

TRANSACTIONS
OF THE
PHILADELPHIA ACADEMY OF SURGERY

STATED MEETING HELD FEBRUARY 4, 1929

DR. JOHN H. JOPSON in the Chair, DR. CALVIN M. SMYTH, JR., Recorder
NEPHRECTOMY FOR UNILATERAL POLYCYSTIC KIDNEY

DR. A. B. THOMAS reported the case of a woman, married, thirty-one years of age, who was admitted to the Presbyterian Hospital on account of

an increasing tumor in the left loin. Formerly had to rise once during night to urinate. Had gained sixteen pounds in weight the last few months. Urine: amber, specific gravity 1.018, no albumin, no sugar, no casts, no red blood cells, average two to four white blood cells per high power field, many epithelial cells. Blood count: red blood cells 4,760,000; white blood cells 8500; polymorphonuclear leucocytes 60 per cent., small lymphocytes 28, large lymphocytes 8, transitormals 2 per cent., eosinophils 2 per cent. There was no hypertension. There was an exophthalmic goitre, which had been present for six months, and a large tumor in the left loin which was thought to be kidney.

Cystoscopy revealed a normal bladder and normal ureteral orifices. Indigocarmine given intramuscularly appeared from the right side in seven minutes and from the left



FIG. 1.—Unilateral Polycystic Kidney removed by nephrectomy.

side in eight minutes, but only about one-fourth the amount on the left side as compared with the right, and less intensely colored blue. Ureters were catheterized and the urine obtained revealed a few red blood cells and white blood cells from each side.

NEPHRECTOMY FOR UNILATERAL POLYCYSTIC KIDNEY

A left nephrectomy was carried out on September 9, 1915, delivering a large polycystic kidney. An abdominal incision was first made. The tumor definitely seemed to be the kidney; the opposite kidney was palpated and no evidence of cystic degeneration noted so that wound was closed. Then a lumbar incision was made and the nephrectomy carried out extraperitoneally. The patient made an uneventful recovery. A letter from her physician dated November 22, 1928, stated that about three years after the operation she moved to the Middle West and that he had not been able to get in touch with her since, but up until that time she had been in perfect health.

DOCTOR THOMAS remarked that polycystic kidneys are, perhaps, the most interesting of all the anomalies of the kidney. Naumann found sixteen cases in 10,177 post-mortem examinations, of which fourteen were bilateral. Sieber collected 244 cases from the literature and stated that the bilateral cases outnumbered the unilateral cases ten to one. It is interesting to note that in Sieber's nine unilateral cases, six were on the left side, which is declared to be the more common in the unilateral cases.

Recently he had a case on his service at the Graduate Hospital: a unilateral polycystic kidney, discovered at autopsy, which was on the left side; also, the case which is reported tonight was on the left side.

Females predominate in the analysis of sex. Apparently there is a marked predisposition for the disease to appear in families, and it has been reported in more than one generation. Osler refers to a mother with five children, all with polycystic kidneys. Ball reports polycystic kidneys in three generations. Rochert reports, in the attempt to cross St. Bernard dogs with bassets, both ways, all the pups died within a week after birth and were found to have polycystic kidneys. This was thought to be due to failure of the two systems, from which the kidney is formed embryologically, to unite.

Nothing new has been added in the last few years with regard to the pathogenesis in such cases, although while there is general acceptance of the theory of the failure of the two embryological structures to unite, still it has been reported by several workers that dye injected into the ureter has appeared in the kidney showing that there is a direct communication. There are often many associated lesions such as hypertrophy of the heart, arteriosclerosis,

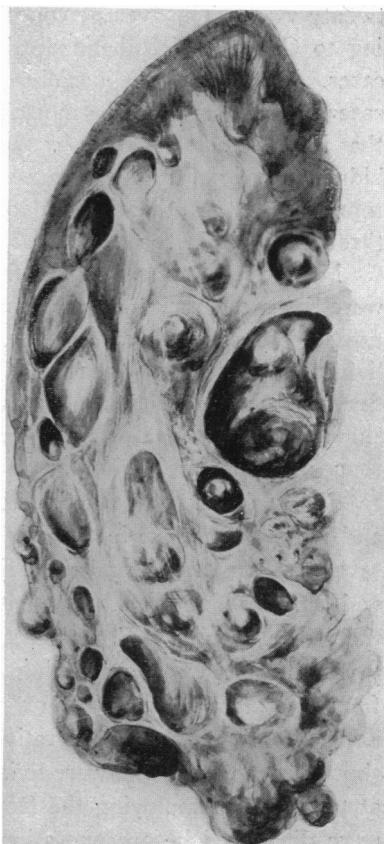


FIG. 2.—Cut-section of Unilateral Polycystic Kidney removed by nephrectomy.

