

THE ESTABLISHMENT AND MAINTENANCE OF AN ARTIFICIAL URETHRA ABOVE THE SYMPHYSIS PUBIS IN CHRONIC PROSTATIC OBSTRUCTION.

Read in the Section of Surgery and Anatomy, at the Forty-fourth Annual Meeting of the American Medical Association.

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I propose to call your attention to an operation for the relief of an extremely distressing and painful form of disease in men, the relief of which was very inadequate until of very recent date. I refer to the establishment of a urethra above the pubic bone in chronic prostatic obstruction.

From a series of over two hundred post-mortems prosecuted by Sir Henry Thompson on male patients over 55 years of age, to determine the percentage of those who were affected with prostatic enlargement it was found that about one in three had more or less enlargement, and only about one in seven of those exhibited symptoms of the disease during life. Consequently we may expect about one man in twenty who is approaching 60 years of age to consult us for this difficulty.

As a rule, enlargement of the prostate takes place in all directions, with occasionally the development within it of separate tumors resembling uterine fibromyomata. Sometimes only one lobe is affected, and again the whole trouble may be due to overgrowth of the middle lobe, which when enlarged gives rise to complete retention.

As the gland enlarges, the length of the prostatic urethra increases, often reaching four inches in length. The vesical orifice is thrown up behind the symphysis, and the curve of the prostatic urethra is much increased, which explains the difficulty often experienced in introducing an instrument into the bladder, and has led to the use of specially devised instruments to traverse the deformed urethra.

In advanced prostatic obstruction the greater portion of the bladder is lower than the internal orifice of the urethra, and forms a pouch behind the prostate. More or less residual urine is left in this pouch after each act of micturition. The obstruction as well as the residual urine increases from month to month and from year to year, and undergoes ammoniacal fermentation from the presence and action of putrefactive bacteria, producing irritation and progressive infection. Inflammation extends from the mucous to the submucous and muscular coat. The bladder walls become hypertrophied from overwork. Contraction takes place with loss of extensibility.

The urine which is loaded with mucus, pus and putrefactive bacteria, is forced back into the ureters, distending and producing inflammation in them.

On account of the stagnation of putrid urine in the bladder and ureters, more or less of this urine is left in the pelvis of kidneys, ending in pyelo-nephrosis or surgical kidney, from which the patient dies, but not until after months and perhaps years of the most intense suffering.

Many cases of cystitis due to prostatic obstruction are entirely relieved by rest and attention to the general health, while in more advanced prostatic disease the distressing symptoms may be relieved by withdrawal of the residual urine with the catheter and

thoroughly irrigating the bladder with antiseptic solutions and proper internal treatment. In another class of cases of which I wish to speak more fully the obstruction is more or less complete. Perhaps not a drop of urine can be passed without the use of the catheter. The bladder is much contracted and the use of the catheter becomes a necessity from fifteen to twenty times a day. The increased growth of the prostate makes the canal difficult to traverse, alike for the surgeon and patient. He only experiences half an hour's rest at night when a desire comes to urinate; again another attempt is made to pass the catheter through the deformed urethra. His powers are taxed to the utmost for continuous sleep is out of the question and his health rapidly declines. Among some of the many operations which have been devised from time for the reduction of prostatic hypertrophy may be mentioned, first, the injection into the prostate with a curved needle of a solution of iodine and iodide of potassium (Heine) which not only gave negative results, but proved to be dangerous. Many competent observers have spent both time and money with electricity without showing any brilliant results. The different methods of compression which have been used have not been attended with success, notwithstanding their frequent and continued recommendation. Internal medical treatment has been as ineffectual as compression.

Mercier's method of punching out a portion of the middle lobe through the urethra by a specially devised instrument has had few advocates and was never used to any extent on this side of the Atlantic.

