

Remarks on the treatment of urethral stricture by combining internal and external urethrotomy : read before the Lancashire and Cheshire Branch of the British Medical Association / by Reginald Harrison.

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REMARKS

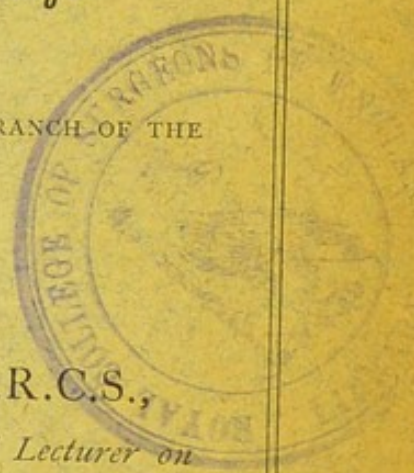
ON THE

Treatment of Urethral Stricture by Combining Internal and External Urethrotomy.

READ BEFORE THE LANCASHIRE AND CHESHIRE BRANCH OF THE
BRITISH MEDICAL ASSOCIATION.

BY REGINALD HARRISON, F.R.C.S.,

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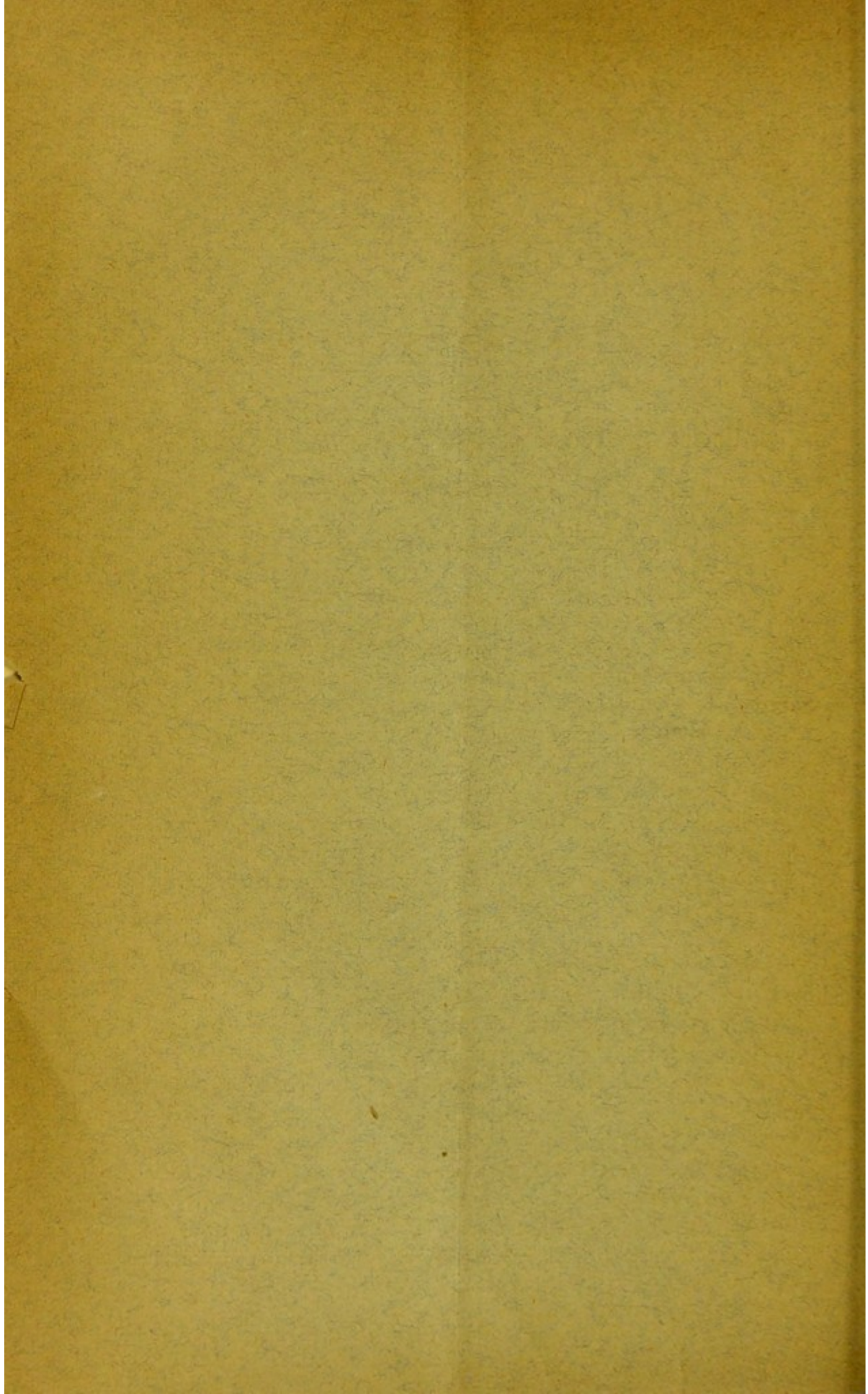
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REMARKS

