

the first ribs, you will find that, joined by bone to the sternum, they constitute a sterno-costal bone, the central part formed by the sternum and the two right and left first ribs form crura, or supports, which offer a very useful double fulcrum for the elevation, forward course, and firm state of the sternum, in the respiratory process, by resting and moving upon the first dorsal vertebra. Thus you see that this rib is not only important on account of the parts in its immediate vicinity, such as subclavian bloodvessels, phrenic and axillary nerves, &c., but also because it exercises much influence on the respiratory process.

I must not omit to direct your attention to the effect of *diffused force* upon the ribs. This force will generally cause the fracture of the extreme convexity of these bones. If you press with some force upon the ends of a bent stick, of equal thickness, it will break in the most convex part. You should always look especially to the convexity of the ribs for discovering the fractures, for there is, as with the stick, its most probable position. It has been noticed, that if the diffused force which produces fractured ribs be applied in front, the ends will most frequently project outwards; on the other hand, if the force come from behind, the ends of the bone will have a direction inwards; it is plain, from the lesion which the lung may most likely suffer in the latter instance, that this is the more hazardous kind of fracture of ribs.

Remember that the breaking of a rib *per se*, as well as fracture of the skull or spine, is not of much importance; the danger arises from the disturbance produced within. I would, then, strenuously advise you to look upon the treatment of such cases with much calmness of judgment, reason upon the lesion you have before you, and with the data I have mentioned, endeavour to use the best means for warding off fatal pulmonary complications.

In the next lecture, I shall continue this subject, by treating of fractured ribs, accompanied by pneumonia, illustrated by a case.

ON THE PROMPT REMOVAL OF  
STRICTURES OF THE URINARY CANAL  
WITH THE  
URETHRAL GUIDE AND TUBES.  
BY  
THOMAS WAKLEY, Esq., F.R.C.S.,  
SURGEON TO THE ROYAL FREE HOSPITAL.

In the month of February last year, just twelve months since, I had the honour of placing before the Medical Society of London a series of new instruments which I had designed for the cure of strictures of the urethra. They had been made for me, and completed in the most perfect manner, by Messrs. Weiss, of the Strand. At a subsequent period,—viz., in March, 1851, a full description of them, accompanied by illustrative engravings, was published in *THE LANCET*.\* The attention which the instruments attracted, and the commendations they received, afforded me much gratification. Ample trials, in a great variety of cases, have now proved their practical value. Any doubt as to their safety and decided utility, cannot exist in the mind of any surgeon who has been an observer of their application and the results. When I spoke of them before the Society, experience was my monitor. Even at that time, others had seen them employed at the Royal Free Hospital. My friend and colleague, Mr. Gay, happening to be present at the Society, and having himself successfully operated with them for the removal of a very difficult and obstinate stricture, offered his testimony in their favour in strong terms of commendation.

Of all new plans of treatment it is judicious to speak guardedly, and refrain from exciting expectations that may never be realized in practice. The non-fulfilment of ardently entertained anticipations is productive of much disappointment. It is almost impossible to exercise too much caution whilst predicting the results of new remedies and operations. From the decided relief which the "urethral guide and tubes" had afforded in obstinate cases of stricture, previously to their having been publicly introduced to the notice of the profession, it might have been excusable had I confidently anticipated a favourable reception for them from all practical surgeons. It was, then, my firmly established belief, that by the judicious use of the directing-rod or guide, and the metallic and elastic tubes, relief in nearly all cases of "stricture of the urethra" might be obtained without violence, without danger, without caustics, and without