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cysts of the liver, and often many other congenital lesions, occurring in the same case. While the cysts occur from birth to the eightieth year, the greatest incidence is usually from forty to sixty years, and the clinical picture is often divided into: (1) Progressive enlargement; (2) the presence of a tumor together with subjective pain such as hematuria, pyuria, etc.; (3) uremia.

The duration, after symptoms have developed, is anywhere from ten to twenty years. The average course is not more than five to six years. According to Goinet and Rabaud death occurs immediately in 50 per cent. of the cases. Nephrectomy is usually employed only as a last resort because most cases are bilateral and the mortality has been exceedingly high. Deaver states that it is not enough to go by the palpating hand to be assured that the other kidney is not polycystic, because in four such cases in which he did nephrectomy, when the other kidney to a palpating hand did not reveal any cysts, three died within three years of polycystic degeneration of the other kidney.

Morris reports that out of five nephrectomies for polycystic kidneys two were living and well three years and seven years, respectively, after the operation; two died within a few days, while one lived a few weeks. Torrence: one living and well two years after operation. Albarran and Imbert report twenty-five operative recoveries in thirty-four cases, in which fifteen of the patients survived from several weeks to seven years afterward; six had probable recurrence in the remaining kidney, two to three years after operation.

Sieber, in sixty-two operative cases, reported a mortality of 33 per cent. and rapid recurrence in ten cases, the remainder being well eight months to seven years after operation. Brin reported nephrectomy in seventeen cases, and Blatt, in nine cases. In twenty-two cases of nephrotomy and nephrectomy the mortality was 31.8 per cent., and only two patients were alive after two years. Employing the Rovsing operation, Brin reported sixteen cases with four operative mortalities, or 25 per cent. The Mayos report fourteen nephrectomies with one operative death, one died of pelvic malignancy very shortly afterward, nine were living and well from, two at two years up to one at ten years. Employing the Rovsing operation in ten cases, seven of which were diagnosed before operation, two died following the operation and one lived for three years, four were living at one year, one at two years, one at three years, and one at five years.

In the case now reported the cysts were confined mostly to the lower two-thirds of the kidney and, perhaps, this has something to do with the fact that it was unilateral and that at least for three years, if no longer, the patient remained free of symptoms on the other side.

DR. CHARLES F. NASSAU said that he had operated upon but one patient with a right-sided unilateral polycystic kidney. After exposing the kidney he recognized the condition and in order to determine the condition of the left kidney he opened the peritoneum and palpated the other kidney, which was apparently normal. The entire right kidney was involved as in the congenital condition. The woman recovered and is perfectly well as far as is known.

X-RAY DESTRUCTION OF KIDNEY

These lesions must be rare because in the course of years the speaker has had a good many kidney cases and this is the only instance he remembers of true polycystic kidney.

DR. GEORGE OUTERBRIDGE spoke of the Rovsing operation, in which he was interested because of a case recently under his care, of a colored woman who was referred to the hospital with the diagnosis of large ovarian cysts. The abdomen was markedly distended, with irregular cystic masses, which on superficial examination certainly suggested that diagnosis. However, from pyelograms it was diagnosed definitely as bilateral polycystic kidney, but as the masses were so large and apparently multiple, he thought it justifiable to make a small exploratory abdominal incision to be certain that he was not dealing with a combination of the two conditions, and that some of the cysts might be ovarian and therefore removable. This, however, was found not to be the case, the cystic masses being entirely renal, the left kidney being almost the size of a small football and the right somewhat smaller, but still very greatly enlarged, and cystic. He did not wish to puncture any of these cysts through the peritoneal cavity, and as any thought of removal was entirely out of the question, the abdomen was closed and nothing further done. It would seem, however, that this might possibly be a suitable case for the Rovsing operation.