ON THE

Treatment of Urethral Stricture by Combining Internal and External Urethrotomy.

I PURPOSE, in the following paper, detailing the treatment of certain cases of stricture of the urethra, where, for reasons presently to be stated, the operations of internal and external urethrotomy were combined for a single purpose. It will be seen that the cases were of an exceptional nature, not permitting of treatment by dilatation, and necessitating the adoption of other measures for their relief. In thus speaking, in a manner, apologetically for what was done, it is because I feel that, as matters at present stand, a person with a stricture had better employ dilatation in some form or other, so long as he can keep himself comfortable, and the size of the urethra is not progressively diminishing. When a patient finds himself liable to attacks of sudden retention, and other serious inconveniences, then it becomes necessary to seek further means of relief. With the views that at present prevail in reference to internal urethrotomy, there will be not a few who would probably, under the circumstances I have mentioned, urge the claims of this procedure. I must, however, in reference to the latter operation, express myself as differing materially from many other surgeons of large experience, for whose opinions I entertain much respect. It is not my intention to convert these remarks into a full criticism on internal urethrotomy; but, as I have been in the habit for a considerable number

of years of carefully inquiring into the history and previous treatment of all cases of stricture that have come under my care, both in hospital and in private practice, I cannot refrain from noticing what appear to me to be the chief defects in this operation, and which, in my judgment neutralise the advantages claimed for it.

In the first place, internal urethrotomy is extremely liable to be followed by a form of fever which is exceptional, unexplainable, and occasionally fatal. It is not the ordinary wound-fever of operations; it is generally ushered in with a rigor, and, in its course, presents every degree both of mildness and of severity. It is occasionally attended with suppression of urine, and it sometimes proves fatal in cases which seem well adapted for operation; and, after death has happened, no satisfactory explanation as to its causation or pathology can be offered.

In a recent paper on practical surgery, Mr. N. C. Dobson thus writes* on internal urethrotomy:—"I have a dislike, perhaps a prejudice, to the operation, as I think it not so free from danger as it is sometimes thought to be, and therefore I have avoided it. On one occasion, however, I felt I should be compelled to do internal urethrotomy, and made arrangements to do so, but on my telling the patient there was some slight risk he told me an eminent London surgeon, whom he had consulted, told him there was no risk. In consequence of this my patient went to London and was operated on by an equally eminent surgeon, and died in about forty-eight hours, and as the operation was done by one of the most skilful surgeons of the day there could be no doubt that, so far as the operation was concerned, there was no fault in its performance. Though I had no practical acquaintance with this operation I have always felt that there must be some considerable risk associated with it, when I have known patients actually die in a few hours from the mere passing of a catheter where there was no bleeding or evidence of laceration, and many times have I seen (and all surgeons must have had similar

* *Medical Times*, October 31st, 1885.

experience) severe rigors and serious symptoms follow catheterism, not in old prostatic cases only, but in young and middle aged men with stricture."

In the second place, internal urethrotomy does not furnish better permanent results than other methods of treatment; some of the worst cases with which I have had to deal have been those where the stricture has been divided from within. Nor can it be urged that the use of the bougie is ever dispensed with, even after the most successful performance of the operation; to operate on a person and to require him to continue the introduction of an instrument for the remainder of his life, indicates that only a partial good is to be hoped for at the best.

With important contingencies such as these to provide against, it is not surprising that some surgeons hesitate to adopt internal section otherwise than under very exceptional circumstances. Still, on the other hand, it is impossible not to see that, so far as the operation is concerned, there is much to recommend it on theoretical grounds.

