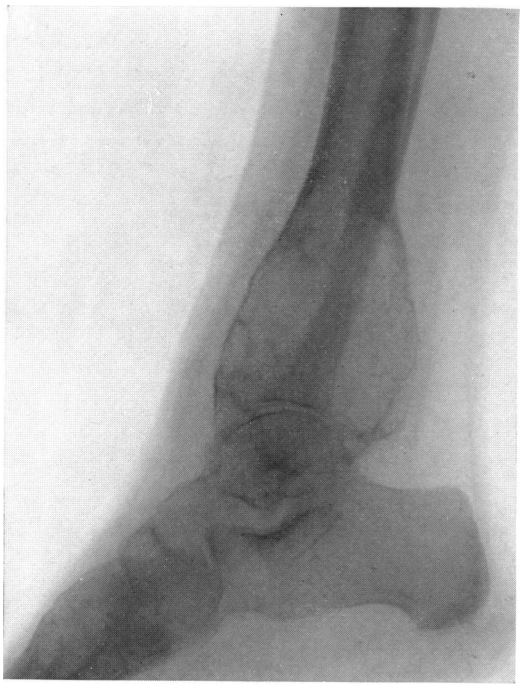

FIG. 4.—Cyst of the lower end of the tibia.

The third method of treatment consists of curettement and bone transplantation. If the bone cyst increases in size and becomes more sensitive, it is proposed to curette the cavity, crush the walls and transplant the fragment of bone in order to retain the shape of the cavity and prevent deformity.

DR. GINSBURG said that two bone cyst cases have been encountered during the past three years in the Fracture Clinic at the Mt. Sinai Hospital. One occurred in the lower extremity of the radius, and the other in the upper extremity of the humerus. Spontaneous fracture occurred in both cases, and during the process of bone repair both cavities were largely obliterated. The bone cyst in the radius appeared to be multilocular, and before union was complete the entire cavity was still not completely obliterated. Pathological fracture appears to be a certain means of obliterating a bone cyst, and is far superior to any surgical method employed.

We know little about the real underlying pathology of bone cysts, and in our cases X-ray plates of other long bones in the body fail to show the presence of cystic degeneration.

G. P. MÜLLER said that he, in 1904, reported a case of benign bone cyst, and wrote one of the first papers published in this country upon this disease, although a number of cases had been previously reported. Since then many more cases have been reported and several good papers, notably those of Bloodgood, Silver and Landon, have been written. Some eighty cases in all have been reported. Dr. Young states that it is his intention to remove most of the wall of the cyst and to transplant bone to take the place of the defect. The simple crushing of the wall of the cyst is sufficient, and is followed by prompt bone formation. Bloodgood has shown this in all of his reports and there does not seem to be any necessity for extensive bone transplants in these cases. In one case reported by Dr. Landon and operated on by Dr. Müller, the patient had a large cyst of the femur surrounded by a mere shell of bone. Crushing part of the walls of this cyst sufficed to bring about a cure. There was entire regeneration of the bone some months later. In looking over the records of Dr. Frazier's service in the University Hospital, the following case has been found which has never been reported:

Elizabeth H., aged fifteen. The trouble began one year previously as a swelling in the hand, without pain, and without history of injury, and with no other symptoms. Examination revealed a spindle-shaped swelling on the fourth left metacarpal, firm but not of bony hardness, and capable of indentation. An X-ray plate revealed a bone cyst.

At operation the shell of bone was partly removed, the interior curetted, and the wound closed without drainage. Two years later the patient was perfectly well and he had not been able to trace her at the present time. The tissue removed from the interior of the bone was typical of granulation tissue with a few giant-cells, and at one place the pathologist reports the presence of cartilage, but on looking at the plate now, they are inclined to believe that the cartilage is not present.

DR. A. P. C. ASHHURST said that these bone cysts in children are practically always benign, but in a patient of eighteen to twenty-five years one must be cautious in regarding them as benign. He had operated on four cases of bone cyst—three in children and one in a girl of twenty-one years. In the latter case the tumor recurred after the first operation. When he did an incision of the bone subsequently all the pathologists to whom he submitted specimens reported the tumor to be a much more malignant type than ordinarily seen in these cases; the stroma was sarcomatous, and did not resemble granulation tissue, as is the case in benign growths.

