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Thesis.

On Stricture of the Urethra By the Immediate Treatment.

by
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Stricture of the Urethra is I believe the cause of as much misery to mankind as any other disease. The generality of diseases that tend to go from bad to worse, occur in old age or beyond middle life; but here we have a disease that generally commences when the person affected is young or in his prime. Few of the public, educated or otherwise can understand the frightful effects an urethral stricture produces in time upon the urinary organs, if surgical treatment has been postponed till the patient can hardly pass his water; so that what would at first have been a simple & easily remedied affection, becomes incurable to a very great extent, & tends to shorten life by producing disease of the kidneys, bladder & other organs. The poor

have little time, in this age of competition,
to think much about their ailments;
So long as they can work, they have to do
s.o. but with the well to do, it is different;
yet it is very common for them to neglect
strictures equally with the poor. I have
been often struck with the amount of ignorance
shown by educated men, about the after
effects of neglected strictures of the urethra.
Having been present, while House Surgeon
to the "London Hospital" at a post-Mortem
Examination on a case, in which the
patient died from old standing stricture
of the urethra & having seen the following
extensive state of disease, & having witnessed
the intense suffering preceding the patients
death, I was induced to take up the subject
as a specialty. The appearances from notes
taken at the time were;

- 1st The stricture almost occluding the urethra
in the bulbous portion, numerous false
passages leading into cavities containing
purulent fluid the result of careless
catheterization before admission. The
urethra dilated behind the stricture,
numerous fistula in the perineum
communicating with the dilated portion;
the bladder so contracted that it would
hold barely 2oz; The interior inflamed,
sacculated & the muscular fibres irregularly
enlarged & resembling the Columna Carnea
of the heart, the thickness of the organ
being nearly 3 times its normal amount.
It contained a small quantity of highly

Ammoniacal urine filled with pus & Mucous.

The Ureters were irregularly distended; about the middle of the left ureter, a large sacculated pouch, containing putrid urine was found, nearly the size of the bladder. The kidneys were dark & vascular with deposits of yellow lymph & some small abscesses in the cortical part.

The pelvis were much distended with a mixture of pus & urine & as the result of the pressure, the cones appeared to be considerably absorbed. The patient had died with all the symptoms of Uraemic poisoning.

In taking up the subject of stricture of the Urethra, it is not with any intention of bringing forward anything exactly new, but simply to give my experience of the treatment by immediate dilatation.

There are very many ways & means of treating strictures; each way has of course its advocates & all or nearly so, are excellent in their way; but as we have no one medicine that will cure all diseases, so no one method is the best for all kinds of stricture. The operation that is best for one kind, may be beaten in appropriateness by another. I simply think, taking the experience I obtained when Surgeon to the Cheltenham Hospital & Dispensary into consideration, that whenever applicable, the treatment by the immediate method, gives such good results, that I should be inclined to employ it whenever

practicable.

I shall presently endeavour to describe the different known methods of relieving stricture, but before going further it will be as well to ask ourselves the questions;

1st What is a stricture?

2nd What are the causes of stricture?

3rd When may a man be said to have a stricture?

4th How do we detect stricture.

1st A stricture is defined as any diminution of the normal calibre of the urethra, the result of the contraction of organic lymph. It follows from this, that any cause capable of producing irritation, congestion & in consequence a low form of chronic inflammation around the urethra, is capable of producing stricture.

2nd It is I think generally admitted, that long neglected cases of gonorrhoea, are the most fertile sources of stricture; in fact, I believe that every case of gleet of six months standing, leaves behind it, more or less thickening of the submucous membrane, thereby producing stricture by thickening which may afterwards by atrophy (Mercier) produce stricture by contraction. In the first instance, the tube is narrowed by inflammatory deposits & afterwards narrowed by absorption of the same, going on to diminution in size of the individual molecules of the part.