On carefully considering the whole subject, it seemed that, if it were possible to assimilate the performance of internal urethrotomy with some other operations on the urinary apparatus, where there was an absence of any special form of fever or septic intoxication following them, and where the wounds inflicted did not heal with a scar-tissue, which subsequently manifested an inordinate disposition to contract, we might mitigate, if not entirely remove, the more prominent objections connected with internal urethrotomy to which I have alluded. If, for instance, we take the operations of lithotomy and of perineal section, where the urethra is more or less involved in the wound, and where, at the same time, provision is made for the escape of urine from the bladder by the newly formed passage, we shall find both proceedings free from the subsequent occurrence of rigors, and from the development of the special form of wound-fever, which, in varying degrees, almost constantly follows internal ureth-

rotomy. If the temperature-charts be taken, say of fifty cases each, of lithotomy, of perineal section, and of internal urethrotomy, we shall see whether such a statement is not warrantable, whatever the deduction therefrom may be. I cannot remember an unexplainable rigor following immediately upon a lithotomy; but, in my experience, after internal urethrotomy, it has been almost constant. In what lies the difference? Are the anatomical and physiological arrangements in the female sex sufficient to account for its entire immunity from anything resembling urinary fever or intoxication as observed in the male, in all cases involving operative interference with the female urethra?

Why do not persons suffering from tight œsophageal strictures suffer from rigors and fever after the passing of bougies, even when it is evident that the operation has occasioned some breach of surface?

Mr. Berkeley Hill thus speaks (*British Medical Journal*, 1879) of what he has observed. "About three years ago, I tied in a catheter in every alternate case, in a series of thirty-eight urethrotomies, leaving the urethra unprotected from the urine in half the cases, without regard to the lightness or gravity of the case. On comparing the after-progress of these cases, I found that elevation of temperature and rigors occurred in both sets of cases, but far more frequently in the set where a catheter was not tied in. Though shivering was not invariable, a rise in temperature always took place where a catheter did not lead off the urine during the first twenty-four hours. This effect of the flow of urine over the wound is unmistakable. The temperature after the operation remains normal for as many hours as the patient refrains from micturition. But within half an hour after urine has flowed through the urethra, the thermometer shows unnatural heat, in some cases not rising above 100° Fahr., and subsiding in five or six hours to a normal range. When the re-action is great enough to produce higher elevation of temperature and rigor, the amount of previous kidney-degeneration is probably considerable, and the approach to danger is pretty close. In

Mr. Davies's table, there are twenty cases where the temperature, after incision of subpubic strictures, was noted hourly; in twelve a catheter was tied in, in eight it was omitted. In all of the eight, the temperature rose in the twenty-four hours, the lowest being 102° Fahr., and the highest 106.6° Fahr. Of the twelve where the catheter was tied in, in six the temperature remained normal throughout. In three others, temperature remained normal until after the catheter had been removed. In the last three cases, notwithstanding the presence of the catheter, the temperature rose, on the night of the operation, to 100° , 102° , and 103° Fahr. respectively, becoming normal next day."

The only case I have seen where rigors and fever, such as are here referred to, happened after an operation for stone, was once when, by reason of a stricture, I failed to extract a stone which lay embedded in the walls of the urethra, immediately behind the contraction. I preferred, after a trial, to dilate the stricture, and to leave nature to complete the process of expulsion, which she speedily did at the next act of micturition. The canal was somewhat lacerated by the forceps, and consequently the condition was not unlike that of an internal section for stricture. Notwithstanding a sharp attack of urinary fever, extending over two days, in connection with this almost trivial incident, the patient made a good recovery.

Since I have been engaged in the investigation of the circumstances under which urinary fever is provoked, with the view of avoiding it in practice, an important communication has been made to the Société de Biologie, by Professor Bouchard (*British Medical Journal*, June 6th, 1885), who has drawn attention to the poisonous effects of normal urine when injected into the blood, even in small quantities. It seems exceedingly probable that these effects are due to the presence of certain alkaloids in the urine. From a chemical standpoint, the whole subject is worthy of the most careful investigation. If it be found possible to determine precisely the substances capable of producing such poisonous consequences as are usually

attributed to the alkaloid group, it will necessarily follow that we shall learn how to avoid the conditions under which these substances are produced.