X-RAY DESTRUCTION OF KIDNEY

DR. ALEXANDER RANDALL presented a man who entered the University Hospital in May, 1925, with acute appendicitis. An appendectomy was done by Dr. I. S. Ravdin and, though convalescence was complicated by lobar pneumonia, he made a complete recovery during the next two years. During these two years he had, at times, pains of dull character in the lower abdomen to the right of the mid-line, and referred to the pelvis. There were no acute symptoms and the patient attributed his discomfort to bowel irregularity. There were no urinary symptoms.

He was re-admitted to the University Hospital two years later, in April, 1927, because of his lower abdominal discomfort. X-ray was negative for calculus. The urine showed white blood cells and red blood cells but was negative for the tubercle bacillus, and a pure culture of non-hemolytic staphylococcus was found. His condition was felt to be pyelitis and he was sent back to his family physician with advice.

The pain in the lower abdomen continuing, he was again admitted to the hospital a year later (March, 1928). His pain now was continuous and at times sharper and cramp-like. Hæmaturia had been noted on two occasions during the past year, though his major complaint was lower abdominal pain and considerable digestive disturbance, flatulence, cardiac palpitation, dragging weight in abdomen, though no nausea or vomiting, and no bladder discomfort. An operation was performed by Dr. George P. Muller, under a tentative diagnosis of post-operative adhesions, on March 17, 1928. The peritoneal cavity was found to be normal. In the right iliac fossa a hard calcareous mass was felt behind the posterior peritoneum. Incision over it, with the expectation of removing a calcified retroperitoneal lymph gland, delivered a ureteral calculus. The ureter being opened, drainage was established by placing a tube retroperitoneally, giving it an exit through a second-

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ary incision directly medial to the anterior superior iliac spine. Further examination revealed the right kidney lying directly under McBurney's point, markedly ptosed, but fixed in that position. Four weeks later he was discharged with a patent urinary fistula to regain some strength before nephrectomy was done.

He was re-admitted to the hospital in May, 1928, and pyelographic studies confirmed the suspicion of ectopic right kidney, and on May 10, 1928, Doctor Muller performed a right nephrectomy extraperitoneally. The organ was tightly adherent and very difficult to mobilize. It was removed in three portions and all major vessels doubly ligated. Gauze drainage was instituted. Forty-eight hours later a transfusion was given and the same repeated three days subsequently. He was discharged convalescent four weeks later with a wound healed to a small sinus that continued to discharge.

The patient was re-admitted in November, 1928, on account of the persistent urinary fistula. Various cystoscopic and pyelographic studies established the fact that there was no connection between the bladder and the fistula; that there was a normally developed and functioning left kidney and ureter and allowed of but one conclusion, *i.e.*, the persistence of some portion of the ectopic kidney still viable and functioning through the persistent fistula. Indigocarmine administered intravenously, while showing prompt and normal elimination per bladder from the left kidney appeared as the faintest tinge of color from the fistula, and the same result was obtained with repeated phenolsulphonephthalein tests.

Discussion centred on the relief of this distressing condition without subjecting the patient to further operative measures, and recalling the work of Hartman and his associates in producing marked interstitial nephrosis in experimental animals by X-ray, it was felt that the remnant of this ectopic kidney might likewise be destroyed by radiation. Hartman's efforts were to produce chronic interstitial nephritis in animals for experimental purposes, which he unquestionably accomplished to the point of producing uræmia and death, but he does not hint at the possibility of this pseudosurgical use of the measure. November 22, 1928, this patient received his first treatment and was given five daily exposures of thirty minutes each. The day following his first exposure the drainage was definitely increased and on the next day there was almost no drainage at all. He was discharged on the last day of treatment, November 27, 1928, with unquestionably reduced drainage. Returning January 8, 1929, he reported but little change in the amount and was given five further exposures, ending January 15, each of thirty minutes' duration. Feeling that the failure of the first series was due to the too limited application, this second series of exposures were given to cover a greater area. It was not until after beginning the above X-ray treatment that justification for the same was found in the recently published article by Kline, who reports four cases of post-operative ureteral fistulization in each of which the kidney involved was caused to cease secreting by X-ray destruction.

