EXPERIENCE OF SAYRE'S PLASTER JACKET.

Read in the Section of Surgery.

By WALTER BERNARD, F.K.Q.C.P.I., Londonderry.

WHEN I commenced, I had to re-apply the jacket two and three times before I succeeded in making the patient comfortable, and in satisfying myself that I had in some degree carried out Dr. Sayre's directions. The *Factus eruditus* required for the management of the jury-mast in diseases of the lower cervical and upper dorsal vertebrae was not quickly acquired.

I had to contend with other difficulties. Young children were alarmed at being suspended. One young woman fainted. Some, before I could complete my work, became cyanotic. One was seized with a convulsive attack. A warehouseman, aged 18 years, having disease of the third, fourth, and fifth dorsal vertebrae, with complete paraplegia, from Belfast, was so heavy and difficult to suspend, that I had to treat him in the prone position. On the next application of the jacket he became more manageable, and I was able to suspend him. He perfectly recovered, and was able to return to his work after five applications.

During the last six years, rapid and complete recovery from paraplegia has followed its application in my practice. I have not many cases now, inasmuch as the medical men in Belfast and country places can apply it, as well as, and perhaps better than, I can. I brought a case a long distance here to-day to show to Dr. Sayre, which got the greatest relief under the treatment, but which again lost power, even when a well fitting poroplastic jacket was applied.

I will now mention a few brief notes of the case. In April 1883 I saw J. S., aged 3 years and 9 months, the eldest of five children. In the previous month of March, the parents noticed loss of power in walking. On examination I found the three lower dorsal spinous processes prominent, one in particular. Rapid recovery followed the application of the jacket. I put her up three times in nine months, at the end of which time she was so well that I did not deem it necessary to continue the treatment, and only supported her with a well-fitting poroplastic jacket. While wearing this she again flagged, and consequently the plaster jacket had to be re-applied. She has now for some time worn the plaster jackets, running about and feeling well. Indeed, when the old jacket is off for some hours, she is anxious to get her new one put on as soon as possible. Unfortunately, since the jacket was removed on Monday, partial loss of power in the lower limbs has again returned.

The long application of jackets in this case, and in others, did not arrest growth or nutrition, and did not prevent swinging, playing, and running about.

I intend, on my return, to apply another plaster jacket, and I expect the paraplegia will be cured in time.

[The girl, since her visit to Belfast, is now again running about, in good health, and apparently quite well, wearing another jacket.]

THE TREATMENT OF STRICTURE OF THE URETHRA BY INTERNAL URETHROTOMY, WITH A REVIEW OF THE DIFFERENT METHODS.

Read in the Section of Surgery.

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THERE can be no difference of opinion with regard to the danger of neglecting stricture of the urethra; retention of urine, perineal fistulae, cystitis, and suppuration in the kidneys are the most serious, and, at the same time, the most common consequences. Besides obviating these possible evils, we are often called upon to interfere in order to relieve the pressing symptoms of stricture and to prevent their recurrence; and I propose to explain what I believe to be the best means for attaining these ends. I do not intend to discuss the symptoms or the diagnosis of stricture; my remarks will be confined to the various methods that may be employed for effecting a permanent or radical cure. By this I mean the restoration of the strictured portion of the urethra to its normal calibre, in such a manner that the improvement will be not temporary but permanent.

Many methods have been, and are still, employed; the most important of these are four in number, namely, dilatation, rupture, external and internal urethrotomy. With regard to dilatation, either gradual or continuous, it is, of course, the simplest and the safest method, and it should always be first tried; but it is often found in-

efficacious for old standing indurated strictures, for those which are characterised by resiliency, and for strictures of traumatic origin. The second method, rupture or divulsion of the stricture, is open to many objections. With the ordinary instrument, the stricture cannot be lacerated or split without the risk of tearing, at the same time, the healthy portion of the urethra. Besides, it is impossible to estimate the extent to which the stricture has been split, and, if much force be used, the laceration is likely to involve the deeper tissues of the urethra. Another grave objection is constituted by the fact that, in neglected cases, the cicatrices, after Holt's operation, give rise to contractions as resistant as strictures of traumatic origin.

