CONTRIBUTIONS TO CYSTOPLASTIC OPERATIONS

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The attempts for plastic repair of the bladder date back to the end of the past century. The insufficiently elaborated technique, the unclarified anatomo-physiological requirements of the cystoplastic transplant, the inadequate reanimation and anesthesia and the lack of means to combat infection have all greatly contributed to render cystoplasty an operation of high mortality risk. The isolated patients surviving the intervention have been published as rare casuistics. Nowadays, thanks to the experimental material accumulated, precise technique, adequate anesthesia and reanimation and wide scope of antibiotic therapy, cystoplasty gradually enters in the routine surgical practice, rendering possible the treatment of numerous bladder conditions, hitherto considered inoperable.

Our experience with cystoplastic operations comprises 13 patients, operated over the past 10 years at the Varna District Hospital. The indications for surgery have been as follows: in 2 cases — extrophia vesicae urinariae, in 9 — papillary carcinoma of the urinary bladder and in 2 — unoperable stricture of female urethra subsequent to birth trauma.

In both cases with extrophia vesicae urinariae, the procedure suggested by A. I. Mihelson is applied. We give a brief account of their case histories:

1. F. I. F., 14-year-old, from the village Karamanite, district of Provadia, history of illness № 74/11.I.1955, with diagnosis extrophia vesicae urinariae. Local status: within the hypogastrium, a defect is discovered of the abdominal walls measuring the size of a man's palm, with a prolapse of the urinary bladder mucosa therefrom. At the distal end of the latter, the symmetrically situated ureteral orifices are disclosed, discharging urine. The surrounding skin is slightly reddened, m. recti are not palpated, symphisis ossium pubis is missing, the penis is rudimentary and the testicles are palpated in the scrotum. After adequate preparation of the intestines, a typical bladder-sigmoideal anastomosis is performed under general ether anesthesia, according to the method of Mihelson. The postoperative period was uneventful and as early as the first day after the operation, urine escaped from the straight tubule. On the 18th postoperative day, the child was dismissed-clinically healthy. The periodic follow-up examinations, performed up to 1964, show a normally developing child, with miction every other two hours via the rectum, with preserved working capacity and no clinical evidence for progressing urinary infection.

2. G. M., aged 7 years, from the village Grozdevo, Provadia district, history of illness № 186/6. IX. 1957, with diagnosis extrophia vesicae urinariae. General status: within normal limits, showing no pathological

changes. Local status: a defect in the abdominal walls within the hypogastrium, measuring the size of a small apple, through which the bladder mucosa prolapses. The adjacent abdominal skin is slightly macerated. Following routine medical preparation, the child was subjected to vesicosigmoideal anastomosis after Mihelson, under general ether anesthesia. The postoperative period was uneventful, but on the 12th day after the operation, following removal of the sutures, dehiscence of the operative wound occurred at the upper end, measuring 2 cm in length, wherein a small stercoraceous fistule was formed. After further 20 days, fistulography was undertaken according to the method of Sapojkov. Within ten days the patient was discharged healthy. The regular, yearly check-up examinations showed a good general condition of the child, miction every other 2 hours and lack of anamnestic and clinical evidence for developing pyelonephritis or hyperchloremic acidosis.

Our limited experience as well as the rich experience of Soviet authors corroborate the statement that the procedure discussed entails minimum complications, is easily tolerated and should therefore, be advised instead of other surgical methods.

In the past ten years nine patients were admitted at the Varna district hospital with papillary carcinoma of the bladder for radical operative treatment. The sex distribution of the patients was 4 females and 5 males, ranging in age from 50 to 72 years. The diagnosis in all instances was histologically proved — carcinoma papillare vesicae urinariae. Four of the patients were admitted for secondary operation: three after transvesical electrocoagulation of the tumour and one female patient — after nephroureterectomy for Ca papillare pelvis renalis. The clinical course in all instances was characterized by spontaneous intermittent hematuria, moderately pronounced anemia, polakiuria and dysuria. Cystoscopically, in all instances papillary carcinoma was established of varying size, infiltrating trigonum vesicae and in 5 cases — involving some of the ureteral orifices. The urography performed in the latter 5 patients, disclosed disturbed renal function on the ipsilateral side of the ureteral orifice, involved by the tumour. The laboratory and instrumental examinations in these cases disclosed: impairment of the cardiovascular system (myocardial hypoxia) in two instances, slightly disturbed hepatic function (shortened Weltmann's serum test) in seven, mildly pronounced anemia (Hb up to 50% and erythrocytes — up to 3 000 000) was recorded in almost all patients, the reaction of erythrocyte sedimentation rate was substantially accelerated in all patients, all were with normal blood sugar, blood proteins in one case were beneath 6 gr %, plasmatic chlorides in two patients exceeded 600 mgr %. In the latter two patients, the blood urea likewise exceeded 50 mgr %. A negligible amount of albumin was discovered in the urine of all patients as well as varying degrees manifestation of hematuria; leukocyturia was established in three patients. Manifest evidence for renal insufficiency was not come across in any of the patients.