Again, though the urethra is cut with the knife, and is often torn or scraped during the extraction of rough stones with the forceps, I have never known, in a personal experience of something like one hundred cases of lithotomy, in persons of all ages, a stricture of the urethra to follow, but I have known, within this category, two instances where persons were permanently cured of bad strictures by an extension of the wound necessary for the removal of the stone.

A rupture of the urethra following a blow or contusion of the parts, is generally regarded as exposing the patient to an almost certain risk of a stricture of the worst kind. This liability is, I believe, from some experience of these injuries, largely influenced by the conditions under which the patient is placed immediately after the accident; in other words, the liability to urinary fever, and to subsequent stricture, is mainly determined by the line of treatment that is pursued. Let me take two examples; 1, where the urethra was completely torn across, and there could be no doubt as to the treatment; and, 2, where the rupture was partial, and less heroic measures were, with the best intentions, employed.

Three years ago a middle-aged man fell, on his perinæum, across a joist, and completely ruptured his urethra, about the membranous portion. My house-surgeon at the infirmary could not pass a catheter. I saw the patient within an hour of his accident, had him placed under ether, managed to slip a staff into his bladder, and made him a median perineal urethrotomy; through this the urine drained for several days. The patient made just as good and rapid a recovery as any case of median lithotomy I have seen, and is now as sound as if he had been operated on for stone, instead of having had his urethra torn across. He has not a sign of stricture, nor is he now likely to have. Five years ago an omnibus conductor was kicked behind

the scrotum, and bled from the penis. He was found to have a partial rupture in his membranous urethra. A soft catheter was, however, introduced into the bladder, and was retained for ten days, when the patient began to pass his urine naturally. During this period, the temperature chart showed many variations which gave cause for uneasiness. He apparently made a good recovery. Twelve months afterwards, he again came under treatment, for a stricture of the worst type. Instances such as the former which are not exceptional, point to the conclusions that a stricture is by no means a necessary consequence of a ruptured urethra, and that the development of the contraction has a relation to the treatment that immediately follows the infliction of the lesion.

My own observations on this point appear to correspond with those of Dr. Max Oberst, of Halle, who states (Volkmann's *Sammlung Klin. Vorträge*, No. 210) that, if this injury be treated by a free outlet for the urine, and effusion from the internal wound, it need seldom excite serious apprehension; but if on the other hand, it be not judiciously dealt with, it will in many instances not only threaten the life of the patient, but permanently impair the urethra.

Further, it must be noted how unfavourable are the conditions for producing the best kind of repair which generally attend the operation of internal urethrotomy. The section which is requisite for the division of the contraction necessarily paralyses the urethra to the extent, or rather more, of the wound that has been inflicted. Hence the process of repair has to be carried on with the wound soaked in the urine that is left behind to stagnate, and to undergo change, after each act of micturition. This is a very different condition from the incontinent flow of urine over the glazed and granulating open wound of a lithotomy, or of a perineal section. In one case, it is merely contact of urine with open surfaces; in the other, retention within a confined space.

Amongst the most valuable contributions made to the

surgery of the urinary organs must be included the late Professor Syme's observations (*On Stricture of the Urethra and Fistula in Perinæo*, Edinburgh, 1849) on the treatment of stricture by perineal section—a communication which may be regarded as the most important one we possess on the radical treatment of this affection. In it we have, not only provision for the complete division of the stricture, but also for avoiding those contingencies to which I have referred as seriously interfering with the more general acceptance of internal urethrotomy. Amongst the few specimens I know of, where there is evidence that a stricture had been permanently cured, is one that recently came under notice at the Royal Infirmary. It was from a patient, aged forty-six, who died of chronic Bright's disease, in Dr. Davidson's ward, in February, 1885.

When ten years old, he injured his perinæum, and subsequently suffered from stricture and urinary fistulæ of the worst type. In 1867, Mr. Bickersteth performed Syme's perineal section for him. In 1869, he was known to be quite well; and, during his recent residence in the Royal Infirmary, Mr. Bickersteth took care to determine that the stricture had not returned, though no precautions appear to have been taken by the patient during this long interval of time. After his death from renal causes, as mentioned, the urethra was removed and carefully examined. No sign of stricture could be found; in fact, the calibre of the urethra, along the line where the section had been made, was positively larger in proportion to the rest of the canal; it seemed to have yielded somewhat under the pressure of urine.