DR. THOMAS C. STELLWAGEN asked if smears were made from the sinus and analysis made of the discharge. He has had occasion to treat three such cases. One patient had had a stone removed from the kidney. He had a stone-forming kidney and also had an obstruction further down in the ureter and would not submit to further surgery when the condition returned. At present this man is perfectly well because his sinus is closed. Finally, after numerous X-ray exposures the kidney ceased functioning, but whether or not

NEW GROWTHS OF RENAL PELVIS

the kidney is absolutely out of commission is uncertain. He submitted to only one cystoscopy which showed the kidney was not functioning at all. This case is one which is comparable to the case shown by Doctor Randall, that the kidney ceased to function following X-ray.

DR. ALEXANDER RANDALL said that Doctor Stellwagen raised the question as to whether the urine from the sinus had been analyzed. With the patient in a certain position he was able to collect two-thirds of a test tube of fluid from his fistula in three-quarters of an hour's time. Analysis showed the usual urinary salts present though in very low concentration. The same was true of both the indigocarmine and the phenolsulphonephthalein dye tests, the amount obtained being too low for estimation.

In regard to the work which Hartman and his co-workers have done at the Ford Hospital, it is of interest to point out that they were able to cause such a high grade of experimental nephritis as to produce coma and death from typical uræmic symptoms (including blood studies) in their experimental animals. They were interested only in this side of the question and have not considered its surgical application. Kline, on the other hand, has reported four cases of ureteral fistula following Wertheim hysterectomies, and in each case was able to put the involved kidney completely out of function by X-ray exposure. Apparently in two of his cases the involved kidney was of equal function to that of its mate before X-ray treatment was instituted. Doctor Randall stated that this is but a preliminary report, and he hoped at a later date to be able to report the case as a permanent cure.

NEW GROWTHS OF THE RENAL PELVIS

DR. LEON HERMAN and DR. LLOYD B. GREENE (by invitation) read a paper with the above title for which see page 682.

DR. JOHN T. BAUER remarked that the first case mentioned by the essayists appeared to be histologically a papilloma of low-grade malignancy. The second case which Doctor Herman thought to be a flat carcinoma is quite malignant, infiltrating the parenchyma of the kidney, and vaguely suggests a papillomatous origin. The other cases which were examined involved the pelvis and did not extend into the renal tissue.

In regard to malignancy the papillomata of the renal pelvis are similar to those of the bladder, that is, they may appear histologically benign and be clinically malignant. The delicate character of the fronds, the ease with which they break and may become implanted in the ureter and bladder may explain this malignant tendency. It is interesting to comment upon the early symptom of haemorrhage in these cases. This may be due to the rupture of the vessels in the delicate fibrous trabeculae when the papillary tips are broken.

DR. PAUL A. BISHOP said that coöperation between the urologist and the röntgenologist was essential when interpreting films in these cases. There are so many things that these defects and distortions of the pelvis can be due to. The presence of a circumscribed defect in the kidney pelvis is not

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enough to diagnose papilloma. A stone which is non-opaque or a blood clot, which is likely to occur in these cases, may also stimulate this appearance, but a localized distortion of a calix or two calices and a filling defect at the base of it are suspicious even from the pyelogram alone. The speaker has suggested that Doctor Herman try flattening the kidney pelvis by using pressure before the medium is injected, as he is sure it will improve the results from pyelography.

DR. B. A. THOMAS said that pyelography of the kidney pelvis is one of the, if not the most, interesting fields in urological diagnosis. Contrary to the infallibility of pyelography in the diagnosis of papillary tumors of the kidney as stressed by Doctor Herman and Doctor Greene, they have shown by the citation of cases in their own paper, at least by one of them, that it is impossible to differentiate between certain solid and papillary tumors. All know that in the majority of cases a filling defect of the renal pelvis is diagnostic of a papillary growth. Characteristic though it may be, it is not, however, infallible.

In a case which came under the speaker's observation and was operated recently, and which was included in Doctor Herman's and Doctor Greene's presentation, the pyelogram showed a definite filling defect of the lower calix of the renal pelvis, characteristic of papilloma, but at operation a large hypernephroma occupying the lower pole of the kidney was removed. The calix had not filled fully owing to compression by proliferation of hypernephromatous growth. Also, within the past year, he has seen two patients thought by pyelography to have papillomata of the kidney pelvis or calices, but at operation calculi were found and had doubtless caused the filling defects. Therefore, one must not be too dogmatic or arbitrary concerning the interpretation of renal pelvic filling defects. In the future it may be possible to differentiate unerringly in the pyelograms of kidney tumors—the solid from the papillary—but today one cannot be too sure with respect to this differential diagnosis.