resorting to either external or internal incisions of the urinary outlet. This view of the subject did not exclude the consideration of strictures that are complicated with fistulous openings, with false passages, nor even with cartilaginous indurations and contractions of the urinary canal. In a word, every form of stricture of the urethra had been fully taken into consideration. While estimating the power and complete safety of the "urethral guide and tubes," an endeavour was made to bring every variety of stricture under review; and, finally, a decided opinion was established, to the effect that in *every instance* where a stricture is permeable, (and Mr. Syme, a high authority, denies the existence of an *impermeable* stricture,) these simple and safe "guide and tubes" would afford great relief to the patient, if not effect a complete and permanent cure. The prudence, however, must be generally admitted, of having only cautiously indulged in favourable anticipations. The subject is one of much importance, and the introduction of an instrumental novelty in the treatment of a disease which has engaged the attention of some of the most distinguished surgeons of times both past and present, obviously demanded no ordinary exercise of prudence. It was an object not to raise a hope by theory that practice would fail to realize. The course that was then adopted has been productive of a lively feeling of satisfaction, and a legitimate foundation for future confidence, has, I trust, been well established. Experience has proved that bright anticipations of the effects of the new instruments might have been safely recorded. Doubts and surmises have been effectually displaced by facts and demonstrations.

If I were now to write in a hesitating, undecided tone, after an experience of more than a year, derived, as it has been, from the treatment of more than one hundred cases of stricture, I should be guilty of detracting from the value of a newly-contrived mechanical acquisition, which is as remarkable for its safety, as for its simplicity of action, and extraordinary power.

The proofs of the successful application of the guide and tubes, in the treatment of strictures of the urethra, are now numerous and indisputable. Such a confident mode of expression, in the absence of appropriate facts, would be utterly unjustifiable. But the introduction of a "guide" of the smallest size into the bladder insures the passing, by degrees, of sliding-tubes of the largest size through the strictured portion or portions of the urethra. The guide renders it impossible for these tubes to take a wrong course, and the effect of their introduction is to afford immediate relief to the patient.

When the guide is once introduced, the command of the urethra is at the disposal of the operator. That instrument effectually directs the tubes through the right channel. They are prevented from entering either sinus or false passage. In a word, the guide having taken a right course, the tubes cannot take a wrong one. Nor is the command of the canal relinquished on the withdrawal of the last metallic tube—on the contrary, a free passage is then retained, by introducing an *elastic* tube over the guide. The guide is then withdrawn, and may be re-introduced at the will of the operator. Thus the importance of the elastic tubes, in *maintaining a free canal* during the intervals caused by the use of the metallic tubes is, in obstinate cases, of indescribable value.

The easy performance of the operation accords most suitably with the mechanical simplicity of the means employed. It might have been expected that violent measures in the treatment of stricture would have been completely displaced by the general and immediate employment of the safe and simple means here described. A resort to the knife, to caustic, or to the stilette, would, it was hoped and expected, be an event of exceedingly rare occurrence; and that the ears of scientific surgeons would seldom be shocked by reports of fatal operations in the treatment of strictures of the urethra. It would be wrong to omit to state, that the continued adoption of the old plans of treatment, and the accounts of the tragical results, have been calculated to produce strong feelings of surprise and disappointment.

Upwards of a year since, the guide and tubes were publicly and successfully employed in the wards of the Royal Free Hospital. It is now just eleven months since they were exhibited before the members of the London Medical Society. Months have transpired since a full description of them, accompanied by explanatory engravings, was published in *THE LANCET*; and in the months of March and April last year, the method of using them was repeatedly shown to numerous members of the profession in the clinical demonstrations which were given at the hospital.

Having done so much, with a view to bring the new instruments under the notice of the profession, I have refrained from publishing a word on the subject during a period of nearly one year, in the full and confident expectation that the treatment of "permeable" stricture, by either internal or external incision,

\* *THE LANCET*, No. 1438, March, 1851.

would belong only to history, and even then be exclusively found in the least satisfactory portions of our surgical records. Events, however, have proved that my hopes were not to be so promptly realized. The knife, I find, is still performing its deadly work in the treatment of stricture in this metropolis. I decline, therefore, to incur the responsibility which a further silence regarding the safety and utility of the guide and tubes might entail. The publication of the results of the experience of myself and others, has really become a duty, and to shrink from its faithful performance would be a fault, if not a crime.