All patients admitted were operated upon after the surgical method suggested by the authors (modification of the Gersuny operation). The intervention was carried out in two sessions and the technique employed was the following: First session — after 3-day preparation of the patient with streptomycin, sulfaguanidine, dairy foods diet and adequate

cleansing of the gastrointestinal tract, medial laparotomy is carried out under endotracheal ansesthesia in gynecological position, starting from the symphisis and reaching 3—4 cm above the umbilicus. After adequate exposure of the pelvic cavity, the posterior peritoneum is cut bilateraly to the sigma — from the promontorium level to the second lumbal vertebra. Through the medial incision, a. mesenterica inferior is exposed and accordingly ligated in close proximity to the abdominal aorta. Thus, maximum mobilization of the sigma is rendered possible without impairing its circulation. At the promontorium level, the sigma is divided from the rectum and the mesosigmoid is resected between a. rectalis superior and the last a. sigmoidea, up to the point of its separation from the a. mesenterica inferior. Thus, after dividing the rectum from the sigma, a. rectalis superior is left nearer to the rectum, and a. sigmoidea — to the sigma. Next, temporary ligature is made of the end of the sigma with a suture thread and maximum mobilization is achieved of the sigma by means of its retraction, together with the mesosigmoid, from the posterior abdominal wall down to the distal end of the colon descendens. Thereafter, through the medial incision of the posterior peritoneum, the two ureters are exposed and retracted together with the neighbouring loose tissue, 5—6 cm distalwards from the promontorium level, where they are divided. The distal ends of the cut ureters are tied whereas within the proximal ends two plastic ureteral catheters № 9 (according to Charr) are inserted, fixed to the ureteral end by means of cat gut thread Kuot. By means of suturing the ends of the two ureteral catheters to a rubber tubing, introduced into the rectum, they are brought out through the rectum whilst the proximal ends of the cut ureters are drived into the open rectal lumen. The latter is closed by means of a double suture row, fixing also the adventitia of the ureters to the intestinal serosa. Thereupon, the Douglas'pouch is exposed and the pelvic peritoneum resected to the letf of the rectum in sagittal direction, for an extension of 3—4 cm. Thus, the previously prepared rectum is reached and incised over a length of 6—12 cm to the left of the anal orifice, between the skin and the anal mucosa. The latter is grasped with Cope's clamps and in a semi-blunt, semi-acute manner, divided from the muscular layer of the rectum; above the sphincter apparatus, the muscle layer of the rectum and m. levator ani is torn bluntly and via the incised pelvic peritoneum, the pelvic cavity is penetrated. Through the canal thus created, the separated sigma is drived out, attaching its cut end by means of single stitches to the anal skin and mucosa. After completing the perineal stage of the operation, the pelvic cavity is inspected, n. presacralis (plexus hypogastricus superior) is cut (running similar to nerve fibers bundle in front of and beneath the bifurcation of the aorta) and a thorough peritonization is carried out of the denuded retroperitoneal space. Finally, antibiotic infusion into the abdominal cavity is performed and the wound is closed with direct suturing. The ureteral catheters are removed 15 days after the intervention.