Doctor Thomas did not quite agree with Doctor Herman in regard to indigocarmine in tuberculosis of the kidney. His experience has been that it has been well nigh infallible, and the best aid at our command in the diagnostic management of these cases; moreover, it has served admirably in differentiating between those cases that should be treated medically and those wherein surgical treatment is indicated. In his experience surgery has been confined to those cases in which there was delayed elimination of the dye beyond the normal time limit, or none at all. Regarding the case of carcinoma of the ureter he understood Doctor Herman to say that the dye was eliminated in twenty-five minutes from the right kidney and in sixteen minutes from the left or affected side. Apparently there was no involvement of the kidney whatever—the lesion, a carcinoma, was confined to the ureter. Seemingly, there was no obstruction of the ureter on that side and, therefore, no interference with the elimination of urine from that kidney. He did not see,

NEW GROWTHS OF RENAL PELVIS

therefore, why any interference with the function of that kidney should have been suspected.

DR. LLOYD B. GREENE said that there is a fairly characteristic pyelogram in papilloma of the renal pelvis. There are certain factors that make the diagnosis speculative. The most common are blood clots and stone, but by repeated examination these may be eliminated as a source of error. Since pyelography is being done so much more frequently now than even a few years ago and the specialty of urology is advancing so rapidly a positive diagnosis will probably be the rule rather than the exception in the future.

DR. GEORGE P. MULLER said that Doctor Herman referred to the case which Doctor Bothe will report in detail. The patient was fifty years of age, had no symptoms until August, 1928, when he had an attack of acute bladder pain, passed more clots, at which time he came under our observation. Doctor Bothe made a pyelogram and diagnosed papilloma of the pelvis of the kidney. Nephrectomy was performed. When the pelvis was exposed it was felt to contain a growth about the size of a walnut. Perhaps he should have opened the pelvis of the kidney, and if it were found benign, have snared the base, but Doctor Bothe and the speaker felt it was a malignant condition and that a nephrectomy had better be done. The man was well when last heard from, one week ago.

DR. THOMAS G. STELLWAGEN said that Doctor Herman almost persuades him to believe that the diagnosis of tumor of the pelvis of the kidney can be made by pyelogram. The speaker felt, however, that in the vast majority of cases it was guessing. Doctor Stellwagen has had a fair number of cases of papilloma and has been able to diagnose a few of them. Some, which were diagnosed as papilloma, turned out to be hypernephroma, some to be stone, and so it went. He ran the gamut of the usual misinterpretation of pyelograms. He makes it a matter of routine to radiate these patients previous to operation and then again after operation. The speaker recalled definitely three cases of malignant growths of the kidney which are well and alive today. One of whom he saw recently has gained twenty-two pounds in weight and has had no symptoms whatever.

DR. ASTLEY P. C. ASHHURST asked whether it is common to have profuse haemorrhage in growths of the renal pelvis which are only microscopical in size. He had a patient with haematuria, in whom the pyelograms were practically negative, and at operation removed what seemed to be a normal kidney, on the assumption that a small tumor was bleeding into the pelvis. The pathologist, Dr. C. Y. White, examined the specimen very carefully, but only after cutting it up into mincemeat did he finally find an area which he thought looked abnormal. On microscopical examination he found this was a hypernephroma bordering on the pelvis. The patient has been entirely free from haematuria since the operation.

DR. HENRY P. BROWN, JR., recalled a case in the service of the late Dr. Robert LeConte in which the diagnosis was essential haematuria. On

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account of persistent bleeding Doctor LeConte decided upon nephrectomy. Section of kidney revealed, in the upper pole of the cortex, an area approximately five millimetres in diameter, which under the microscope proved to be early tubular carcinoma.

DR. LEON HERMAN, replying to Doctor Ashurst's question, said that massive haematuria from a hypernephroma of microscopic size would seem to be unlikely, and yet considerable renal bleeding occurs not infrequently in the absence of adequate demonstrable cause. In many instances we are compelled in the absence of demonstrable pathology, to classify these cases as idiopathic or essential haematuria. This is a hazardous diagnosis, but a necessary one in some instances. It should always be a tentative one, however, and adhered to only as long as repeated examinations fail to disclose a real pathological cause of bleeding. Excessive haematuria may necessitate nephrectomy in a few of these cases.