It will be found that the perfect command of the urethra, by means of the guide and metallic and elastic tubes, is a source of immense satisfaction, and of inestimable practical value. The metallic tubes having cleared the passage, and having stimulated the absorbents into action, the elastic tubes come into operation, and secure the most favourable condition of the canal for the completion of the curative process. In all the varieties of stricture that have fallen under my observation, these simple and safe instruments have proved of advantage. In the mildest as well as in the severest forms of the disease, they may be employed with equally good results and freedom from danger. In only two instances have any troublesome constitutional symptoms arisen subsequent to their employment, and in not one case where I have had an opportunity of repeating the attempts to pass the guide through the stricture into the bladder, has there been a failure. Frequently, such is the twisted and distorted state, such the false passages of the canal, that much patience is required in order to effect the introduction of the guide. This operation being accomplished, the first, and it may almost be said, the only difficulty in the treatment, is surmounted, and henceforth the *free passage* of the canal is at the command of the operator.

It affords me much gratification to quote from the valuable work of Mr. Guthrie, his remarks in favour of the new instruments. He says,—

“This may be accomplished (removal of the obstruction) after the manner lately recommended by Mr. Thomas Wakley, and it is impossible to speak too highly of this invention.....It is capable of rendering great service when the withdrawal of a sound or catheter cannot always be certainly followed by the re-introduction of another, and which withdrawal it renders unnecessary, until a larger one is introduced over it—a very great improvement, which no surgeon should neglect; for where this can be done, no operation is immediately necessary.”\*

This testimony, from so distinguished a surgeon, is highly appreciated by me, and will be duly valued by the profession.

The reports of cases now in my possession, embrace nearly all varieties of stricture of the urethra that are seen in the hospitals of this metropolis. Selections from them, commencing with the simple forms, and concluding with the most complicated and obstinate, will, I think, illustrate very satisfactorily the successful action of the urethral guide and tubes. It will be remarked that the reports refer to strictures with lengthened, cartilaginous, and riband-like bands; false passages and sinuses; urinary fistulæ and retention of urine, either partial or complete; and indeed almost every complication calculated to embarrass the practitioner. In publishing selections from these reports in my case-book, I cannot refrain from expressing a hope that other surgeons who have employed the guide and tubes in the treatment of strictures of the urethra, will also record the results of their experience.

Before proceeding to give abstracts from the reports of the cases, it may be proper to refer briefly to the system of general treatment pursued during the employment of the urethral guide and tubes. Although the reports contain no intimations of the kind, yet the general health of the patients was noticed with especial care. There was not an exception to this rule, and the entire absence of constitutional irritation and disturbance in several instances may possibly be traced to the faithful observance of that precaution. Ample experience justifies me in stating that during treatment for the cure of permanent stricture, the state of the patient's health demands the unremitting attention of the surgeon. The normal action of the digestive organs and intestinal canal is essential in many cases to the speedy and easy relief of the patients. Occasionally the constituent qualities of the urine should be ascertained, as highly-irritating urine frequently tends to impede the process of the cure, by causing spasm and inflammation of the newly-excited parts of the urethra. This is a subject of considerable importance, and it cannot well receive too much attention in the early periods of the treatment. Sometimes, in very severe cases, it is necessary to administer opiates, but examples of this description are very rare, provided the tubes are not rashly and violently introduced. The local treatment

consists of poultices, fomentations, or leeches, or of all three, as the symptoms may indicate. When there is much cartilaginous thickening of the strictured part, and also tenderness on pressure, poultices applied to the perinæum on the first two or three nights after the introduction of the tubes, are productive of great advantage. It may seem to be superfluous to point out the necessity of resorting to such simple agents in the treatment of strictures of the urethra; but I entertain a totally different view of the subject. A system of treatment that fails under the direction of one surgeon succeeds under the guidance of another, because the latter attends to circumstances which the former altogether disregards or neglects. The practitioner who omits to devote attention to any of the facts or conditions which are strictly characteristic of the disease under consideration, or of the treatment adopted for its cure, must, in my opinion, fail in the performance of an essential part of his duty.