DR. GWILYM G. DAVIS had operated on a case of this character six or eight years ago in a child of four or five years of age with a cyst of the lower end of the ulna. He simply broke away the outer wall and curetted the cavity, in which there was some granulation material, found to be sarcomatous in structure, and depressed the sides. The wound healed nicely and has remained healed ever since.

ILEOCÆCAL INFANTILE STENOSIS

DR. ASTLEY P. C. ASHHURST reported the following case: Thomas B., aged two years, was admitted to the Episcopal Hospital, November 25, 1915, with symptoms of acute intestinal obstruction. The illness began November 22, with recurrent attacks of abdominal pain; during the attacks the baby gripped his belly with both fists. As he had suffered with similar attacks all during his life, no great alarm was felt. Vomiting set in, however, and on the third day of what was now seen to be the severest attack he ever had suffered, he was sent to the hospital.

Examination at 1.30 P.M., soon after admission: The child lies quietly on his back, apparently exhausted. His eyes are hollow, his tongue and skin very dry. He has just vomited some bile. Since admission there have been several attacks of sudden abdominal pain, the child crying out, and clutching at his belly. There is violent peristalsis. There is no rigidity, except during the attacks of pain. Above

the umbilicus, a transversely placed, sausage shaped tumor is present, which is slightly movable, and not very tender. A diagnosis of intussusception was made, and the child was prepared for operation.

Operation.—Under the anæsthetic 3 P.M. (gas-oxygen, preceded by morphin sulphate grain $\frac{1}{48}$ and atropin sulphate grain $\frac{1}{400}$) no such tumor as above described could be palpated. It was nevertheless determined to proceed with the operation. A right paramedian incision was made downward for three inches from the umbilicus. There was no peritonitis. The lymphatic vessels of the small and large bowels were

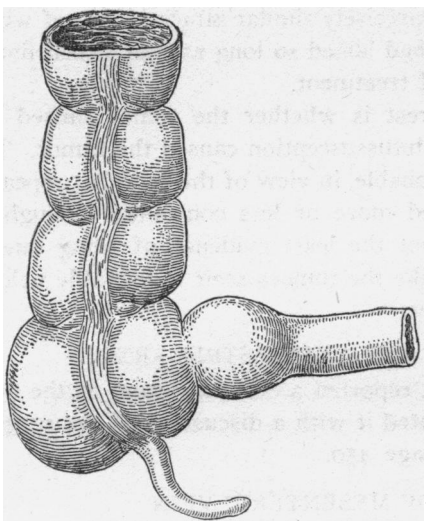

FIG. 5.—Tumor of ileum proximal to ileocæcal opening, causing stenosis.

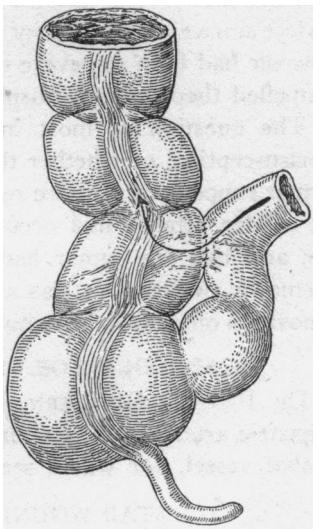

FIG. 6.—Ileocolic anastomosis to short circuit stenosis of ileocæcal opening.

distended. The transverse colon was normal. The small bowel was not distended. A movable mass, the size of a guinea-hen's eggs, was felt in the ileocæcal region. The small intestines were then packed off with pads, and the ileocæcal coil was delivered through the incision. No intussusception was now present, but there was a tumor in the ileum just above the ileocæcal valve, about 4 cm. in length, precisely resembling the tumor seen at the pylorus in cases of infantile stenosis. There were several inflamed epiploic appendages on the cæcum and ascending colon, but no enlarged mesenteric lymph-nodes were detected. The wall of the ileum felt thick, and the lumen appeared to be almost obliterated by the tumor which involved the whole circumference equally (Fig. 5). Apparently there had been an intussusception of this mass into the cæcum and ascending colon. A lateral anastomosis (Fig. 6) was made by suture between the ileum just proximal to the

mass and the ascending colon (into the anterior longitudinal band, not as shown in the diagram into the median side of the colon). The appendix was not removed, owing to the precarious condition of the patient. The time of the operation was thirty minutes.