Blows, wounds & in fact any kind of violence referred to the perinaeum, are capable of producing stricture & such

are by far the most inveterate. The reason of this is not I think far to find. Every Ophthalmic Surgeon knows what an amount of cutting & slicing an eye will stand without becoming seriously inflamed, if the eye has already being the seat of any previous violent inflammation, & how soon & how seriously an eye will inflame from slight causes, if the eye has not already been the seat of inflammation.

So with the Urethra. A blow or wound inflicted on a healthy urethra, produces an amount of inflammatory change, that tends to produce a much more serious form of stricture, than will be produced in an urethra that has been the seat of a quiet amount of chronic inflammation for several months.

I have no doubt but that stricture occurs in many cases, where no violence has been sustained & where the patient has never had gonorrhoea, but some irritation must doubtless have been present; perhaps inordinate sexual use of the organ, might be sufficient to produce the irritation required.

3? (When may a man be said to have a Stricture?)

If any person who could pass a stream of urine, equal to N^o 8 or 9, were asked whether he had a stricture or no, he would doubtless laugh at the idea; and yet pathologically he may be the subject

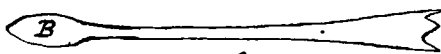
of one or more. It is quite clear to my mind, that if any person's natural urethra is equal in size to, say No 12 & if from any cause No 12 is found too large & the canal can only take No 11 or 10, that that man is the subject of stricture. Practically speaking a man has a stricture, when he feels himself, owing to inability to pass his water comfortably, obliged to consult a medical man.

Dr Osio of New York, has proved that the ordinary calibre of the male adult urethra, is much larger than was formerly believed & also that the human urethra varies in calibre as much as any other part of the body, Osio says that there is a very close relationship between the circumference of the penis & the calibre of the tube it contains.

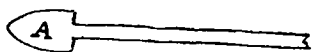
How do we detect stricture?

For exploring the urethra & for the detection of stricture, many & very various instruments have at different times been invented.

For exploring the urethra, Sir Charles Bell originally invented the "bougie à boule". This is a very different instrument from the bougie oléaire; the one being for diagnosis, the other for treatment.



A. bougie à boule



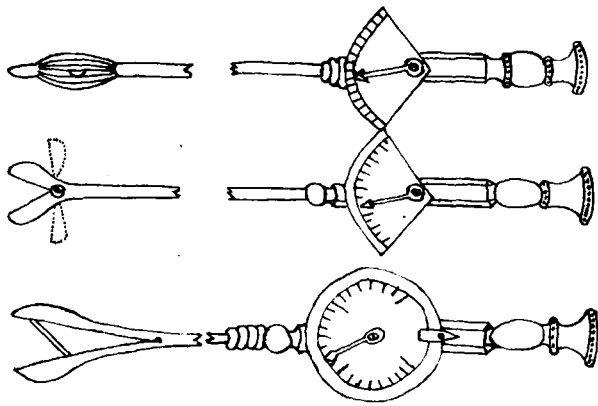
B. bougie oléaire.

The sides of the urethra when at rest are in apposition, and when a bougie à bouc is passed, it will slip through the stricture as its tapering end allows it to do; but on its withdrawal, the base of the head will hitch against the strictured portion.

The bougie à bouc is indispensable for hospital work.

The Urethrometers of Drs. Ellis, Richardson & Weir will also ascertain the size of the urethra.

They are instruments that expand at the ends by means of a screw placed in the handles, which by being turned, opens or shuts the ends at pleasure, the results being marked by indicators.



It appears that the urethra has two separate Calibres, equally with every other mucous Canal, viz. A natural & an artificial (Ray her) or an ordinary & an extraordinary & it was through the investigations of Dr Ellis, demonstrating the comparatively large size of the ordinary human urethra, that

enabled Dr Bigelow to utilize the discovery for his new method of lithotomy, though really Guthrie, who discovered the Compressor Urethric muscle, first found out the great Calibre of the urethra, & used to pass a pewter bougie, equal to No 16 Catheter.