We now come to the methods which involve incision of the urethra; and, first, as to external urethrotomy. In this operation, to which the late Mr. Syme's name has been attached, a staff is passed through the stricture; and upon this, as a guide, an incision is made from the perineum. The results of this operation, so far as can be gathered from statistics, are in general very satisfactory; but it should, I think, be reserved for severe traumatic cases, and for cases complicated by perineal fistulae and abscess. A less serious operation, and one in which only the diseased parts are dealt with, is much more generally applicable. To put the case briefly, I would say that, with the exceptions just mentioned, internal urethrotomy should be performed when the method by dilatation is impracticable, and also when retention recurs in spite of dilatation.

I now, therefore, come to the immediate subject of this paper; and I propose to describe the operation of internal urethrotomy (as practised at the hospital with which I am connected), to allude to the results of the operation, and to review the different methods of performing it.

Internal urethrotomy can be performed in two ways; that is to say, the stricture can be incised from behind forwards, or from before, in a backward direction, towards the bladder. Each plan has its advocates, and it must be admitted that extremely good results have been attained by both methods. Still, as I shall presently attempt to show, the division of the stricture from before backwards is, for several reasons, to be preferred to the other plan.

At St. Peter's Hospital, we are accustomed to use the urethrotome known as Maisonneuve's, but modified and improved in various ways by Sédillot, Gouley, and in particular by my colleague Mr. Teevan. The instrument consists of a grooved staff, which is introduced into the bladder. A triangular blade, with a stilet attached, is made to slide along the groove; and the blade is contained in a double sheath, from which it is protruded when the stricture is reached. In Maisonneuve's original instrument, the blade was furnished with a knob, and the groove extended to the end of the staff. The groove in this instrument terminates two inches from the end; it is likewise fitted with a wire stilet, on the withdrawal of which urine will flow if the instrument be really in the bladder. The knob on the blade is replaced by the double sheath which encases the knife. The instrument terminates in a small screw, by means of which it can be attached to a conducting bougie which guides it into the bladder. Before making the incision, it is of great importance to be quite certain that the instrument is really in the bladder; for, in the absence of such proof, a false passage might be divided instead of the stricture. After this instrument has been passed, the stilet is withdrawn, and urine will then escape if the bladder have been reached.

The operation is performed at St. Peter's Hospital in the following manner. A fine flexible guiding bougie, equal in size to No. 4 or 5 F. is passed into the bladder. The staff or sheath of the urethrotome is then screwed on to the guide, passed through the stricture into the bladder, and held in position by an assistant. The operator, with his left hand seizes the penis just behind the glans and draws it forwards; with his right hand he pushes the stem of the sheathed knife down the urethra until the obstruction is reached; the knife is then protruded, and all resisting tissue in front of it is divided. The incision is thus made in the roof of the urethra. The knife is then withdrawn into its sheath, which is pushed along the urethra in order to ascertain that the division has been complete. If it be so, the instrument is immediately withdrawn. A full sized silver catheter is then passed; the bladder is emptied, and the catheter is at once withdrawn.

It occasionally happens that some difficulty is experienced in the introduction of the catheter after the operation. In some cases, this is due to the staff having been held too far out by the assistant, so that the stricture is not completely divided. But this difficulty will not be experienced if the sheath be found to pass freely through the stricture after division. If it meet with an obstruction, the incision must be repeated. The passage of a full-sized silver catheter suffices to prove that the calibre of the urethra has been restored to its normal dimensions.