I have frequently resorted to Syme's operation, with excellent results, where it was possible to include the whole of the stricture within the limits of a perineal incision. It is clear that this proceeding is not applicable to some very obstinate strictures, by reason of their position and relation to the perinæum. For instance, strictures within the limits of the scrotum, or in the penile urethra, are obviously beyond a legitimate reach of it.

A careful consideration of the various points to which I

have already given prominence led me to conclude that it might be possible advantageously to combine the two operations of external and internal urethrotomy. In doing so, my object was to secure that the healing process following the division of the stricture should proceed without being subjected to those influences, immediate and remote, which I have ascribed to the presence of stagnant urine in the wound. I desired to put in, as Gouley (*Diseases of the Urinary Organs*, p. 76, New York, 1873) expresses it, "a cicatricial splice," which should be formed under circumstances most favourable to kindly repair. How this was to be done, will best be understood by a perusal of the cases I will now relate. The first case, which served to lead up to the more complete development of the process, is as follows.

CASE I.—J. McL., aged thirty-six, came under my notice at the Royal Infirmary in May, 1884, with a tight bulbous stricture. Fourteen years previously, internal urethrotomy had been performed. With care, he kept well until within the last twelve months, when, by neglecting the use of the bougie, the stricture returned; it was a dense one, and would not yield to dilatation. On June 6th, I performed Holt's operation, with a smaller divulsor than usually employed. After this was done, a full sized bougie passed readily into the bladder. There was much febrile excitement afterwards, and on the 10th, a considerable perineal tumefaction could be felt. The patient's condition was such as to cause me some anxiety. With the view of averting abscess, and possibly extravasation of urine, on the 11th I passed a grooved staff, opened the perinæum, and introduced a drainage-tube into the bladder. The point where the urethra was opened was just behind the stricture that had been divulsed. The patient made a good recovery; and when he was last seen, eleven months after the operation, a No. 10 bougie passed easily, and he was urinating normally. This case is merely introduced as being a suggestive one in connection with others that followed. It pointed to the local and general advantages that imme-

diately followed the complete withdrawal of the urine from contact with the divulsed portion of the urethra.

CASE II.—J. C., aged forty-five, was admitted on July 2nd, 1884, with a tight stricture of the bulbous urethra, perineal fistulæ, and a chronic orchitis. On July 9th, I succeeded in passing through the stricture a No. 2 English bougie. In the evening he had a severe rigor, and was feverish afterwards. On July 11th, I divided a long stricture with Maisonneuve's urethrotome. I then placed the patient in the lithotomy-position, passed a grooved staff, opened the membranous urethra, and inserted a drainage-tube into the bladder. No rigor or fever followed, and the urine drained clear of the stricture. Twice a day the urethra was washed out from the external meatus with an antiseptic fluid; for nineteen days the urine drained by the perineal tube. After the drainage-tube was withdrawn, the wound closed, and the patient left the infirmary on August 15th, passing a full stream, and with a urethra admitting a large sized instrument.

CASE III.—P. McQ., aged forty-five, was admitted on June 10th, 1884. He had a urethra which was impervious just behind the scrotum, and numerous fistulæ, through which pus and urine trickled. The first thing to be done was to make him an urethra, or rather, a direct way into his bladder. In the course of seventeen days, I succeeded in doing this by taking a line which I thought as nearly as possible corresponded with the original urethra. Along this I passed a urethrotome, and made him a passage which would admit a good sized staff. Then I did him a perineal urethrotomy for drainage; the new urethra was washed out with an antiseptic fluid frequently from the front, with the result that, by August 16th, all the fistulæ had closed but one, and the patient returned home urinating normally, and passing a full-sized instrument.

CASE IV.—E. C., aged twenty-five, was admitted in January, 1885. He had a tight stricture in front of the scrotum, and a urinary fistula, with indurated edges, through which urine passed. By the urethra, the patient voided his

urine in drops. On January 15th, I divided the stricture with a Watson's urethrotome. I then pared the edges of the fistula, and closed it with silver wire. A perineal urethrotomy was next performed, and a drainage-tube passed into the bladder. It is not necessary to follow the case throughout. On February 21st, he was discharged well; that is to say, his fistula and perineal opening were both closed. He urinated naturally, and a full-sized bougie could be passed. He has reported himself once since as quite well.