W. L—, aged forty-five, a carpenter, living at Hampstead, applied at the hospital, March 10, 1851. The symptoms, both local and constitutional, were those arising from a permanent stricture of the urethra. The disease had been occasioned by a severe attack of gonorrhœa, which had been allowed to “wear itself away” without the adoption of any kind of treatment. A slight gleet had continued for the last ten years. Cold and destitution, from both of which the man had lately suffered, had greatly aggravated the disease. He had been a patient at a country hospital, whence he was sent to this hospital. On examination, it was found that a stricture existed at about five inches from the meatus, and that it was cartilaginous. After some little difficulty, I succeeded in introducing the guide, and then the tubes up to No. 4. The operation was comparatively painless. After No. 2 had been passed, Nos. 3 and 4 entered the strictured part with comparative ease. There was no hæmorrhage. At the third visit of the patient, I introduced a No. 10 tube over the guide, and at the fourth visit a No. 10 common sound passed through the urethra with perfect facility. In this case the great advantage of being enabled to increase the size of the instrument without losing the command of the urethral canal, was very strongly manifested. Under the common system of treatment, it would have required weeks to have cured this patient.

E. H—, March 10, 1851, aged twenty-five, an ostler residing in Gray's-inn-lane, applied at the hospital, having a very troublesome stricture, situated about four inches from the meatus. He states that the disease was caused by gonorrhœa and intemperance. In this case I had considerable difficulty in passing the catheter-guide through the stricture, an operation which somewhat tried the patience of the gentlemen who were present on the occasion. At length, however, by cautiously continuing the efforts, the guide first, and then the metallic tubes, up to No. 5, were introduced completely through the stricture. Subsequently an elastic tube No. 4 was passed, and left in the canal for an hour. On the following day the operation was repeated, and metallic tubes Nos. 6 and 7 introduced. In less than three weeks this patient was discharged quite well. The absorption of the cartilaginous enlargement, in this instance, was very quickly effected, and the patient declared that he had not suffered from pain during the treatment. The improvement in the state of the general health of the patient was particularly rapid.

Richard B—, a tailor, aged forty-six, applied at the hospital, suffering from a very obstinate and intractable stricture of the urethra. It had existed seven or eight years. On passing the guide into the urethra, two distinct strictures were found. No false passages existed, although the contrary was alleged. The guide was easily passed through the first stricture, but the second, about an inch deeper in the canal, resisted for some minutes the efforts that were made to pass it. There was, in this instance, a sufficient amount of irritation to give rise to spasm. The metallic tubes were passed in rapid succession to No. 7, when a No. 6 elastic tube was passed and kept in the canal nearly half an hour. The operation was repeated daily and the tubes gradually increased. In eleven days the patient was discharged, perfectly well. The introduction of the guide at the first visit of the patient, rendered the case simple and easy without the appearance of a single constitutional symptom. In this case, six tubes of graduated sizes were introduced in one day, completely through the stricture. Of course they were all passed on the guide, which conducted them unerringly through the natural canal. In order to have obtained an equal degree of freedom in the urethra, the old plan of treatment would have required probably twenty distinct operations, and the difficulties first encountered twenty times repeated. The application of the tubes in this case was witnessed by many surgeons, amongst whom, on one occasion, I had the great satisfaction of seeing Mr. Guthrie

\* Mr. Guthrie on the “Urinary and Sexual Organs,” p. 40

John Y—, aged twenty-nine, a groom out of place, applied at the hospital, April 4th, 1852. He was suffering from stricture of four years' standing. He had great difficulty in voiding his urine, and the obstruction had increased very considerably lately. The urine is now discharged, with much pain, in a very small, thread-like stream.