With regard to the after-treatment, the ordinary course is as follows. Immediately after the operation, the patient, of course, remains in bed; hot bottles are applied to the feet, and three grains of quinine are given with half an ounce of brandy. A little warm beef-tea is also given from time to time. If no rigors occur, the patient has a hot bath at night, and 48 hours afterwards a French bougie, corresponding in size to the catheter used after the operation, is passed along the urethra. The patient is then allowed to get up. The bougie is passed every three or four days, and, at the end of ten or fourteen days, the patient is taught how to use the instrument himself. When he is able to do this satisfactorily, he is discharged and attends as an out-patient, with instructions to use the catheter once a week. He is kept under observation for as long a period as he can be induced to attend.

The next point refers to the results of the operation; and these, I think, are very satisfactory. The house-surgeon at St. Peter's Hospital has prepared a list of 206 cases of stricture for which internal urethrotomy has been performed during the last ten years. I will mention only a few of the results shown by an analysis of this list. The ages of these 206 patients varied from 16 to 69 years. Only four were under 20; the decade from 30 to 40 gave the largest number of cases. In a large proportion of the cases the strictures were of a severe form. In twelve they were of traumatic origin. Ten cases terminated fatally, but two of them died from causes unconnected with the operation, for one patient succumbed to bronchitis; and in another, death followed lithotomy, which was performed twenty-one days after the patient had been subjected to internal urethrotomy. In a majority of the eight cases in which death was attributable to the operation, the fatal result was immediately due to suppression of urine. Collapse and signs of pyæmia were the symptoms that preceded death in the remaining fatal cases.

We next have to inquire into the results of the operation as regards the condition of the stricture. Are the effects permanent, or are the symptoms likely to return? I believe that a permanent and radical cure will result, provided that the stricture have been sufficiently divided to allow the introduction of a full-sized instrument, and the patient has learnt the art of passing the bougie himself. Whenever circumstances permit, the surgeon should pass a steel instrument from time to time. If, in spite of these precautions, or as a consequence of neglect, the symptoms reappear, the operation can of course be repeated.

I operated last week upon a patient for whom I performed the same operation two years ago. The case was one of traumatic stricture, and the first operation was immediately successful, but the patient neglected the instructions given him; he never attempted to pass an instrument, and the stricture recurred.

A few words with regard to the use of anæsthetics when internal urethrotomy is performed. In the 206 cases referred to, ether was given in 52 instances, and chloroform in 3. Among the last 62 cases contained in the list, anæsthetics were found necessary in four cases only. The operation is by no means a very painful one, and the absence of an anæsthetic considerably lessens the risk to the patient. The cases for which anæsthetics are most needed are those in which the constricting portion is very dense, and the patients are of decidedly intemperate habits. Such patients bear pain badly; they nearly always struggle, and a comparatively simple operation is thus rendered somewhat dangerous. In any case, however, where there is likely to be anything more than the slightest resistance on the part of the patient, an anæsthetic should be given.

The possible accidents of the operation are few in number. Of the 206 cases referred to, hæmorrhage occurred in 15. This, however, is readily controllable, if the operation have been performed upon the anterior portion of the canal, and it is at all times less likely to happen if, as I have recommended, the roof of the urethra be divided. Rigors and urethral fever are somewhat common; their occurrence was noticed in 61 cases. A few grains of quinine given immediately after the operation would appear to lessen the severity of this complication. Extravasation of urine has not occurred in any of my cases. Suppression of urine is the most formidable accident; in five cases it was incomplete or partial; in two it was complete, and fatal in its results. In one of these cases, on *post mortem* examination, the kidneys were found to be enlarged (nearly twice their normal weight) and congested, and to contain purulent fluid in their interiors. The ureters were dilated and full of pus; the bladder was inflamed and hypertrophied, and contained only a small quantity of dark purulent fluid. The record of the urine, as examined a week before the operation, states "urine 1016, acid, no albumen."

With regard to the circumstances which forbid the operation of internal urethrotomy, all I need say is, that it is contraindicated if

severe renal mischief be shown to exist. I should hesitate to operate upon a patient with decided symptoms of pyelitis, or on one whose urine contained albumen and hyaline and granular casts.