Recovery was entirely uneventful. The child was taken home one month later, December 25, 1915; and was seen at first at rather frequent intervals. The child is now in perfect health. No attacks of abdominal pain have occurred since operation.

It was not until after the operation, with its rather disconcerting findings, that it was learned from the parents that the child had been subject since earliest infancy to precisely similar attacks, none of which however had been so severe or had lasted so long as that which finally compelled them to seek hospital treatment.

The question of most interest is whether the tumor caused the intussusception, or whether the intussusception caused the tumor. The former supposition is more reasonable, in view of the fact that repeated but milder attacks had occurred more or less constantly throughout life, and that the tumor had not the least evidence of being due to œdema or swelling. It was as like the tumors seen in infantile pyloric stenosis as one pea is like another.

STAB WOUND OF THE DEEP EPIGASTRIC ARTERY

DR. PENN G. SKILLERN, JR., reported a case of wound of the deep epigastric artery, and supplemented it with a discussion of the surgery of that vessel, for which see page 450.

STAB WOUND OF MESENTERIC VEIN

DR. GEORGE P. MÜLLER reported the case of a butcher, age twenty-five years, who, while at work, slipped and fell against a long, sharp meat knife which he was using at the time. It entered the abdomen. He became faint, and had some abdominal pain, and a few hours later was brought to the University Hospital on the service of Dr. Charles F. Frazier.

The history of the injury, general abdominal rigidity, some dulness in the flanks, and a leucocytosis of 17,000 were suggestive of intra-abdominal hemorrhage, possibly also of peritonitis. Operation was immediately performed (July 14, 1916). On opening the abdomen it was found to contain a considerable amount of fluid blood, and investigation revealed three punctures of the mesentery through which blood was oozing, and a nick in the serous coat only of the intestine, just above the mesenteric wounds. The knife had evidently nicked the bowel, and penetrated the mesentery twice, just as a pin is passed

through a coat lapel. Between the leaves of the mesentery there was considerable bleeding, and this extended for six or eight inches on either side of the wounds. The punctured areas were caught *en masse* and ligatures applied. The blood clots were removed from the abdomen and the abdomen washed out with salt solution. The patient was discharged nine days after the operation and recovery was uneventful.

DR. GWILYM G. DAVIS said that before exploratory operations were as common as they are now he had a case of stab wound of the deep epigastric artery rather high up, just below the lower edge of the ribs. The wound was enlarged slightly but it was so difficult to control the bleeding that he made an incision about an inch below the wound and placed his index finger in underneath and compressed the deep epigastric artery against the abdominal wall. That controlled the hemorrhage and enabled him with the other hand to enlarge the wound sufficiently to control the bleeding vessel without further difficulty. He did not recommend that technic to-day, but it answered well in that case. In that instance there were no such symptoms as mentioned in the paper. In many of these cases of stab wound, although the abdominal wall is perforated, the intestine may not be seriously damaged.

MEDIAN BAR FORMATION IN THE URINARY BLADDER

DR. ALEXANDER RANDALL read a paper with the above title, for which see page 471.

DR. CHARLES H. FRAZIER had under observation a case which might be interpreted as illustrating the type of obstruction which Dr. Randall has referred to in his classification as congenital.

The patient was three years of age. His mother said he was always more or less feverish and urinated frequently. What was thought to be incontinence proved later to be retention with overflow. Owing to an existing cystitis the child complained at times of great pain. The urine contained large quantities of pus and the phthalein test showed but 15 per cent. elimination in two hours on one occasion, 25 per cent. on another. There were occasional rises in temperature, and a provisional diagnosis of pyelitis was made as a complication of the vesical obstruction.

An exploratory suprapubic cystotomy was performed. The bladder was found to be distended, extending up to and above the umbilicus. A careful inspection failed to reveal the cause of obstruction, although in the absence of any form of obstruction in the urethra there must have been some congenital lesion at the urinary meatus which interfered so consistently with the evacuation of the bladder. Although

ample drainage was provided the patient subsequently succumbed to the pyelitis. While the findings were negative, there would seem to be no explanation of the dysuria other than the pressure of some such congenital form of obstruction as Dr. Randall has referred to.