There seems to be a great diversity of opinion as to whether strictures are curable or no. Brodie, Gross, Pease, Inneson & others, say that they are; the generality of the Profession, I think say otherwise. The former say that longitudinal wounds of the urethra, do not contract when healed, but become the seat of a supple cicatrix, & that if a stricture be completely divided longitudinally, it will not reform, but in practice, how many times do we see strictures, that have been, as far as could be judged, completely divided, reform?

I do not believe myself, that any organic stricture is really curable, though by operative means we can practically make them so.

Strictures have been divided into two kinds, the "passable" & the "impassable"; but Prof. Syme has pointed out, that really no stricture is impassable; the canal is there, the difficulty is to find it & pass an instrument.

For the treatment of the passable forms, the following methods

have been used.

- 1st The Expectant Method
- 2^d Gradual Dilatation
- 3rd Rapid Dilatation
- 4th Wakley's method.
- 5th Caustics.
- 6th Electrolysis.
- 7th The immediate method.

The Expectant method consists of putting the patient to bed, acting freely on his bowels & keeping him warm & quiet. The good effects produced disappear as soon as the patient resumes his daily occupations & I do not suppose it is ever used now.

The gradual method is performed as follows. An instrument is passed once or twice on successive or alternate days; then the next size is taken & so on till a full sized Catheter can be passed. The patient is then taught to pass one himself & he is told or should be told, to pass it at intervals all his life, otherwise the stricture will return as badly as ever again.

The objections to this method are the long time it takes before a full sized Catheter can be passed with ease; sometimes months & the almost invariable forgetfulness of patients to keep on passing the Catheter for themselves.

It simply amounts to this, that so soon as the patient begins to neglect to pass his instrument, so soon does

the stricture commence to contract. Again in bad cases, when small instruments have to be used frequently, there is always danger of making a false passage & the continual use of instruments must keep up a great amount of irritation in the canal. The next method to be mentioned is by far the superior of the two; it is by the rapid method.

Let us suppose that the patient is suffering from retention of urine, the bladder being exceedingly distended; In order to effect rapid dilatation, I should first try one of the very soft & small french catheters, either with a filiform, bulbous or olive point; these by their flexibility will often worm their way in whilst being rotated, when nothing else can be introduced. If I succeed I tie in the catheter, but if this should prove too large, there are fine silkworm gut bougies not pervious but which if introduced will enable the urine to pass by the side in a few hours. The next day this can be withdrawn & a gum-elastic catheter, one or two sizes larger can be introduced, this being repeated *de die in diem*, until a full size is attained. By this method a full sized one can often be passed in about 10 days or a fortnight & my experience is, that patients improve wonderfully by being kept in bed.

I suppose the careful dieting, warmth &c has every thing to do with it.

The patient must be taught to pass an instrument himself & be told to do so all his life once a week. If these directions are carried out fully, the cases managed by this method do remarkably well.

The objections that strike me are, that many patients cannot or will not keep an instrument in their bladder for the length of time required, or suffer from persistent rigors. I have found that if a full dose of Morphine be given an hour before the passage of a catheter, no rigors will follow.

Then again there is always the danger of the catheter ulcerating through the coats of the bladder. I remember when at the London Hospital this accident happening to a boy, who in consequence died of peritonitis.

Wakley's method consists essentially in sliding one instrument over the other, & is said to be very useful in certain cases of false passages; for when once the guide has passed, tubes increasing in size can easily be slid over it.

The method by caustics has I think being mostly abandoned in this country. Some surgeons speak of it as been useful in some cases of impassible stricture, but it seems

Come that the result would produce would be very objectionable & tend to make matters worse, not only by increasing the size of the stricture, but by changing an ordinary stricture into a cicatricial stricture.

It was performed with Lallemand's force caustique; an instrument in which the caustic was hidden in the end of the instrument, but could be pushed forwards at pleasure by mechanical means in the handle.

The method by electrolysis was first employed by Malley, Tripier & Newman of New York. It acts I suppose by causing absorption, but does not seem to be much used.

Bad cases of perineal abscess have followed its use.

