ON
THE EFFECTS
OF
STRICTURE OF THE URETHRA,
PARTICULARLY OF THE
SACCULATED STATE OF THE BLADDER,
WITH AN
INQUIRY INTO A MODE OF TREATMENT TO AVERT THIS LATTER
CONSEQUENCE OF STRICTURE, WHICH IS OFTEN FATAL.

By JOHN SHAW, Esq.

Read Feb. 25, 1823.

THE opinion prevails more generally now than at any former period, that the improvements made in surgery have resulted from the methods of investigating the nature of diseases, by comparison of the healthy organs with the same parts in a morbid state. This induces me to hope, that the proposal to examine in this way a disease more common, and therefore more interesting, than many which have engaged the attention of the profession, will be favourably received by the Society.

The disease to which I allude is Stricture of the Urethra ; a disease which may be considered particularly interesting, not only because it is very

common, but at the same time the most difficult to treat successfully, while, if the condition of the parts be not thoroughly understood, it often proves fatal. Our interest in it is also increased by the knowledge, that if we pursue a plan of treatment founded on correct notions of the anatomy and pathology of the urinary organs, we may not only rescue many patients from the most severe sufferings, but also offer well-grounded hopes of a permanent cure. By a correct and safe practice, founded on a knowledge of anatomy, the surgeon has it in his power to confer greater and more lasting benefit, than can be promised after the most brilliant and successful operations on a greater scale.

I shall not at present describe all the effects produced by stricture, but confine my observations to four distinct pathological facts; each of which, however, I trust, will be considered worthy of the attention of the Society.

1st. I have not, in more than a hundred dissections which I have made of diseases of the urethra, seen a stricture or narrowing of the canal, posterior to the ligament of the bulb; nor have I been able to find one example of stricture beyond this part among those preserved in the College Museum.

2d. In almost every instance where a narrow stricture has existed for some time, in any part of

the urethra anterior to the ligament of the bulb, I have found the membranous and prostatic portions dilated to three or four times their natural size.

3d. The ducts of the prostate, which are naturally very small, are always more or less enlarged when there has been a stricture, or a long continued irritation of the canal.

4th. When such a stricture as causes occasional retention of urine has existed for some years, the bladder is found to be not only thickened but often at the same time sacculated.

I shall now endeavour to show the importance of collecting facts which shall either substantiate or invalidate the accuracy of these observations.

In doing this, my principal object will be to bring before the Society certain facts regarding the sacculated state of the bladder, which have not, as far as I can learn, been hitherto noticed ; but previous to doing this, I may perhaps be permitted to offer some remarks upon certain practical questions connected with the observations just made, and which, though of daily occurrence, do not seem to have met with that attention which their importance merits.

If the first three observations are correct, certain important practical rules may be deduced

from them. First, if in examining a patient who has symptoms of stricture, the instrument is obstructed at a point posterior to the ligament of the bulb, we ought not to attribute the impediment to a narrowing or stricture of the passage, but to some other cause ; to one which will not be removed by such means as are available in the case of stricture. If the second observation, that the membranous and prostatic parts become enlarged in consequence of stricture, be correct, it will be admitted as a consequence, that if a bougie be obstructed posterior to the bulb, in a patient who has previously had stricture in the anterior part of the urethra, there will be still less probability of the obstruction to the passage of the instrument through these parts being caused by a narrowing or stricture of the canal.

The rule obviously deduced from these facts is, that, on feeling an obstruction posterior to the ligament of the bulb, we should not persevere in the attempt to push the instrument further in.

To this rule we shall perhaps be inclined to assent, when we consider that such an obstruction, though an impediment to the entry of the instrument, will probably be none to the passage of the urine from the bladder ; and, moreover, that it is questionable whether carrying an instrument along the dilated part is always beneficial to the patient.