DR. H. L. CECIL, of Baltimore, said that the condition of median bar may be divided into two forms: congenital and acquired. The congenital forms date from birth or early childhood and give symptoms of small stream, weak force, straining on urination, etc., with the symptoms of obstruction as manifested by the patient's general condition. The acquired form usually dates back to middle life or early manhood. The symptoms are essentially the same as in the congenital form, except that the patients are seen earlier in the disease and usually do not show such grave general symptoms. The cause of this form is probably anything that may cause a chronic prostatitis or cystitis; namely, gonorrhœa, sexual excess, sexual excitement without gratification, masturbation, etc. However, many of the patients did not give a history of anything that might have caused the condition, so far as we know.

The symptoms produced by median bar may be divided into (1) urinary, (2) painful, and (3) sexual. Among the cases observed in the clinic of Dr. Hugh Young, at the Johns Hopkins Hospital in Baltimore:

(1) *Urinary Symptoms:* 16 had retention; 11 had incomplete urination; 14 had sudden stoppage; 18 had urgency; 47 had hesitancy; 92 had frequency; 35 had small stream; 28 had weak force; 7 had hæmaturia; 11 had pyuria.

(2) The symptoms of pain may be divided into local and referred: *Local pain:* 12 patients had pain at the end of urination; 24 patients had pain during urination; 6 patients had pain before urination; 5 patients had pain constantly in the region of the bladder; 26 patients had pain at the vesical orifice. *Referred pain:* 18 patients had pain throughout the urethra; 24 patients had pain at the end of the penis; 21 patients had pain in the perineum; 11 patients had pain in the rectum; 7 patients had pain in the back.

(3) *Sexual symptoms: Desire:* Lost, 6 patients; impaired, 19 patients. Erections: Absent, 6 patients; impaired, 11 patients; painful, 1 patient. Ejaculation: Absent, 7 patients; precocious, 5 patients; painful, 4 patients. General symptoms: 4 patients were uræmic; 7 showed definite septic symptoms.

Age: Before 20 years of age, 1 case; 20 to 30, 3 cases; 30 to 40, 8 cases; 40 to 50, 36 cases; 50 to 60, 35 cases; 60 to 70, 30 cases; 70 to 80, 17 cases; 80 to 90, 3 cases.

The cytoscopic findings were as follows: 114 cases had median bar; 36 cases had lateral enlargement; 18 cases had an anterior lobe; 4 cases had polyp at the vesical orifice; 3 cases had hypertrophied trigone; 19 cases had diverticulum; 42 cases had marked trabeculation; 14 cases had vesical calculus.

Residual urine: 3 patients had complete retention; 14 patients had over 200 c.c.; 36 patients had between 50 and 200 c.c.; 74 patients had below 50 c.c.; 6 patients had no residual.

The number of cuts made at the time of operation was judged entirely by cystoscopic findings, three being the usual number and these usually directed posterior, right and left posterior.

Every effort has been made to ascertain the results in these cases by having the patients return for examination and when it was not possible to do this have the patients fill out a circular letter. When patients returned if they had any of the old symptoms, or if on examination residual urine was found, the case was not regarded as cured. Seventy patients were cured; 13 patients were 90 per cent. improved; 16 patients were 75 per cent. improved; 13 patients were 50 per cent. improved; 3 patients were 25 per cent. improved; 13 patients were not improved.

The 13 patients that were not improved were cases in which the principal symptoms were pain, irritation or frequent urination due to contracted or painful bladder, although before operation cystoscopic examination showed a definite median bar. The punch operation was done in these cases in the hope it might relieve the symptoms. These cases may be classified as follows: 3 patients had definite hypertrophy of the prostate; 5 patients had cystitis; 2 patients had pain in posterior urethra; 3 patients had greatly contracted bladder.

A study of these cases shows that the punch operation will do all that it is intended to do, viz.: completely remove obstruction at the vesical neck due to a bar, valve, or circular contraction. It also generally cures the irritation, pain and frequency as well. But in some cases these painful symptoms are due to other lesions in the posterior urethra or bladder, and require appropriate additional measures.