We now come to the immediate method. Forcible dilatation of the stricture was I believe first brought into notice by a Frenchman, M. Perrière & his instrument somewhat modified introduced into this country ^{by} Mr. Barnard Holt.

Mr. Holt's instrument is essentially a dilatable instrument consisting of two blades attached to each other at the point, but separable otherwise & fastened to a central rod.

This central rod being sufficiently pervious to permit the escape of a little urine & so to show if the instrument is really in the bladder

before the dilatation is proceeded with. Over the central rod, tubes of various sizes can be pushed down, according to the calibre of the urethra, so as to separate the blades.

Lie & Thompson invented an instrument that could be dilated by turning a screw in the handle, which caused a small lever to project from the central stem & so drive the blades asunder. Lie & Henry's instrument is very apt to bent & I believe has been once or twice broken when used. It also causes a good deal of bleeding sometimes. I now always use Holt's. I shall revert presently to this method, as I have practised it many times, with a few remarks thereon. In the mean time we will run over the methods that are more directly operative in the strict sense of the word.

They are chiefly varieties of perineal section.

1st The old plan without a guide.

2nd Lymie's method

3rd Prouis's method

4th Coak's method.

5th Internal urethrotomy

6th Subcutaneous method.

The old plan without a guide ~~is~~ ^{is} performed as follows.

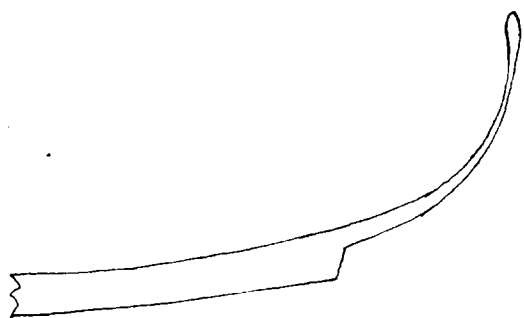
The patient being secured in the lithotomy position & the perineum shaved, a large grooved staff is to be passed down to the anterior surface of the stricture

& retained there by an assistant. Great care is required not to pass it into a false passage, especially if one is known to be present. The forefinger of the left hand being placed in the rectum, the knife is plunged deeply into the perineum with its cutting side upwards, just in front of the rectum, taking care not to wound it, & made to cut its way out upwards, in the median line. The end of the staff is then to be exposed by reversing the edge of the knife & carefully dissecting, till its point is reached. The difficult part now, is to find the end of the urethra; but by carefully keeping on the median line, it will generally be found. The dilated part of the urethra behind the stricture, can generally be found; this however is somewhat complicated by perineal fistula, if they exist.

The director having been passed into the bladder, a gum-elastic catheter should if possible be conducted along it into the bladder from the wound, & the director withdrawn. The catheter should be tied in. If a catheter cannot be passed at first, it will make very little difference, so long as the stricture has been freely divided. The catheter should be changed every 2 or 3 days, until the parts have completely cicatrised. After this the dilatation

must be maintained as after any other method. Such is the old way, which is now seldom performed, newer methods having taken its place, one of which viz. Syme's External Urethrotomy I will now describe.

The patient being placed in the lithotomy position, with the perineum shaved &c. A shouldered staff,



is passed through the stricture up to the shoulder, which of course is stopped by the contraction of the tube.

The staff is narrow at the end & grooved, the groove stops a little short of the end & running a slight distance over the shoulder. The staff being retained in place by an assistant, who also holds up the scrotum from the perineum, the forefinger of the left hand is passed into the rectum & a knife with its cutting edge looking upwards is plunged into the perineum just above the rectum, (taking care not to wound it,) & made to cut its way out upwards in the median line, almost as far as the scrotum. The shoulder of the staff will now easily be felt if the incision has been deep enough, & it should

be further exposed if necessary. The edge of the knife is then inserted into the groove & carried forwards, cutting through the stricture as it goes. The staff is then passed into the bladder & afterwards a full sized gum elastic passed & retained till the parts have cicatrised. It is better to pass a guide into the bladder from the wound, before withdrawing the staff, as sometimes difficulty is encountered in passing the catheter after its withdrawal. The after-treatment as regards the passage of instruments, will be the same as with the other methods. This method answers well in cases of bad traumatic & old cartilaginous strictures, complicated with fistula in perineo & is I believe now chiefly employed for such.