The importance of recollecting these facts will be still more obvious, if the truth of the third observation be admitted ; since, in consequence of the enlargement of the ducts, it is highly probable, that if the instrument has not been obstructed by certain natural impediments, it has passed into one of the dilated ducts. If this should happen, and if the attempt to push the instrument into the bladder be persevered in, a false passage will probably be formed. The enlargement of the ducts, and the consequent difficulty of passing an instrument through the membranous and prostatic portions in cases where there has been a stricture in the anterior part of the canal, is well illustrated by the preparations on the table, and particularly by No. 50 a. in which a complete labyrinth is formed by the enlarged ducts and by membranous bands, both of which are evidently the consequence of the narrow stricture behind the glans.

If the catheter enters into one of the enlarged ducts, it may be pushed through the prostate into the back part of the dilated bladder : indeed several preparations, illustrative of this accident, have been preserved in the Windmill Street Museum, and are now upon the table of the Society.

The importance of exhibiting these examples to the Society is proved by the fact, that even at the present day the authority of Desault is given for using forcible means to overcome obstructions,

which he describes as the consequence of the narrowing of the prostatic part of the urethra.

As the proofs afforded by the preparations on the table will be, perhaps, considered sufficient to shew the impropriety and danger of the attempt to overcome by force the difficulties opposed to the introduction of an instrument after it has passed the ligament of the bulb, I shall not take up the time of the Society by dwelling more upon the subject, nor shall I here enter upon the very important question of the propriety of using force to overcome obstructions in any part of the canal*.

I shall now beg leave to draw the attention of the Society to a question connected with the anatomy of that part of the urethra which is surrounded by the ligament of the bulb, during its healthy state, but more particularly while suffering under a slight attack of inflammation.

In the accompanying drawing of the natural form of the canal, we see that it becomes suddenly narrow at the bulb. This abrupt diminution of the calibre of the urethra must of itself be a cause of difficulty in passing an instrument. If to this we add the obstruction occasioned by the natural curve of the canal being here likewise suddenly

* This question is discussed in the Notes made by me to the last edition of the work, "On the Diseases of the Urethra, by Mr. Charles Bell." See particularly the note, p. 156.

changed (for the ligament is higher than the sinus of the bulb), we shall admit that the mechanical impediments to the introduction of an instrument are greater at this point than at any other.

The accuracy of this observation will be acknowledged by those who have superintended the operations of students, as it is invariably at this part that they are foiled in their first attempt to pass a catheter in the dead body.

If to these impediments, we add the difficulty occasioned in the living body by the contraction of the muscles which surround this part of the urethra, and which is always excited by a slight inflammation of the membrane, we shall understand how the spasmodic affection which comes on, the moment a bougie touches the inflamed part, combined with what I have called the mechanical difficulties, may produce so complete an obstruction to the entry of an instrument as to give rise to the idea of the presence of stricture.

Here I ought also to state a fact which, if it occurs under the circumstances just mentioned, may be an additional source of error to one not fully acquainted with the natural structure of the parts. When a bougie is obstructed at the bulb, its upper surface may be so cut or indented by being pressed against the lower edge of the ligament, as to have exactly the same appearance as that which has been

considered as an unequivocal proof of there being a stricture at the point where the instrument has been stopped. Indeed, so great is the chance of a mistake occurring in consequence of one or other of the above causes, that we are induced to consider many of the histories given of the sudden cure of narrow strictures at the bulb by bleeding, antispasmodics, &c. as only so many examples of the difficulty of understanding this disease, without a perfect knowledge of the anatomy and pathology of the urethra.

The circumstances mentioned above also form good grounds for suspecting that many of the strictures at the bulb have originated in the inflammation consequent upon the ineffectual attempts to pass an instrument through this part of the urethra, while the internal membrane is in a state of irritation.

The question regarding the sacculated state of the bladder involves so many important considerations, that I shall not presume to offer more than some general remarks upon it, in the hopes of exciting attention to the subject.

All who are familiar with the appearances of stricture upon dissection will acknowledge, that a sacculated state of the bladder is a very common occurrence: I have so frequently found it, that I

have been led to the following conclusion (and which has not been hastily formed, as the preparations on the table will testify):—if a very narrow stricture has existed for a certain time, and the patient has suffered occasional attacks of retention of urine, a sac has probably formed.