The congenital bars are due, as we have seen them, to hypertrophied muscle of the internal sphincter or a great increase in the connective tissue between these muscle bundles. This type usually shows but little if any inflammatory change. The acquired form may be either inflammatory, which is by far the most frequent, or a definite hypertrophy of the gland tissue.

The inflammatory type shows usually an inflammation, either sub-

mucous, muscular or periacinous or a combination of these. This inflammatory change may be either acute or chronic, though usually chronic and of long-standing. The most frequent location of this chronic change is just beneath the mucous membrane at the vesical orifice. This chronic inflammatory process causes the formation of connective tissue which is piled up at the vesical orifice and subsequently leads to median bar.

The inflammatory change may, however, be deep-seated instead of superficial, in which case microscopic examination shows the muscle bundles widely separated by connective tissue throughout which there is an active chronic process.

Of about equal frequency as the submucous type is the periacinous. Here the most marked inflammatory process is just beneath the mucous membrane of the glands. Further from the glands there is a great increase in connective tissue. In this way there is a great increase in the tissue of the subcervical or subtrigonal group of glands which leads to median bar.

The acquired form of hypertrophy is identical with hypertrophy of the prostate and needs no comment.

From a pathological point of view the cases that have not been relieved show either an acute inflammatory process or a hypertrophy.

The one objection to the punch operation—that of hemorrhage—has been to a large extent obviated by the use of a cephalin-coated catheter. The cephalin is dissolved in as small amount of ether as possible and this concentrated solution of cephalin is allowed to drop on the rotating catheter; the ether quickly evaporates and leaves a smooth coat of cephalin. The coating extends from the eye for about three inches back. Thus, when the catheter is in place, pure cephalin is brought in direct contact with the cut surface at the vesical orifice. This local hæmostatic, recently described by Dr. Howell, has been used on all the punch cases during the past six months at the Brady Urological Institute, with the result that practically none of these cases bleed.

Dr. Edward Martin said that this discussion is limited to obstruction at the neck of the bladder, the part of the prostate palpable through the rectum bend and the urethral length not being largely increased. It is true that obstruction thus placed and conditioned may be due to a median bar, but not always, since there may be a fibrosis of the internal vesical sphincter producing a ring-like constriction. Although there are no completely convincing microscopic studies of this type clinically, there is a hard annular obstruction which can be

felt by the finger, which obstructs the passing instrument and which can be relieved only by section or wide dilatation or both. Obstruction in practically all cases is largely influenced in its degree by spasm and congestion, as this obstruction in the ring cases is more inveterate and lethal than that due to the ordinary hypertrophied prostate which we take out.

The operative attack, of course, is at the site of the obstruction. This we have carried out by fulguration, by the punch—which has not been entirely satisfactory; but most successfully and safely by a suprapubic opening, inspection, palpation and the meeting of the indications, either by removal of adenomatous growth or section of an obstructive fibrous bar always followed by very wide dilatation of the internal sphincter or by multiple sections of a localizing ring.

Dr. Randall spoke of the renal degeneration and atrophy which always accompany obstruction low down and which are factors in hastening the fatal ending, whatever the disease from which the patient suffers. The difficulty in treating many of these cases is that they have never been catheterized, and are not infected. There is no known method, no human skill by which can surely be avoided infecting these cases on the first catheterization. The infection when it occurs travels up into the kidney by the lymphatics with a resulting pyelitis and pyelonephritis to which these congested and damaged kidneys are peculiarly susceptible and from which some of these patients promptly perish. For that reason the cases which have survived their first infection may be better risks than those who have never been infected. And it therefore follows that in the case of a fairly comfortable and able-bodied person there is a perfectly justifiable hesitation in instrumentation of any kind, even gentle catheterization, since this in spite of every precaution may be followed by an ascending and fatal infection. When the obstructive symptoms become urgent this risk must of course be taken.

Dr. John B. Deaver said that he had operated on these cases in years gone by, exposing by the suprapubic method and removing the enlarged portion with the rongeur forceps. He had used the Sir Henry Thompson instrument. He had found that the ordinary rongeur forceps, such as is used in other operations, answers very well. He agreed with Dr. Randall that in these fibrotic prostates or median bar enlargements, one cannot do a total enucleation with the same degree of ease and safety as one can the above mentioned operation. We know how much more grave from the operative standpoint removal of a small hard prostate is in comparison to a large prostate. He had had

no experience with the punch operation. It is doubtless satisfactory in the hands of Randall and Young and in the hands of men who are experts in cystoscopy, and the operation should be confined largely to the practice of those men. The safer method rather than the one proposed by Dr. Randall would be that of suprapubic exposure by which one can actually see the condition and deal with it with less liability of complications.