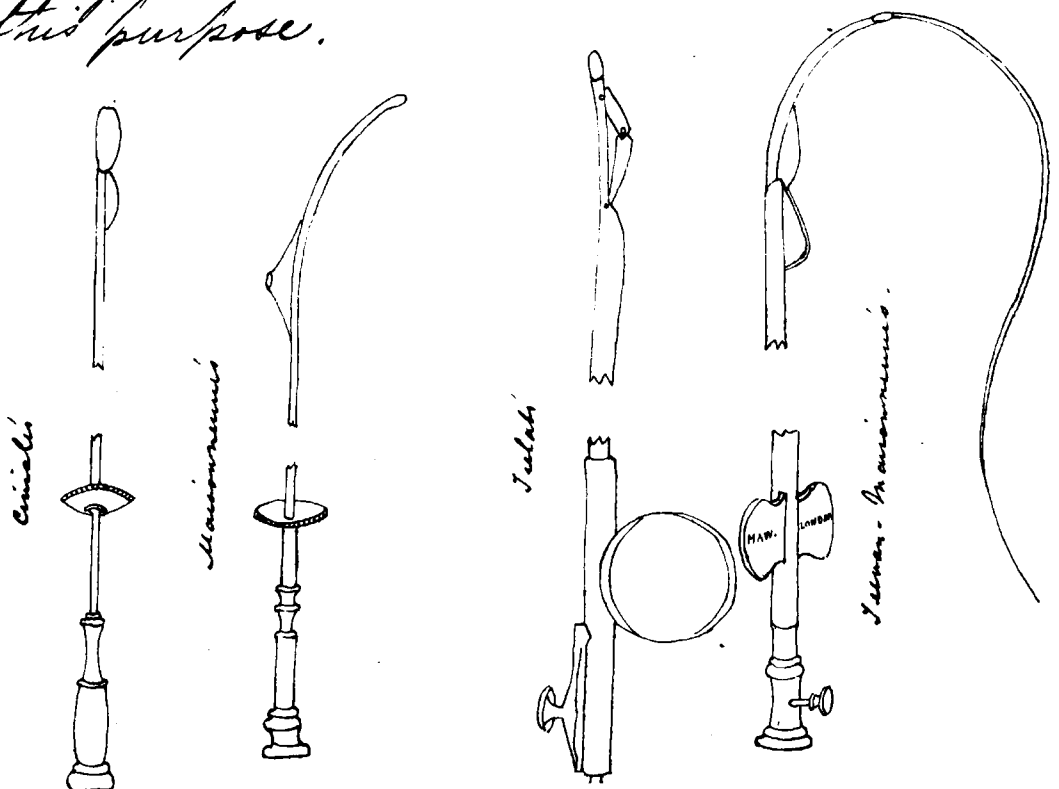
Rouse's method is simply a modification of the old plan without the guide. I have seen him perform it many times at St. George's Hospital. The patient is placed in the lithotomy position. Mr Rouse then introduces his knife in the median line of the perineum & never fails at once to hit the membranous portion of the urethra. He then introduces a female Catheter through the wound into the bladder. Having done this, he reintroduces the knife & divides the stricture by cutting forward. A silver catheter is then introduced & tied in. The whole

operation occupying some 2 or 3 minutes.

Mr Cook of "Guzo" having I believe, tried every possible method, has come to the conclusion that as all kinds of urethral stricture are incurable, it is better not to operate upon them at all on the stricture itself & prefers making an opening into the bladder per perineum, passing in a female catheter & leaving it there, until a permanent fistula is established. My great objection to this plan would be the great inconvenience the patient would be put to, in having to squat like a female to micturate & also his inability to beget children.