This observation I confidently make, though at the same time I acknowledge, that I cannot with accuracy point out any particular symptoms, by which we may predict the formation of a sac; I will, however, hazard the opinion that, when in severe cases of stricture, there is a peculiar irritation about the back part of the bladder and between it and the rectum, especially if this occurs after voiding urine, we may suspect that a sac has formed.

The following questions naturally occur to us. If a sac has formed, is it ever spontaneously removed? Is it not probable, that a certain quantity of urine will generally lodge in the sac? What will be the consequences of the lodgment of the urine?

The difficulty of determining whether certain symptoms are produced by the presence of the sac, or by some other cause of irritation, will make it almost impossible to resolve with certainty the first question; the second, I fear, must be answered in the affirmative; and in reply to the third and most important, I would be inclined to say, that the

lodgement of urine in a sac produces a very peculiar train of symptoms, constituting a disease that is often fatal, the patient's death being occasionally preceded by symptoms of peritonitis. I have also observed, that the sufferings of the patient are of a very different nature from what are considered the more common consequences of stricture. The cases upon which I have founded these observations I shall not at present detail, my object being to direct others to the question; I may, however, again refer to the preparations on the table, as shewing that I have not made the statements without sufficient evidence, that a sacculated state of the bladder is a frequent consequence of stricture*.

While upon this subject, I should not omit to allude to certain cases, which, though not uncommon, have scarcely been described by any au-

* There is another question connected with the sacculated state of the bladder, which is too important to be more than alluded to in this inquiry, viz. whether there is not much danger of calculi being formed from the urine lodging in the sac?

Several specimens of stones in sacs of the bladder are placed upon the table; but I am not prepared to say whether the sacculi in these examples were formed in consequence of stricture of the urethra, or of the irritation under which the bladder of a person, with symptoms of gravel, generally suffers. It cannot, however, I presume, remain a question, that the formation of stone is to be considered as one of the dangers attendant upon a sacculated bladder, whatever may have been the original cause of the sac being formed.

thor: I mean the fistulous communication between the rectum and bladder, which is sometimes the consequence of the formation of a sac in the bladder, but more usually of a sacculated state of the prostate. It is almost needless now to say, that both of these have generally their origin in stricture of the urethra; but the important fact must not be overlooked, that the prostate itself is very liable to become sacculated, even though there be no stricture. The miserable condition of a patient with such a disease, and the little hopes we can hold out of doing more than alleviating his suffering, after the fistula is established, are too well known; but it is this circumstance, in addition to what has been already stated, and the hope of exciting others to engage in the investigation, that induces me to inquire whether we cannot avert these most fatal effects of stricture.

In doing so, the Society will, perhaps, permit me to make some observations on the condition of those who are labouring under such strictures as are likely to produce some of the consequences just stated.

I shall suppose a case which is common, and must be familiar to many members of the Society.

A patient has had a stricture near the bulb for several years; every plan of treatment, as by bougies, caustic, and forcing, has been tried, but with

so little success, that now the smallest bougie cannot pass the stricture. The patient has frequent attacks of inflammation of the bladder, and the water dribbles from him, or is passed only drop by drop.

When a patient is in such a condition, what have we to hope for, and what are we to dread, if something decided be not done to free the stricture, and, at the same time, to relieve the bladder from the constant irritation under which it suffers?

As it is presumed that all the common means for the relief of stricture have had a fair trial, we can scarcely expect now to remove the obstruction by such treatment. We can, therefore, only hope, that by palliatives, we may allay the irritation, or if this cannot be effected, that, as the least evil, a suppuration may gradually form in the perineum, and produce a fistulous opening, which, by allowing exit for the urine, may be the means of prolonging the patient's life.

This, then, bad as it is, is the most favourable issue which we can expect such a case to have, if left to nature.

It is, therefore, incumbent upon us to inquire what we have to dread, and what means ought to be resorted to for the relief and safety of the patient.