CASE V.—W. C., aged thirty-nine, was admitted on January 2nd, 1885, with the history of a stricture extending over twelve years. He had undergone, some years ago, Holt's operation, at a Birmingham Hospital. He had a tight long stricture about the bulb, and a less important one behind it. In addition, he had an orchitis, which was suppurating, and required opening. The principal stricture was long and cicatricial, such as is generally seen when from any cause the operation of rupture or divulsion of a stricture has failed. I could only pass an extremely fine instrument to commence with, and it was not till February 6th that I had made sufficient progress to get in a urethrotome. Having succeeded in doing this, I divided both strictures internally. In doing so, the longer stricture was so hard that the instrument failed at first to accomplish what I desired, I therefore had to reintroduce it, and to use it more freely. To satisfy myself that every source of constriction, along the whole length of this very distorted urethra, had been removed, I introduced Gross's dilator, and, having somewhat separated the blades, after the instrument had fairly entered the bladder, I withdrew it. I thus satisfied myself that every cause for stricture had been removed. In doubtful cases, after internal urethrotomy, I have thus used Gross's dilator with advantage; to operate and to leave a single band of contracted tissue undivided, however slight, is to provide a cause for the development of another stricture. After I had satisfied myself that the stricture had been removed, I

introduced a grooved staff, and opened the membranous urethra for the passage of a drainage-tube into the bladder. The progress of this case was somewhat delayed; in the first place, the internal urethral incisions had been so free, that some blood-clots were retained in the anterior section of the canal and suppurated; it was further necessary to make a median antescrotal incision, to give exit to this discharge. I have since provided against the latter contingency in cases where I have had to make the internal urethrotomy freer than usual, by introducing a piece of drainage-tube through the external meatus, and bringing it out from the perineal wound by the side of the bladder drainage-tube; this permits any blood to drain off, and affords a ready means for washing out this portion of the canal with an antiseptic fluid. In this way the urethrotomy-wound can be made to heal, not only without contact with urine from the commencement, but free from the constant presence, in a confined space, of the products of the healing process. In other cases, where the internal cut has been small, I have found it sufficient to have the anterior portion of the urethra washed out frequently with an antiseptic fluid; this can be readily done by a syringe introduced at the external meatus, the fluid escaping by the perineal wound. I have thought it necessary to refer at some length to these details, inasmuch as they will be found to provide for the complete arrest of hæmorrhage from the internal section, should such occur, and, further, for the application of the antiseptic system in the subsequent management of the wound, if this precaution be deemed desirable.

To continue with my case. In addition to the drawback which led to this digression, the patient had a pretty sharp attack of bronchitis, to which he appeared subject. The perineal drainage-tube was finally withdrawn on March 19th, by which time the cicatricial splice was soundly completed, and a full sized instrument could be passed into the bladder.

On April 23rd, the patient was discharged well. On

May 11th, 1885, he presented himself for examination. Both wounds were healed; he was passing urine, as he stated, in a full stream for the first time in his life, and a large bougie passed without any stricture being felt. What pleased me most was to find the steady improvement that had taken place in the tissues of the urethra; instead of being harsh and unyielding, they had become almost as soft and pliant as in the original state. This was obvious both from within and without.

I am indebted to my house-surgeons, Mr. Pearson and Mr. Dawson, for the careful manner in which the numerous details connected with the management of these, and other like cases, were carried out.

Sufficient illustrations have now been given of a method of operating which has, so far, justified my expectations. I shall proceed to notice some points which the cases suggest. Though it would be premature to speak of the combination of these two well-recognised methods of operating, as affording a means of radically curing urethral stricture, there is much encouragement for such a hope in what has already been observed. I have now operated in this way on twelve occasions, without meeting with any discouragement; and though this number is not large, yet it includes the worst and most unpromising types of the disorder.