DR. B. A. THOMAS called attention to a paper in the *Ohio State Medical Journal,* April, 1915, by E. O. Smith of Cincinnati, who discussed the subject of "median bar formation" or obstruction. Smith cited a number of cases and showed excellent pictures of two or three gross specimens similar to some shown by Dr. Randall, in which enlargement of Albarran's glands, causing obstruction, was beautifully shown. Contrary to Dr. Randall's conception, it has been his custom to regard "median bar formation" not as one involving the median lobe of the prostate, a premise which is not generally admitted, but which the essayist this evening states should be considered, including everything obtructive at the vesical neck "with the exception of the lateral lobes." Personally, he did not think that simple hypertrophy of the median lobe of the prostate belongs in the caption of so-called "median bar formation."

He had been accustomed to recognize five types of "median bar formation" or obstruction at the neck of the bladder. They are: (1) glandular; (2) fibrotic inflammatory; (3) fibrotic non-inflammatory; (4) muscular contracture; (5) congenital mucosal fold.

The glandular type of this disease has its origin in Albarran's subcervical or Home's subtrigonal group of glands, but should not include hyperplasia of the median lobe of the prostate. The second and third types are fibrotic in character, and may or may not be associated with inflammatory changes associated with the underlying prostate. The fourth type is that which clinically we are accustomed to consider as a muscular contracture of the vesical neck, possibly the result of neurological or inflammatory affections. This opinion is also held by a number of renowned authorities—Guyon, Marion, Bazy, Frankel-Hochwart, Chetwood and others.

The work of Young with respect to the microscopic study of sections in about 100 cases did not show that the muscular element entered into the condition at all. However, it is possible that by the punch operation enough glandular or fibrotic tissue is not removed to catch the underlying muscle or fibres of the sphincter. The last is the congenital obstruction. This he had never seen but he had no doubt it may occur, simply as a fold of the mucosa at the vesical orifice.

The German urologists in recent years have regarded atrophy of the prostate as a cause of median bar formation or contracture of the neck of the bladder. In a recent article Dr. Randall also seemed to attribute atrophy of the prostate as a cause of this condition. He could not see by any thought of histopathology how atrophy of the prostate can possibly cause such a state of affairs at the vesical orifice. He did not believe it is the cause, although not infrequently atrophy of the prostate is present. Why cannot prostatic atrophy be associated with or the counterpart of the same condition that causes contracture of the neck of the bladder? The importance of "median bar formation" will be realized when it is remembered that approximately 10 per cent. of patients complaining of symptoms of prostatism are cases of *prostatisme sans prostate,* and do not belong to the well recognized group of simple prostatic hypertrophy, in which the treatment is essentially and frequently radically different.

In the proper treatment of the conditions, two thoughts should be borne in mind primarily by the surgeon: First, whether or not syphilis may be present. The second is that to which Dr. Randall alluded, spermatocystitis, as a gonorrhœal sequel. It has been shown by Belfield, of Chicago, that, as a result of seminal vesiculitis with inflammation and infiltration of the base and neck of the bladder, symptoms may arise such as median bar formation causes. Within the past eighteen months he had seen three cases with considerable amounts of residual urine, one with fifteen ounces, with no other possible cause than a definite chronic periseminal vesiculitis. The cysto-urethroscope, although not always all sufficient diagnostically in all cases, is invaluable in differential diagnosis.

He agreed with Dr. Randall that as to treatment each case is a study unto itself. Rectal palpation, to determine if possible the state of the seminal vesicles and lateral prostatic lobes, and in conjunction with the use of the cysto-urethroscope to learn the thickness of tissue intervening between the rectum and vesical neck, is important. Just as in prostatectomy for simple hypertrophy either suprapubically, or perineally, so here with "median bar formation" or obstruction at the vesical neck it is paramount to determine, first, the operability of the patient by any method, and, second, operative procedure best fitted for the particular patient. For the first he recommended more strongly than ever, the index elimination of indigocarmin, than which there is no better, or more reliable test for the determination of kidney function. Reliance mainly upon this and discrimination as to route has obviated a prostatectomy death now for two years and eight months and a mortality rate of barely 3 per cent.