Second session — performed 20—30 days after the first operation. A medial incision, beginning from the umbilicus and reaching the symphisis is made and the peritoneal cavity entered. Cystectomy is carried out through intraperitoneal approach: the peritoneum is cut over the urinary bladder along the sagittal line, from the Douglas' pouch up to the

cavum Retzii and thereby separated in the form of two flaps, lateralwise from the underlying bladder. First, the posterior urinary bladder surface is freed and later — the lateral surfaces, carrying out ligature and consecutive division of the seminal canal, the distal ends of the cut in the first session ureters and the bladder vessels. Next follows liberation of the anterior bladder wall, retraction of the bladder from the prostate, dissection of the urethra and removal of the urinary bladder. In case the prostate is similarly involved by the process, its removal is imperative together with the seminal vesicles. Following removal of the urinary bladder, a thorough hemostasis is made of the bleeding vessels within the bladder bed, the greater sac of the peritoneum is closed and draining of the bladder bed secured suprapubically and via the urethra.

The operative procedure described is distinguished from that proposed by Gersuny in the following points:

1) The operative method presented is two-staged and hence alleviates the operative shock, obviates profuse postoperative hemorrhage, usually accompanying the cystectomy and provides for enough time for "sterilization "by application of antibiotics within the rectal urine reservoir. The staging of the operative intervention makes possible the prompt normalization of miction and defecation. The first session separately, could be carried out as a palliative operation in instances of inoperable bladder carcinoma, owing to the fact that by shifting the urinary passage through the rectum, the distressing polakyuria, dysuria, profuse hematuria and the hazard of anuria during infiltration of the two ureteral orifices are spared, resulting in lengthening the life-span of the patients concerned.

2) The ligature of a. mesenterica inferior makes possible the maximum mobilization of the sigma and unhindered lowering of the intestine into the anal region with sifficient degree of blood supply preservation. This method renders the operation applicable also in instances with short mesosigmoid, when the classical Gersuny procedure with ligature merely of a. rectalis superior is contraindicated. The sufficient loosening of the sigma provides for its higher resection (not exceeding at any rate, the promontorium level) by which act the capacity of the rectal urinary reservoir is increased.

3) The ureteral implantation by means of direct impaction into the rectal lumen after the method of Boeminghaus, simplifies and reduces the duration of the operation and yields results not inferior as compared to those of the Gersuny method with suturing of the ureteral orifices within the rectal lumen with a rosette of the bladder mucosa. Moreover, this method renders possible the implantation of the ureters also in instances of involvement of the ureteral orifices by the neoplastic process. The direct introduction of the ureters without a valve tunnel reduces the hazard of stenosis at the implantation site, whereas the freely suspended end of the ureter within the rectal lumen obviates the occurrence of rectoureteral reflux.

4) The placement of plastic ureteral catheters and the performing of overlying anastomosis permits the application of an air-tight suture between the ureters and rectum, facilitates the healing of the wound surfaces by means of the transitory urine discharge via the rectum and precludes the danger of postoperative anuria. The employing of plastic cathe-

ters obviates their obliteration by urinary salts and provides for unhindered urinary discharge. The urinary catheters temporarily isolate the rectal from the ureteral lumina and thus, greatly contribute for a more secure "sterilization" of the rectum.

5) Tunnellization of the perineum to the left of the rectum is more favourable than that practiced by Gersuny — "in front of the rectum" — because, firstly, the path from the sigma to the anal ring is shortened and secondly, the path of the tunnel lies mainly through muscle tissues of the perineum. The latter circumstance accounts for an increased fecal retention capacity of the sigma. Driving the sigma anteriorly to the rectum is technically more difficult for achieving, and the necessary rupture, in similar cases, of lig. peritoneoperineale leads rather more often to narrowing of the sigmoid lumen.

6) The supplementary resection of n. presacralis (plexus hypogastricus superior) reduces rectal sensibility, does away with rectal tenesmi, improves the continence capacity of the rectum and accounts for augmentation of its capacity.

7) The cystectomy, carried out in the second session of the operation through intraperitoneal approach, facilitates cutting the peritoneal flaps needed for the closure of the peritoneal sac, whereas intraperitoneal infusion of antibiotics reduces the hazards of postoperative peritonitis due to contamination.

None of the patients died during the clinical application of the method described. Both sessions were performed in 6 patients of the series, and merely the first stage — in 3 cases, owing to inoperability of bladder carcinoma. The postoperative period in all the patients ran a course of moderate severity, since the first postoperative day diuresis was maintained within normal limits, the motor function of the intestines was usually regained on the 4—5 day after the operation in the average, the function of the anal sphincter with effective continence of urine and feces was restored towards the end of the first postoperative month. The listed below early postoperative complications were noted: acueing (exacerbation) of pre-existant pyelonephritis in one female patient and postoperative eventration with prompt subsequent suture of the abdominal walls — in another female patient.