Internal Urethrotomy can be performed either from behind forwards or from before backwards & seems to answer very well according to Sir Henry Thompson, for strictures situated from 2 to 4 inches from the meatus.

Many instruments have been invented for this purpose.



We will take Civiale's as the type of them all as it is the best known. The principle is that of a bistourie cache, i.e. a stem containing a knife which can be projected by turning a screw in the handle. In Civiale's the head of the instrument is bulbous & in this bulb a small knife blade is concealed. The position of the stricture being ascertained, by passing the bulb through it, the concealed blade is made to project by turning the screw & as the instrument is withdrawn the stricture is divided, preferably through the floor of the urethra & a full sized gum-elastic catheter passed and retained. It will be seen from the above description that the instrument being bulbous, is only applicable to cases where the instrument can pass the stricture & therefore inadmissible in a great number of so called impassable strictures.

The operation from before backwards, requires the aid of a guide to be passed through the stricture.

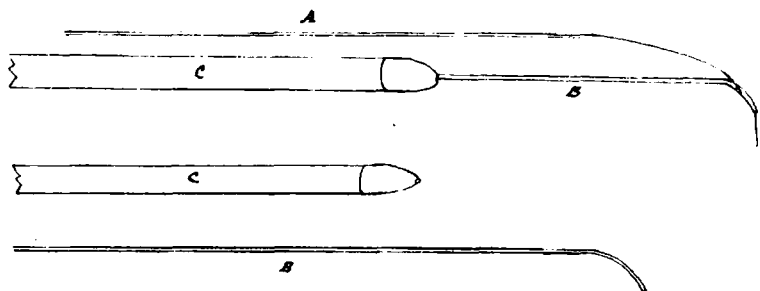
Maisonneuve's guide is a flexible, filiform bougie, on the end of which a grooved rod is screwed. The bougie being passed through the stricture, the grooved rod is screwed on & passed also, the flexible bougie coiling itself up in the bladder. A semi-sharp lancet

shaped knife is passed down the groove & made to tear its way through the stricture, but should not be sharp enough to wound the normal urethra. Litz & Thompson has devised a grooved catheter for the same purpose - along which a sheathed knife-blade is passed. A large gum-catheter is then passed over the grooved conductor & the latter withdrawn. I have no experience of internal urethrotomy. The operation therefore from before backwards, the filiform bougie being passed first renders the field of usefulness much larger than in the other plan, viz, with a bulbous tipped instrument. I should be inclined to use an instrument with a filiform bougie attached to the end which would enable one to know more about the topography of the urethra.

Scarification was once extensively used in France but abandoned, its results being very ephemeral.

Lastly there is the subcutaneous method. Wheelhouse opens the urethra half an inch in front of the stricture & passes into the bladder a filiform bougie. A fine metal catheter, open at both ends & having a slit in its connectivity is slid down the bougie. When the catheter gets into the bladder, urine will pass, so that the surgeon

will have the satisfaction of knowing that it is not in a false passage. The stricture is then divided, subsequently & a large elastic tube, made to slide over the silver catheter into the bladder.



A. Filiform bougie.
 B. Fine elastic catheter.
 C. Large elastic tube.

Such then are briefly some of the various methods at present in use for the relief of stricture of the urethra. The first question a surgeon would put to himself, would be; Here is a patient suffering from stricture, what shall I do to relieve him? Every case should I think be taken on its own merits. I should not think of operating upon any case, where I could pass a N^o 5 for instance; for these cases do so remarkably well by the rapid dilatation method, that nothing seems left to wish for. But in cases where a no 1 or 2 can hardly be passed, it is different. Something must be done to relieve the patient otherwise he is sure to get disease of the urinary organs behind the stricture from back pressure, & perineal abscesses are

always liable to complicate the case. Nearly impassible strictures are best relieved, some by one operation, some by others, & the great thing seems to me to choose that plan which is least dangerous. We find many patients who have such a horror of the knife in any shape or form, that they will endure almost any amount of pain, sooner than submit to a cutting operation. Again, the patient may be in such a shattered state of health, that an operation would be likely to prove fatal; and really it seems to me that, the cases requiring the more severe methods of operations are small, & that perineal section should really be a rare operation.