The operative procedures directed to the relief of median bar formation or obstruction resolve themselves into the following: (1) suprapubic cystotomy, followed by removal of obstruction at orifice, either with ordinary cranial rongeur or with Young's punch. (2) Young's median bar excisor or punch operated per urethram, as designed. (3) Chetwood's galvanocautery, through perineal incision. (4) Destruction by high frequency spark (so-called fulguration).

He agreed with Dr. Deaver regarding the method of operation in the majority of cases, that is as described under (1). In those cases where a fibrotic bar exists at the vesical orifice, Young's punch will be of service when the rongeur fails. Used in conjunction with cystotomy, the danger from hemorrhage and infection incident to the punch operation is reduced to a minimum. Employed only per urethram as designed, he believed the danger following the punch operation is greater than that from the open operation, either by the suprapubic or perineal route. He had used Young's punch in a number of cases and in one case was unfortunate enough to have the patient die of embolism within a week after having been considered out of danger. Of course, one cannot say that embolism might not have occurred had the operation been of another kind. However, a number of urologists have reported serious hemorrhages, even deaths, following this operation.

Chetwood's galvanocautery incision of the vesical neck through the perineum has permanently supplanted the Bottini-Freudenberg procedure per urethram, but it too enjoys a rather restricted field of utility, and should be reserved for only the most advanced and intractable forms of contracture of the vesical orifice.

Fulguration or the high frequency spark may be applicable to a limited number of cases, but should not substitute more rational and better procedures. As a rule, even in the glandular type of obstruction, this method is likely to prove unsatisfactory because of the necessarily prolonged and painful course of treatment.

DR. RANDALL, in closing, said that he feared he had been rather vague in describing the median bar, and he confessed he was still a little vague in his own mind regarding exactly what it means. He started out in this work thinking that he had a very definite picture of what he would find. As time has gone on he had had to modify and modify that picture, for as the specimens increased he had found more borderline conditions, and specimens in which, with the naked eye only, it was impossible to say the origin of the tissue causing the obstruction. The work has continually pointed to the need of microscopic study in

order to distinguish the true underlying pathology, and this phase of the subject was started some months ago and is being carried on as fast as the material is obtained.

He had continued to use the term " median bar " because it was the one employed by the man who first recognized and described the condition, but he used it in a very broad sense, covering with it all obstructions situated at the posterior vesical orifice unassociated with hypertrophy of the lateral lobes.

He felt that he had touched rock-bottom in but two places. He had presented four types of obstruction. He had found two types of obstruction at the posterior vesical orifice, the first is fibrous, the second glandular. Each allows of a second subdivision; the fibrous into bars that point (*a*) urethraward, and those that have an (*b*) upward-vesicalward-tendency of growth; while the glandular obstructions (call them bars if one will) may either be the (*c*) hypertrophic nodule or lobe from the subcervical glands, or the (*d*) thick, rounded bar from the glandular hyperplasia in the posterior prostatic commissure.

Dr. Martin's remarks in regard to the muscular ring contracture are pertinent. One sees them clinically but what they are from the gross pathological standpoint he was not ready to say.

Dr. Thomas had brought out a fair criticism as to why he included the glandular hypertrophies at all. He had done so because, first, they form a definite type of median obstruction, second, because clinically in certain cases it is impossible to say whether the obstruction is of one variety or the other, and, third, because there are borderline cases in which even with the bladder and prostate in one's hand, one cannot determine the character of the obstructing tissue. It was because of such embarrassments that the microscopic study became an essential.

It had been a great pleasure to hear both Dr. Deaver and Dr. Martin sanction the death knell of suprapubic prostatectomy in the cases of so-called " small fibrous prostates." They are not hypertrophies and unquestionably should not be treated as such. They *are* the bar cases, the cases of *prostatisme sans prostate:* the obstruction is definite but in actuality small, and other surgical procedures than prostatectomy can secure complete relief of symptoms.