I have thus described the operation and its results. I wish, in conclusion, to point out the advantages which my method of operating possesses as compared with the plan in which the incisions are made from behind forwards, as with Civiale's instrument and its modifications. This latter method has, as you doubtless know, been recently advocated by Sir Henry Thompson, in his lectures delivered at the Royal College of Surgeons of England. In his operation, the stricture has to be dilated up to No. 5 English before the urethrotome can be passed. The bulb of the instrument is introduced through the stricture, and passed half or three-quarters of an inch beyond, but no portion of the instrument reaches the bladder. The incision is made from behind forwards on the floor of the urethra. The preliminary requisite of anæsthesia, and the retention of a catheter for forty-eight hours after the operation, are the remaining distinguishing features of Sir Henry Thompson's plan.

There is no doubt that, in Sir Henry Thompson's hands, his method of operating has proved very satisfactory; but to use Civiale's instrument with safety and success requires a man who has had a large experience, and enjoyed very special opportunities. Even under those circumstances, there are, I maintain, several objections to the instrument and the operation. In the first place, I am not prepared to admit that all strictures, suitable for internal incision, can be sufficiently dilated to admit an urethrotome with a bulb of a diameter of No. 5 (English). As a matter of fact, strictures of traumatic origin and strictures attended with much induration cannot be sufficiently dilated. But the bulb of Civiale's urethrotome cannot be passed behind the stricture unless considerable dilatation is feasible. Teevan's instrument, on the other hand, can be passed through very tight narrow strictures. In the second place, having passed Civiale's instrument down the urethra, you cannot be quite sure as to where the instrument has really gone. It may, for example, be in a false passage. With this instrument of Mr. Teevan's, if urine flow when the stilet is withdrawn, you know that you are safe; and, in my opinion, no man should perform internal urethrotomy for the cure of stricture unless he have positive proof that the instrument he employs has passed through the stricture, and is in the bladder. The third objection to Civiale's instrument is, that with it the operator cannot tell where the incision is to stop. With Teevan's urethrotome, you know not only where your incision will begin, but also where it will end, *i.e.*, as soon as all the constricting tissue has been divided.

With regard also to certain other details of the operation, I think that the method I have just described is preferable to Sir Henry Thompson's. Thus I think it safer to make the incision along the roof of the urethra than along its floor. There is less bleeding, and less risk of extravasation of urine. I have indeed noticed bleeding only in those cases in which the incision was made in the floor of the urethra. I also prefer to operate without placing the patient under the influence of an anæsthetic. As I have said before, the pain is slight, the operation requires only a few seconds for its performance, and it is also well to avoid, when possible, even the slight risk involved in the use of ether or chloroform.

In the last place, I cannot regard the retention of a No. 12 or 13 gum elastic catheter for forty-eight hours after the operation as a necessary or safe practice. To say nothing of the discomfort to the patient, surely the risks of cystitis, rigors, and of urethral fever must be increased by the retention of the catheter. My practice is to empty the bladder after the operation; some hours will then elapse before any amount of urine accumulates, and by that time the cut surface will be covered with a clot, and the patient will be able to pass his urine with comparatively little discomfort. This point, with regard to the non-retention of a catheter, was especially insisted on by Mr. Teevan in a paper he read before this Association a few years ago.

These, then, are the advantages which I claim for the one as compared with the other operation. My remarks are based upon my own experience and that of my colleagues, and I am tolerably confident that my future experience of this operation will tend to corroborate the views I have just expressed.

A NEW SURFACE THERMOMETER.—M. Constantin Paul has shown, at the Société de Médecine, a surface thermometer constructed for him by M. Galante. It is fixed on the skin (shaved if necessary) by an India-rubber sucker. A drawing of the instrument is given in the *Bulletin de l'Académie de Médecine* for February 12.