Since the bladder is in a constant state of irritation, it is very probable that if the patient should catch cold, or dissipate in the slightest degree, there will be complete retention of urine.

If this should happen, what must be the consequence? The state of the stricture is such, that neither a catheter nor a bougie can be passed; therefore, if the patient be not immediately relieved, and this with great care, by cutting into the perineum, or by puncturing the bladder, he must either die of the irritation caused by the distended bladder, or the urethra will burst behind the stricture, and the urine necessarily, in a highly acrid state, be effused into the scrotum. If this last should be the result (which it too commonly is in such cases), and if the patient be not then treated with skill and decision, he will probably die in the course of three days; or should he escape the immediate danger, he will run much hazard of sinking under the extensive sloughing of the scrotum and penis, which almost invariably follows rupture of the urethra, when a free passage for the evacuation of the effused urine has not been made.

The cases that occur almost weekly in London, and the histories which are contained in the catalogue of the preparations of stricture in the Museum of Great Windmill-street, will prove, that

this is not an overcharged picture, but that it is a fair statement of a very common case.*

But if complete retention of urine and the consequences just mentioned, do not ensue, what must we fear from the bladder being kept in a constant state of irritation! If the patient is not suddenly carried off by the fever consequent upon the irritation, the probability is, that either the prostate gland will become disorganised and sacculated, or that sacs will form in the bladder, and in consequence of this, as has been already attempted to be shown, a patient may gradually sink, worn out without any distinct symptoms.

Under such circumstances, are we not entitled to say, that something decided should be done, with a view to remove the stricture, and relieve the bladder?

With this object, should a catheter be attempted to be forced through the stricture, or should the bladder be punctured? The proposal of forcing the stricture is decidedly wrong, because the portion of the urethra which is contracted is probably much firmer and stronger than any other part of the canal, and is, perhaps, of the same cartilaginous

* See the numerous and important examples which are detailed in the third edition of the Treatise on the Diseases of the Urethra by Charles Bell.

nature as in several of the preparations on the table, in some of which the stricture is so hard, that it was necessary to use the knife in the manner of a saw before it could be divided.*

Puncturing the bladder would be infinitely safer than the attempt to force the stricture, but it would not be effectual, as it would only afford a temporary relief. Seeing the many dangers to which a patient, in such a condition, is liable; and having, by experience, found that, when the urgent symptoms (which we must expect) do come on, prompt measures must be used, or our patient will be lost; are we not entitled to inculcate the propriety of performing an operation while the parts are yet comparatively in a favourable state? The proposal is the more encouraging, as the operation, if dex-

* The strictures on the table are good examples in proof of the little value of the late proposals to cure such diseases by complicated machines, called dilators. We may be pleased with the ingenuity displayed in the mechanism of these instruments, the invention of which is claimed both by English and French; but when we look upon them as instruments intended to cure stricture, we can only be amused, for it is quite impossible to introduce even the point of the smallest of them into such a stricture as should be considered difficult to manage. The circumstance of the possibility of passing a dilator through a stricture, so as to be used in the manner described by the inventors, should be sufficient proof that the stricture is so slight, that it might be easily cured by the common methods. In several of the examples on the table, the narrowing of the canal is to such a degree, that it is not possible to pass more than an eye probe or hog's bristle through the stricture.

terously performed, is not severe, nor attended with any danger, and it is moreover one which will probably not only afford immediate relief to the bladder, but also, if not the means of restoring the patient to perfect health, put him into a condition of much greater ease and comfort than could be expected, if his disease were to terminate in what we should consider its most favourable natural issue.

The operation is not severe, indeed, much less than what almost any patient will cheerfully submit to, in the mere hope of being relieved from the inconvenience of a fistula in perineo. It is merely to cut through the stricture, to introduce a catheter from the glans, and endeavour to make the urethra entire, by allowing the wound to granulate over the catheter*.