Another operation which is more recent, and with which the name of Reginald Harrison is intimately connected, consists in opening the bladder by a median perineal incision, dividing the obstructing portion of the prostate and retaining a tube in the opening for six or seven weeks; large bougies are subsequently passed to keep the wound open, when finally it is allowed to heal. The low operation has many disadvantages. First, the patient who is generally in a poor condition of health from long suffering is confined to bed for many weeks; secondly, when the tube is withdrawn and the patient is up and around, there is a constant dribbling of urine, and when the opening is allowed to heal, all the old symptoms are liable to recur.

Prostatectomy, supra pubically through the perineum, or combined, has given brilliant results in many cases in the hands of McGill, Guyon, Moullin, Belfield, Keyes and other enthusiastic workers in the department of surgery. As a rule, patients who submit to this operation are men well advanced in life, and worn out by long continued suffering have renal complications, and the mortality must necessarily be high from uremia and sepsis. The question now arises, can anything be done by any other operative measures for the permanent relief of those cases? It can be answered in the affirmative. By the establishment and maintenance of a urethra above the symphysis pubis. The honor of having first planned and performed this operation belongs to Dr. Hunter McGuire. The technique of the operation is about the same as supra pubic cystotomy for vesical calculus. The patient is prepared the same as for any other abdominal operation. The rectal bag is introduced and distended with fluid. The bladder is thoroughly cleansed with a one-sixth per cent. solution of salicylic acid, which has the advantage over other solutions

of removing completely all the mucus and pus from the bladder wall, which is an important point in the subsequent steps of the operation.

The bladder is distended with the same fluid. The supra pubic region is thoroughly disinfected. The incision is made down to the bladder in the usual way and the bladder is opened on a line with the upper border of the pubic bone. The rectal and bladder distension raises the bladder in the pelvis, consequently the peritoneum is not encountered.

After the bladder is opened the interior is thoroughly explored for vesical calculus, tumors, etc. If there is obstruction at the outlet of the bladder due to projection of the middle lobe, its removal should be attempted if the patient's strength will admit. Any of the tissues should not be lacerated during the operation; particularly is this true of the loose cellular tissue surrounding the bladder as it opens avenues for subsequent urinary infiltration. The bladder walls are not sewed in the wound but allowed to drop back into the pelvis. A large gum catheter is introduced through the wound into the bladder and the urine removed by siphon action. When the wound contracts down to the size of a ten or twelve English catheter the opening is maintained by wearing a plug which resembles a tracheotomy tube, at least a portion of the time. When the desire comes to urinate the plug is removed and the bladder empties itself through the artificial urethra with considerable force. The urethra which is now established is from three-fourths to one and one-half inches in length. In the intervals of urination the recti muscles and other tissues close the opening and there is no dribbling of urine whatever.

Within the past year I have established an artificial urethra above the symphysis pubis in two cases; both were very great sufferers and in both the time had arrived when the introduction of the catheter was difficult both for the patient and surgeon. One of them has kindly consented to appear at the meeting this afternoon. He is a man nearly seventy-two years of age, and has always enjoyed excellent health until about five or six years ago, when his trouble first commenced with frequency of urination, particularly at night. He grew progressively worse, and for the past six months previous to the operation he was not able to leave the house and was introducing the catheter from fifteen to twenty times a day. He was suffering fearfully, notwithstanding the use of large doses of morphine. His urine contained large quantities of mucus pus and bladder epithelium. Although he had been a very great sufferer for some time no evidence of renal disease could be found by either chemical or microscopical examination of the urine, which is exceptional in a case that has had disease in the lower portion of the urinary tract so long. He was very anemic and his health was rapidly declining. He consented to an operation which was performed on April 11, 1893. The preparatory treatment consisted in irrigating the bladder twice daily for three or four days previous to the operation with a saturated solution of boracic acid containing one-sixth per cent. of salicylic acid, trit. repens. and salol internally. The bladder was opened in the usual way and in a pocket behind the enormously projecting prostate were found a few small stones which were removed. The bladder was allowed to drop back in the pelvis and a large drain introduced through the wound into the bladder. No

attempt was made to remove any of the projecting portion of the prostate as the patient's enfeebled condition would not admit of it.