On examination, I found a very firm stricture at the anterior part of the membranous portion of the urethra. After a trial of a few minutes' duration, the guide was introduced through the stricture, and then the silver tubes to No. 5 were passed. An elastic tube, No. 4, was then sent through the stricture, and kept in that position for about twenty minutes. On the following day, the metallic tubes were increased two sizes, and afterwards elastic tube, No. 6, was passed and retained for half an hour. This treatment was continued as in the other cases, and in a fortnight the patient could pass his urine in a full-sized stream, and was discharged cured. I saw this man in November, and he stated that he was quite well in all respects, that he was then in a situation as groom, and could perform all his duties as effectually as at any period of his life. His constitution, when he first applied at the hospital, was in a very shattered condition.

On April the 1st, Patrick D—, aged fifty-nine, a burly Irishman, applied at the Royal Free Hospital, with a recommendation addressed to me by my friend, Mr. Rawlins, Surgeon, of Kentish-town, requesting that I would attend to the stricture. I examined the man, and found he had two strictures, one about two inches from the orifice, the other near the membranous portion of the urethra. There was considerable hardening in the region of the perinæum. The No. 1 catheter-guide could with difficulty be introduced; this accomplished, however, no further obstacle had to be surmounted. In fourteen days a No. 10 common sound could be passed with the utmost ease. At the end of three weeks this man was discharged in perfectly good health.

T. H—, aged sixty, a bricklayer's labourer, was admitted into the hospital March 6th, 1851, with an intractable cartilaginous stricture of the urethra, about six inches from the orifice. He stated that he had been under treatment in Ireland and different parts of this country at least twenty times during the last thirty years. On introducing a No. 5 common sound, the instrument entered a false passage, about four inches from the meatus. A No. 2 guide, after an effort of about twenty minutes' duration, was passed through the stricture, and then onwards into the bladder, when a large quantity of offensive urine was discharged. The urethral tubes up to No. 5 were then introduced, and also an elastic tube. The operation was repeated daily, and the tubes gradually increased in size, without producing a single unfavourable symptom, or causing any pain. In fifteen days a No. 12 common sound was easily passed. This instrument I gave to him at his own urgent request. He assured me that he would always pass it twice a week for the remainder of his life. I saw him about four months after his discharge from the hospital. The induration around the urethra had quite disappeared; the discharge had ceased; there was not any thickening of the passage remaining; his bladder and urethra acted perfectly, and his health had been so completely restored, that he had resumed his occupation, and stated that he could ascend the highest ladder with ease. From the history of this man's disease, it appeared that the false passage was the difficulty which resisted the ordinary mode of treatment. He said that at times, when he had been under treatment, he had "bied like a pig." The guide having been first introduced, the tubes were effectually prevented from entering the false passage, which was soon closed by the action excited in the part. This was a very interesting case.

C. C—, a butler, out of place, applied at the Royal Free Hospital, March 13, 1851, suffering from stricture of the urethra. He passed his urine *guttatim*. He says that he has been examined at several hospitals, and by all pronounced to have an impermeable and incurable stricture, about seven inches down the canal. Has had a light, gleet discharge for years, following a very bad gonorrhœa which he contracted, and treated by powerful astringent injections. He appears much reduced by his disease—is desponding—thin. The small catheter-guide was passed into the bladder after considerable trouble, and a few drops of blood preceded the flow of urine. The metallic tubes were now used, up to No. 5—and the elastic tube No. 4 retained two hours. On the following day, the same instrument was used. The next day, the sizes were increased to 8, the elastic being retained two hours. In fourteen days from the commencement of the treatment, this hitherto intractable stricture yielded to the influence of the tubes, and a No. 12 sound then passed with ease. The man states that caustics had been frequently used, and always produced shivering, and very considerable hæmorrhage. At the expiration of a month he was quite well.