Some may, perhaps, consider, that such a serious operation is not warranted for the relief of a trifling disease; but I hold that the question involves the life or death of the patient, and whether with the knowledge that this same *trifling disease* is daily

* I should here state distinctly, that the question of the manner of operating is quite changed when there is an immediate necessity for relieving a patient suffering from distended bladder. Upon this I shall not enter, as the question is fully discussed in the work on The Diseases of the Urethra, to which I have already referred. My object at present is to inculcate the necessity of a patient submitting to an operation, although he may not at the moment be in immediate danger.

fatal in London, we are to allow our patient to be insidiously brought into a state in which we can afford no relief. Why should we not reason with him as we would, had he a malignant tumour or aneurism? As to the difficulty of the operation, I can confidently assert there is none, but, on the contrary, that it may be very easily performed. Experience has shown that it is so, and the circumstance of the urethra being almost invariably dilated behind the stricture proves, that when the stricture is divided, the principal object of the operation is attained.

The only difficulty likely to occur in the first stage of such an operation is, that in introducing the catheter with the intention of passing it down to the stricture, as a mark for our incision into the urethra, it may enter into one of the false passages that have been previously made in the ineffectual attempts to force the stricture*.

* There is on the table a preparation in example of the occurrence of this accident. The operation, in this case, was performed under great disadvantages, and after the patient had been saved from immediate danger by puncturing the bladder. The stricture was found so firm, and so much mischief had been committed on the urethra, in the previous attempts to force instruments into the bladder, that cutting the stricture was considered to be the only means of restoring the canal; but the wound in the perineum was attacked with erysipelas, under which the patient, weakened by his great sufferings previous to the operation, sunk. This is the only example in which I have known the death of the patient follow the operation, and here the cause of death was probably the previous irritation.

In the second stage of the operation, we may have some difficulty in discovering the opening of the urethra after the stricture is cut through, for there may be false passages continued even beyond the point of stricture, or the urethra, by its elasticity, may be so close that we cannot see it; these difficulties have occurred in one or two cases, but are more easily surmounted by observing the point from which the urine issued. To have the advantage of the passage of the urine to direct us to the proper opening, we ought to enjoin the patient to retain his water for some time previous to the operation; but if (which is very probable) he is not able to do so, and if there be, after cutting through the stricture, much difficulty of carrying the catheter into the bladder, we ought to desist from all attempts, until the bladder is again filled, for then, with a little care, we may easily discover the proper opening, and pass the catheter into it.

I should also state, that in one case, where the stricture was very long and hard, a small canula was introduced into the bladder, and kept there for four days; at the end of this time, the opening was so much enlarged that the catheter was easily passed, the only difficulty being to carry it through the granulations which, in the interval, had risen luxuriantly from the sides of the wound. It is scarcely necessary to add, that after the wound has closed over the catheter, the urethra must, for a considerable time, be kept free by the use of the bougie.

If the operation should so far fail that the wound of the urethra does not readily close, in what condition would a patient be placed, who, it is presumed, was in a state of great danger previous to the operation? It has been already alleged, that the most happy accident that could befall him, would be the formation of a fistula. Now, though this would be the worst effect that could ensue from the operation, still it would differ from the spontaneous fistula, in several important respects.

The stricture would be removed, which is the first step towards the cure of fistula, and there would be only a single and simple wound in place of the multitude of callous sinuses which take place in spontaneous fistula.

May I, in conclusion, be permitted to say, that since patients have not only been rescued from imminent danger, but restored to a better condition than what they had been previously in for years, by a simple and safe operation, we should be encouraged to perform it more frequently, and before the parts about the stricture become completely disorganised*.

* Since this paper was read before the Society, I have seen a patient upon whom the operation described above had been performed. His appearance was so altered that I hardly recognised him. Previous to the performance of the operation he was so re-

In support of this view, the papers of several distinguished members of this Society might be adduced as illustrative of the great difficulty of performing such an operation, when the parts behind and surrounding the stricture have become callous and diseased by repeated attacks of inflammation.

duced by constant irritation, that he appeared like a broken down man of sixty; but now he is a hale and strong-looking man.