There was some temperature following the operation. The bladder was irrigated three times daily through the tube and dilated as much as possible by hydraulic pressure. He was relieved from pain immediately after the operation and has taken no morphine since. His urine is now clear from mucus and pus and he is able to hold his water from three to five hours during the day and only arises once or twice at night. When the wound contracted down to the size of a number 10 English catheter the plug which resembles, as you will observe, a tracheotomy tube, is introduced for at least a portion of the day to maintain the opening. The patient is now able to empty the bladder completely through the artificial urethra which is just one inch in length. The urine is often expelled several feet from the body. There has been no dribbling of urine whatever since he is up and about. He has gained very rapidly since the operation and you will observe that he is in good condition. He eats well and sleeps well and goes to his place of business daily. He is an enthusiastic advocate of the operation and those who wish to examine him may do so.

The next case was a man 64 years of age. He had been suffering more or less for six years; for some months previous to the operation he was passing a catheter from twelve to fifteen times a day. He had a severe cystitis and his bladder was contracted; rectal examination with a sound in the bladder showed the prostate greatly enlarged in both longitudinal and transverse diameters. His urine was loaded with mucus, pus, and occasionally contained small quantities of blood. He had been treated for some time with antiseptic irrigations of bladder and morphine suppositories. The operation was made in the usual way; the bladder walls were found greatly thickened and sacculated.

In the course of two weeks he was up and about, and when the wound contracted down to a number 10 English catheter, which was about six weeks, the plug was introduced to maintain the opening, and worn a portion of the time. There was some necrosis of the prevesical tissues due to contact with the septic urine. To obviate this danger Dr. W. T. Belfield, of Chicago, recommends making the operation in two stages; at the first operation merely exposing the bladder and packing the wound with gauze until granulations are established, five to seven days, then opening the bladder and completing the operation. The urine is now free from mucus and pus, and he is able to hold it from three to five hours at a time. Both patients are enthusiastic advocates of the operation.

The question might be asked: Is this simply a palliative or ultimately a curative operation? The limited time that has elapsed since my operations will not admit of my answering this question from my own personal knowledge. Dr. McGuire who has had a large experience with the operation reports gradual reduction of the size of the prostate with final restoration of the powers of micturition by the natural route. This is not unreasonable to expect when we consider the greater portion of the hyperplasia is due to the disturbance of urination which constantly exists. And when the bladder and prostatic are put at rest gradual absorption of the ob-

structing tissues might take place. No case in the whole field of surgery can appeal more to our sympathies than a man with advanced cystitis due to prostatic obstruction, and in no case should a surgeon stand by and use simple palliative measures when a radical operation performed early will save the patient long and indescribable suffering.

A NEW MATERIAL FOR SURGICAL SPLINTS AND JACKETS, WITH A METHOD FOR APPLYING IT.

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This material, in its crude form, is old as the hills—for the members of the energetic wasp family have used it, time out o' mind, in the construction of their homesteads. I refer to wood pulp.

There are many varieties of pulp board on the market, and to give their characteristics in detail would needlessly take up your time; suffice it to say they were tried and found wanting. The needful combination of properties sought for was plasticity, toughness, elasticity and rigidity. It took some experimentation to get the desired product, but my task was lightened by consulting my friend, Mr. Charles H. Fish, of Manchester, N. H., a gentleman familiar with every branch of pulp manufacture.

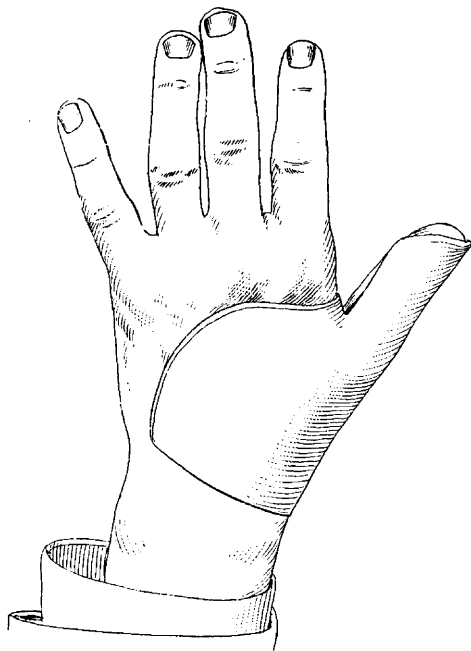


Fig. 1.