This for these reasons, that I gave Holt's method a thorough trial, & I must say I have every cause to be pleased with my results, as far as they went. The operation itself is really one midway between the simple systematic passing of various sized catheters or bougies, & the more formidable operations of by the knife. Patients do not have that feeling of dread they have at operations with the knife, & I believe that when the directions I shall presently give are fully carried out, the operation with Holt's dilator

is as nearly free from danger, as an operation can well be. I am aware that some surgeons think it a very barbarous & dangerous method, especially in America; but I cannot but think that either the cases chosen, were totally unfitted for any kind of operation, or else that they were not properly performed.

The first thing of course is to get your patient into as fair a state of health as possible, & I invariably insist upon the patient confining himself to his bed for a couple of days before I operate. His bowels must be freely opened, his diet good but unstimulating. Bed, warmth, & attention to the secretions are great aids in all these affections. I prefer the patient to be placed under the influence of an anesthetic if possible; it saves pain & quits spasm; one hour before I operate, I direct him to take a full dose of morphia. Prof: Parcaost of Philadelphia, first pointed out to me the fact, that if a full dose of morphia be exhibited one hour before the passing of instruments, no rigors will follow, & I have invariably found his observation correct.

Mr Kolt, I believe, lays great stress upon driving the tube down the instrument sharply, but I certainly have found that slower means have been better. When

using Sir J. Thompson's instrument, I always turned the screw very gently. I make it a point to pass my left fore-finger into the rectum to guide the instrument & make sure that the end has really entered the bladder; the small size of the point is only equal to about a No. 1 & might easily pass into or make a false passage. After the instrument has been fully dilated, it is withdrawn & a full sized silver catheter inserted to draw off the urine. ~~Some~~. This to be repeated for the first two days. Some however prefer to keep in a flexible tube, the great advantage of which, especially in cases of retention of urine from enlarged prostate, has been particularly pointed out to me by their inventor Mr. Johnathan Hutchinson of the London Hospital, with whom I resided for some years as resident-pupil. When the parts seem to be quite quiet, the patient can be taught to pass an instrument for himself, and should do so occasionally. When the above rules were followed out, I never knew of any bad results. & as I have employed this method on some very unfavourable cases with the happiest results, I cannot but look upon it as almost harmless. The question often arises, Can an operation be performed upon a patient for stricture of the Urethra, who is suffering

from Bright's disease?

I simply answer that question by remarking that I have performed Holt's operation on two cases of confirmed Bright's disease complicated with stricture, not only without any ill effects but with much benefit to their general health. I also performed it on a medical man who is still alive & fairly well, when he was 76 years of age. In fact I have always considered the operation as harmless as an operation could possibly be & have been, rather surprised to hear Surgeons speak to the contrary.

I sum up the advantages of the operation.

1st Its rapidity. A catheter having been once introduced, the patient need never be confined to the house for more than a week & in some cases not more than two days.

2nd That as the dilator only enlarges the urethra to its normal calibre & splits only the abnormal tissue of the stricture beyond the mucous membrane, there is no chance of the extravasation so likely to take place after internal urethrotomy.

3rd It is never replaced by a dense cicatricial stricture, which often follows on all the various plans of perineal section

4th It is not to be compared with
perineal section in point of danger.

5th & lastly, it is much more successful
than either the slow or rapid dilatation,
as after the operation, it never recurs
if a catheter is passed at intervals of
from 3 to 6 months, & I know of one
case in which 3 cartilaginous strictures
were dilated by this method & after
the first week no catheter was passed,
& 7 years after the gentleman informed
me, he could still pass water as from
the spout of a teakettle.

Laasmit

Portland House, Cheltenham.

June. 1882.