Late postoperative results — within two years after the intervention five patients died — two of those subjected to both operative sessions, from generalized metastases and cachexia; two of the subjected merely to the first stage — from generalized metastases and cachexia and one female patient subjected merely to the first stage — due to chronic pyelonephritis and occurrence of renal insufficiency. The remainder 4 patients, undergoing operation in two sessions, are in a good general condition, with normal defecation and miction, every 2—3 hours. The check-up examinations, carried out every three months, did not reveal evidence for the occurrence of hyperchloremic acidosis, renal insufficiency or advanced infection of uropoietic system. The urographic investigation in two of them disclosed a minor dilatation of ureters. The tonometric examination of the anal sphincter displayed values, ranging from 12—17 mm Hg (according to the method of V. Yanchev).

At the clinic, cystoplastic operations were resorted to also in two instances (females) with strictura urethrae, due to birth trauma. Two variants of the Gersuny procedure were used.

The first variant was carried out in the following manner: after gaining access into the peritoneal cavity through a median incision, mobilization of the sigma by means of a. mesenterica inferior ligature and dissection of the latter from the rectum at the promontorium level, both ureters were exposed and retracted in the promontorium area for a length of 7—8 cm. Both ureters were threaded with silver loops with diameter 1,5 cm. A lateral incision was made, running along the right margin of the rectum, long 3 cm, through which part of the right ureter was drived into the rectal lumen together with the threaded loop, without interrupting the integrity of the ureter. Overneath the drived into the rectum ureter, the rectal incision was closed in two layers, tightening the entrance and exit sites of the ureter into the rectum with single silk sutures between the serosa of the rectum and the ureteral adventitia. The left ureter was similarly drived into the rectal lumen together with the threaded metal loop through the open proximal end of the rectum, which was sutured in two layers above the ureter introduced therein. The entrance and exit sites of the left ureter into the rectall umen were likewise tightened with single serous-adventitial stitches. Thereafter, the proximal end of the cut sigma was brought out into the area of the anal ring, according to the technique already described. The operation was ended with the division of n. presacralis, peritonization of the denuded retroperitoneal space and closure of the abdominal cavity. On the 40th postoperative day, the isolated rectum was penetrated by means of a rectoscope, the metallic loops threaded on the ureters were consecutively grasped and cut with high frequency electric current. Since the very same day, the patient received spontaneous mictions through the rectum, initially every other hour and later, every 3—4 hours with effective urinary continence. The second variant of the operation was carried out in the following manner: after access into the peritoneal cavity through a medial incision, mobilization of the sigma according to the method already described, with ligature of a. mesenterica inferior and dissection at the level of the rectal promontorium, the urinary bladder was opened at the apex vesicae urinariae, anteriorwards, for a length of 3 cm. Termino-lateral anastomosis was made with a two-row suture between the open proximal end of the rectum and the opening effected in the urinary bladder. Next, in the method already described, the freed colon sigmoideum was passed through and fixed into the anal area. Through the urethra a permanent catheter was introduced into the urinary bladder for 7 days.

The postoperative period in both patients was uneventful. The spontaneous miction and defecation were normal and effectively restored in about one month from the intervention. At the follow-up examination three months later, the patients were in excellent disposition, with undisturbed miction and defecation and normal renal function.

The good long-term results achieved with the application of the technique for cystoplasty herein proposed in instances of inveterate stricture of the female urethra, warrant the recommendation of the procedure in the treatment of additional number of patients in order to be able to give a definitive account for its real value.

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ВКЛАДЫ В ЦИСТОПЛАСТИЧЕСКИЕ ОПЕРАЦИИ

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РЕЗЮМЕ

Автор сообщает свой опыт из 13 цистопластических операций. В двух случаях с Extrophia vesicae urinariae была применена операция А. И. Михельсона, с очен хорошим поздним результатом. В 9 случаях с папилярным раком мочевого пузыря был применен видоизмененный автором метод цитопластики Gersuny. Внесенные технические улучшения, значительно упрощают методику Gersuny и делают ее применимой во всех случаях рака мочевого пузыря. В двух случаях с запущенным сужением женской уретры после родовой травмы были применены другие два варианта автора операции Gersuny, при которых были достигнуты очень хорошие поздние результаты.