The experiments made, and the manufacturing processes employed, might form matter for interesting discourse in the laboratory and the mill; I do not propose to claim your attention for them here, but shall place directly before you a sample of the finished material, and explain how the practical surgeon bends it to his will and produces therefrom a good surgical splint.

A sheet of the material is taken and the splint-blank of the shape intended cut from it. Ordinary arm and leg splints can be outlined immediately on the pulp-sheet and cut without other pattern. For

more complex splints, as of the elbow, shoulder, spine, or pelvis, it is serviceable to first cut a pattern of cloth or paper laid over the part in the position it is intended to retain it, and afterwards, with this pattern for a guide, the proper shaped blank can be cut from the sheet of pulp board. The splint-blank should be moistened (best done by means of a brush) with water, or a stiffening solution, just enough to render the material plastic; then it should be carefully molded over the part with the aid of a roller bandage; after being so retained for a moment, let it be removed and dried. An accurately fitting splint results.

Of the various stiffening solutions tried, that of potassium silicate gives particularly good results. The solution ordinarily sold for surgeons' use and further diluted with water (10 to 50 per cent. according to the rigidity desired) can be conveniently used. This solution hastens the drying process, adds rigidity to the splint, prevents perspiration from softening it, and renders the splint antiseptic. These facts are illustrated in the specimen shown, a splint made in fifteen minutes for a case of compound fracture of the right forefinger; during a part of the time it was worn, its distal end was plunged thrice daily into an antiseptic solution and you can witness how it withstood the treatment. (See Fig. 4.)

A solution of dextrine serves well, adding toughness and stiffness to the material. It is convenient for the general practitioner because dextrine (to be had of paint wholesalers) can be kept in powder form and

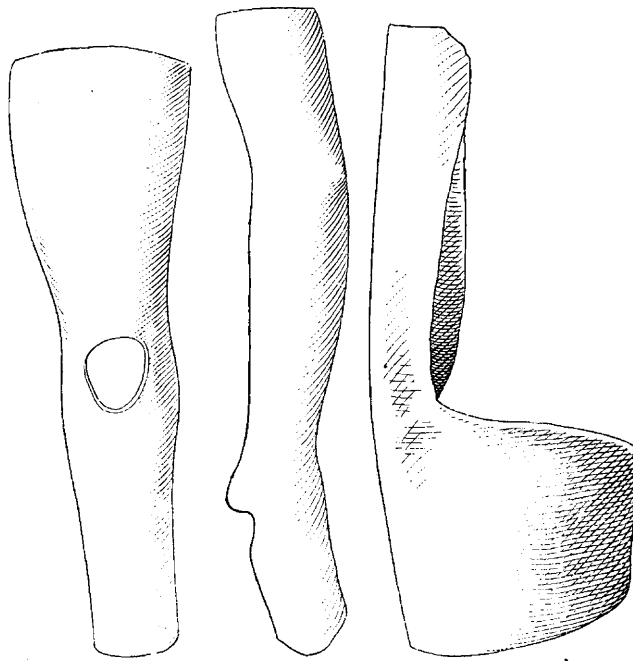


Fig. 2.

Fig. 3.

Fig. 4.

a solution extemporized at any time. Good results are gotten with water as a moistener, and I recall an emergency case treated last winter where with it, a kitchen fire, and a piece of this pulp board, an excellent splint was made in half an hour for a severe injury of the ankle. The splint was worn for three weeks.

Now that the practical working of the material has been touched upon, a glance at the possibilities of its future use may be permitted me.

An illustrious member of this Association, Dr. Marcy of Boston, struck the keynote on seeing one