The diagnosis of intrapelvic tumors is difficult, but the speaker cannot agree with Doctor Stellwagen and Doctor Thomas that pyelography is of little or no aid. The pictures which we have shown were of great assistance and, as experience grows, we will be able, no doubt, to standardize the defects produced by these tumors just as we have been able to do with the more common lesion of the kidney. A normal pyelogram of the bleeding kidney does not remove the possibility of an early neoplasm.

SCROTAL DRESSING

DR. THOMAS STELLWAGEN said that for some years past he had been evolving a surgical dressing for the scrotum and felt that it was sufficiently perfected to offer it to the profession. It eliminates many of the inconveniences formerly encountered. It is readily applied and stays where put when properly constructed. Further, it permits evacuation of the bowels without disturbing the dressings and makes possible the use of the enæma or colonic tube for irrigation without soiling of the operative area. In the past he has used the perineal "T" binder and the crossed spica of the perineum. The binder was unsatisfactory as it did not give the proper support to the scrotum. In the post-operative tossing of the patient, it frequently became displaced and permitted exposure of the operative field. It also necessitated removal of the dressings when the toilet was attended to, etc. The crossed spica is an excellent dressing, but difficult to apply and frequently uncomfortable. To put it on properly the patient must be raised in bed upon an elevator. This is uncomfortable and often distressing. Again, whenever the case is dressed the entire procedure of application of a new bandage must be gone through with. The scrotal sling that the speaker described obviates these difficulties.

It consists of a bridge of adhesive plaster, sometimes spoken of as a "Bellevue bridge", with modifications and additions as shown in the diagrams. Before applying the sling or bridge, the anterior surfaces of the thighs should be cleanly shaved and wiped with sponges saturated with ether to

SCROTAL DRESSING

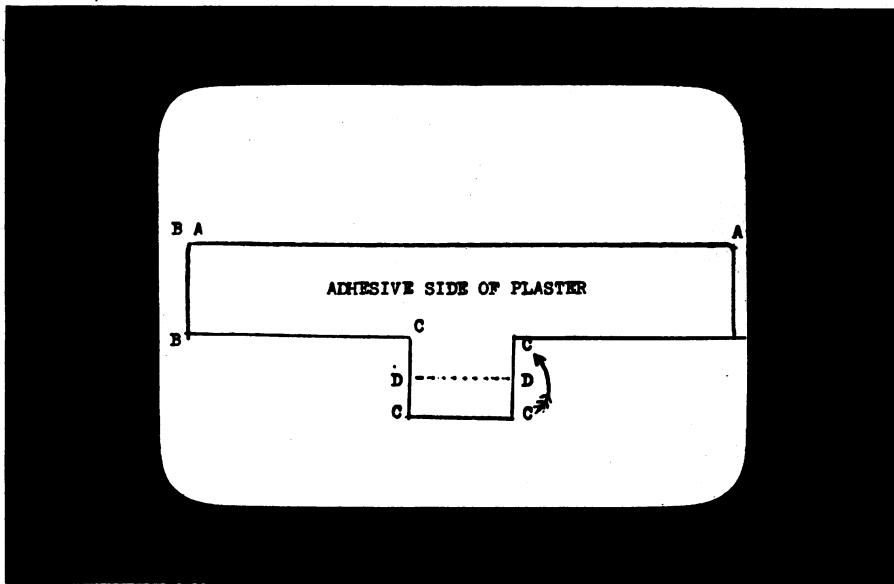


FIG. 1.—Pattern as cut from the adhesive plaster roll. Measure the distance from the outer side of each thigh with patient on back and legs in a comfortable position. Length of the scrotum should be allowed for. A-A thigh distance; B-B the scrotal length; C-C-C-C tip to be folded upon itself along D-D.