In the first place, it has been uniformly noticed that after the double operation we have never had a rigor, nor the development of that special form of urinary fever which frequently follows internal urethrotomy, and is occasionally fatal without forecast or explanation. If there has been any febrile excitement at any time after these operations, it has not been of an exceptional kind, but similar to what may follow the infliction of any wound, or it has been explainable by some such ordinary occurrence as the retention of matter in a disused fistula, or sinus. In the next place, we have been able to put into the urethra, at the point required and to the extent necessary, a cicatricial splice or interval of new tissue, formed and completed

without contact with urine or other possible source of irritation. If the urine be capable, as it has been suggested, of forming, under certain conditions, poisonous alkaloids, their absorption by these wounds has been rendered well nigh impossible. The urethra has been placed absolutely at rest, and thus the process of repair has been facilitated.

We have already had evidence as to the different character of the scar-tissue which is produced by this process, compared with that which follows internal urethrotomy, where no special provision is taken to prevent the contact of stagnant urine and discharge with the healing wound. It is not difficult to imagine that the cicatrix in two instances must differ.

One word before I finish, in reference to the kind of external urethrotomy that is performed. To speak of it as a perineal section is to convey a wrong impression. It should be described as a perineal puncture with a knife, completed with a probe, along which a drainage-tube is conducted into the bladder, the process usually occupying a couple of minutes, or thereabouts. It is not necessary to introduce the finger into the bladder at all; in fact, this should be avoided, as it may cause a prostatitis. I operate in the following manner. The patient being placed in the lithotomy-position, and a grooved staff introduced, I puncture the membranous urethra with a long straight finger-knife, one inch in front of the anus, the back of the knife being towards the rectum; the incision is slightly enlarged forwards, so as to permit the introduction of the index finger; if the staff be found exposed at the bottom of the wound, as it generally is, all well and good; if not, I reintroduce along my finger to the bottom of the wound a somewhat blunt though pointed knife (made for the purpose), with which I clear away the few fibres that remain between the tip of the finger and the groove; if a sharp knife be thus used, either the wound is made unnecessarily large, or the finger may very easily be cut. The plan of the incision is first to make it fit the finger, and subsequently the drainage-tube; if this be done accurately,

there is practically no bleeding. When the groove of the staff is felt, Wheelhouse's small probe-pointed gorget is slid along it, the staff is withdrawn, and the drainage-tube passed along the concavity of the gorget into its position. The proceeding that I have thus described is merely for the purpose of drainage, and for placing the urethra at rest. It is, of course, preceded by the performance of internal urethrotomy, which at once admits the passage of a full-sized sound.

It may be urged, What is to be done with those cases where it is found impossible to pass even the smallest instrument to commence with into the bladder? All I can say is, that in practice I do not meet with these cases; where urine will escape, an instrument will enter. The great improvement that has recently taken place in urethral instruments for such purposes has almost entirely removed the impassable stricture. Where there are fistulæ, and the urethra is at some spot impervious both to urine and to instrumentation, we have a very different condition of matters. One of the cases illustrates what may be done in the manufacture of a new urethra, capable of permanently discharging its normal function.

The drainage-tubes I employ are usually of gum-elastic, four or five inches in length, and somewhat less in thickness than an ordinary index-finger. They are secured by an eye on each side, through which a tape can be passed; they are also fitted with a piece of India-rubber tubing, by means of which the urine is conducted into a receptacle by the patient's bedside. In some cases, where the floor of the bladder is very irregular, or is sacculated, a double drainage-tube is preferable. The length of the drainage-tube in its relation to the interior of the bladder is of importance. It should be just within the bladder and no more. I have drainage-tubes of different lengths, and verify their suitability to each particular case by rectal examination. After they have been inserted in this way, a correct fit and thorough drainage is obtained.

In conclusion: why persons should so frequently have

an exceptional form of fever after internal urethrotomy, and why wounds of the urethra should so often be followed by the formation of an unusual kind of scar-tissue, are points worthy of our most careful inquiry. For it may be said truly that much of the future surgery of the urinary organs depends upon the more complete elucidation of these two questions. If this paper in any degree contribute towards the consideration of these topics, its primary object will be attained.

Since this paper was read I have had further opportunities of examining some of the patients whose cases are described; the improved condition of their urethras so far remains permanent. I have also operated on other advanced cases in the manner here stated with equally good results.

41, RODNEY STREET, LIVERPOOL.

November, 1885.