*To be continued.*

CASES AND OBSERVATIONS

ILLUSTRATING

THE BENEFITS OF THE STRICTURE DILATOR

IN THE TREATMENT OF STRICTURES OF THE URETHRA.

By BARNARD HOLT, Esq., F.R.C.S.,

LECTURER ON SURGERY, AND SURGEON TO THE WESTMINSTER HOSPITAL.

HAVING, in common with other surgeons, occasionally experienced the difficulty of re-introducing a catheter, or sound, for the cure of stricture, where an increase in the size has been demanded, I have long considered the propriety of endeavouring to construct an instrument, which, being once introduced, may be materially increased in size without any other instrument being passed in direct contact with the urethra. To accomplish this desirable result, several plans have been adopted without hitherto overcoming the difficulty. I think every object of such dilatation is attained by the following modification of M. Perrève's instrument, which I have named the Stricture Dilator, and described at the termination of the paper.

In offering this instrument to the notice of the profession, it is not my intention to enter into the pathology of stricture, or at present treat of the history, progress, and treatment of the disease; but as my views have always favoured the treatment by gradual dilatation, I purpose, as briefly as possible, to relate a few of the cases I have already treated, and thus demonstrate the capabilities of this instrument in overcoming some of the difficulties experienced in the management of this occasionally intractable disease.

H. F—, aged twenty-two, was admitted into the Westminster Hospital, Dec. 5, 1851. He has been the subject of stricture for five years, during which period he has had two attacks of retention of urine, and is now admitted for a third. A No. 1 silver catheter was attempted by the house-surgeon without success; he was placed in a warm-bath, and a No. 1 gum-elastic catheter, without a stilette, passed with considerable difficulty; three pints of urine were removed with great relief, and he was desired to take half an ounce of castor-oil.

On the third day after admission, the dilator was gently introduced, and the tubes gradually increased from No. 1 to No. 4.

Fourth day.—He can make water more freely, its expulsion being attended by a slight cutting sensation.

Fifth day.—The tubes were increased from No. 4 to No. 6, the patient merely complaining of slight uneasiness.

Three days were now permitted to elapse, his urine was passed freely, and without pain; the same proceeding was adopted, and on the ninth day a No. 6 catheter was passed with facility.

Dec. 16th.—Ten days after admission (the larger dilator not being made) a No. 7 catheter was introduced, and he was compelled to leave the hospital on the following day to resume his employment.

J. W—, aged forty, a man of unhealthy aspect, was admitted Dec. 23rd, suffering from a continual desire to pass his urine. He stated that for twelve months he experienced greater difficulty in passing urine than formerly, and that, during the last few weeks, his bladder had become so irritable that he was compelled to relieve himself twelve or fourteen times a day. A No. 5 catheter was attempted, but would not pass into the bladder, an obstruction of an apparently obstinate character existing about five inches from the meatus; a No. 1 catheter was eventually passed, and a small quantity of urine withdrawn.

The third day after admission, the smaller dilator was introduced, and the tubes increased from No. 1 to No. 3; there was slight hæmorrhage, and he complained of a cutting sensation during the period of dilatation; the No. 3 tube was permitted to remain five minutes, and then withdrawn.

Fourth day.—He expressed himself much more comfortable; the urine had been passed without pain, and the frequency of micturition was materially abated.

Fifth day.—The same sized dilator was again introduced, and the tubes gradually increased from No. 3 to No. 6; the pain experienced during the passage of the tubes was of the most trifling character.

Sixth day.—Yet further improved; his urine is passed in a good stream, and he is not compelled to empty his bladder more than three times during the day and twice in the night.

Seventh day.—The larger sized dilator was introduced, and the tubes were increased from No. 6 to No. 8; the passage of this instrument and its tubes was unaccompanied by pain, and there was not any recurrence of hæmorrhage.

Eighth day.—The improvement was so manifest that he was desirous of resuming his employment, but consented to remain another week, that the largest size might be introduced.