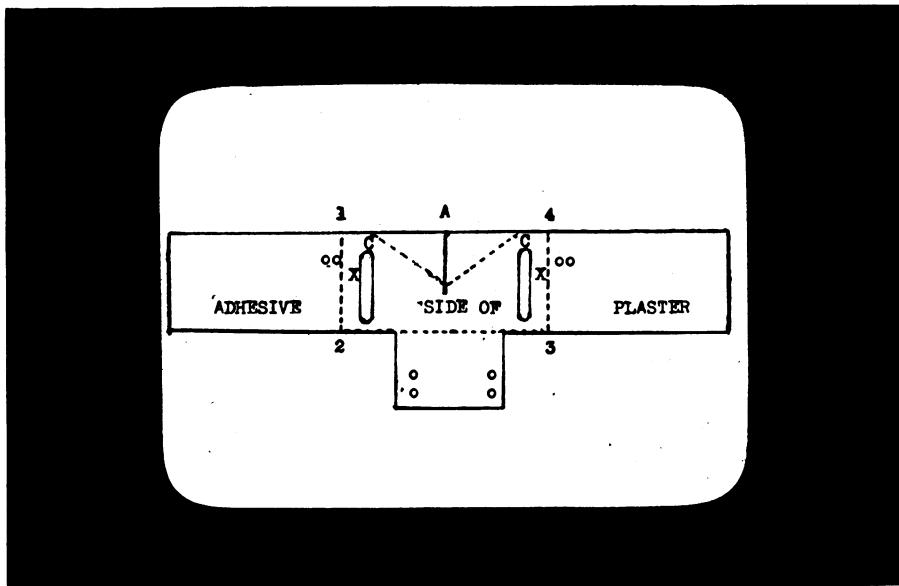


FIG. 2.—Stages in the preparation of the dressing.

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facilitate adhesion of the plaster to the skin. It is further important to use fresh adhesive plaster to insure good retention of the dressing.

A straight cut is made from one-third to one-half of the width of the bridge at the line A-A. The two triangular corners, A-A-C, are then turned

down on the adhesive side and pressed fast. This forms a notch for the perineo-scrotal junction, thus making a close fit to the perineum which is very essential. The next step is to cut two spreaders from wood tongue depressors and press them fast to the adhesive surface at X and X. These keep the dressing well stretched and prevent subsequent wrinkling. The area within the figures I, 2, 3, 4, is then covered, sticky side to sticky side with adhesive plaster and ironed

FIG. 3.—The bridge applied; A-A strips of adhesive plaster used to tack down the lower angles of the plaster. The tension of the tapes when tied over the gauze dressings tends to raise these angles.

down tight over the spreaders. It is notched out at the perineo-scrotal point to conform to the pattern. Double holes are then snipped by curved scissors at the points marked oo and tapes of proper length are tied into them.

The dressing is best applied as follows: The scrotum is raised upward and backward upon the abdomen as far as possible. While in this position the bridge is applied, making sure to get the perineo-scrotal-notched area snugly intact with the perineum. In this position the thigh flaps are then applied with proper tension on this bridge. The final step in the dressing is to use a fairly large piece of rubber dam with a hole for the penis to project through. This largely prevents soiling of the dressings by urine.

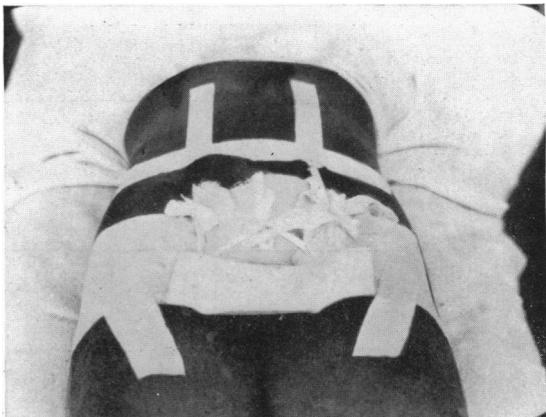
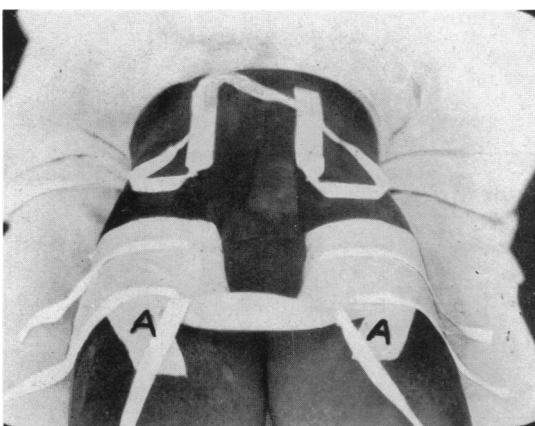


FIG. 4.—Dressing in place.