AN ADDRESS ON SOME POINTS IN THE SURGERY OF THE KIDNEYS.

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IN accepting the honour which the officers of the Medical Society have done me, by asking me to open a discussion on the surgery of the kidneys, I felt it was fortunate for me that the President of the Society was a surgeon whose sympathetic interest and attention I should be sure to have, not only because of our personal friendship, but, more, because he himself was one of the very first in this country to take a practical share in the exploration and removal of the kidney.

I may at once assume that surgical treatment—that is, certain definite surgical operations, such as nephrotomy, nephrolithotomy, and nephrectomy—is, to-day, well recognised as being not only justifiable, but successful, in combatting several of the affections of the kidney.

This is now granted on all hands; but there still remains much to learn (A) with respect to the symptoms which should guide us to these proceedings; (B) as to which of these operations is best adapted for particular cases; and (C) as to how we can most safely and certainly find out the working power of the second kidney, or even if there be a second kidney at all.

I shall to-night say a few words on each of these points, and thereby, I trust, open up a sufficiently wide, but at the same time definite, range for an instructive and interesting discussion.

A. And, first, let me take the subject of renal calculus, to illustrate our need of further and more accurate knowledge of the symptoms of renal diseases. Formerly, and whilst surgical operations on the kidney received the censure and reproaches of surgical authorities, certain symptoms came to be associated with certain diseases, which were often enough not verified by *post mortem* examination; and, of course, were never checked off by the disclosures of the operating table. But, of late years, we have had a way of testing the accuracy of our diagnoses by the results of our exploratory incisions on the living.

Now, before a surgical exploration of the kidney, with a view to nephrolithotomy, is undertaken, two things are required; first, that there shall have existed for some time before, and still exist, certain symptoms which are looked upon as characteristic of renal calculus; and, secondly, that these symptoms shall have shown themselves irremediable by medicinal treatment.

And if I were to ask "what are the symptoms so characteristic of renal calculus as to justify surgical exploration?" I should be told that they are these. 1. Pain in the region of one kidney, extending at times, probably, to the groin and testicle. If this pain be more or less paroxysmal in character, aggravated by movement, and occasionally exciting vomiting and sweating—in other words, if renal colic occur—the evidence is regarded as all the stronger. 2. Blood and pus in the urine, not necessarily in more than slight quantity at any time, and it may be not always, or almost always, present. 3. The absence of any ascertainable condition of the bladder or prostate which can explain these symptoms. 4. Frequency of micturition, though by no means unfrequently absent, is confirmatory of the other symptoms if it be present.

Without doubt, these symptoms are strongly suggestive of calculus, and very often correctly so. But the time has arrived when it should be pointed out that experience seems to show that they are not positively characteristic.

Pathological and clinical observation combined have long ago taught us and our forefathers that the absence even of all the symptoms is not evidence of the absence of renal calculus. Indeed, it is only too well known that calculi in the kidneys may not only exist, but be surely working out the death of an individual, in whom none of these symptoms have been either observed or suspected. Could the presence of the calculus in such persons be accidentally ascertained, nephrolithotomy would be a means of saving life and kidney too.

Surgical exploration of the living, on the other hand, has now repeatedly proved to us that calculus is either not present in the

kidney, or, at least, cannot be found there, in some cases in which all or most of these symptoms are very pronounced.

I have in my possession a list of eighteen cases in which nephrolithotomy has been completed; but I have also a list of fifteen instances more or less typically indicative of renal calculus, in which an exploratory incision in the loin has failed to disclose a stone. In several of these latter cases, digital examination of the kidney was supplemented by acupuncture, and, in two or three, by incision of the kidney, but in all with negative results so far as regards calculus.

It is a fortunate circumstance that the lumbar incision, if carefully and judiciously carried out, is a proceeding almost (for one ought not ever to say "absolutely" in speaking of surgical operations) without danger to life; whilst the removal of a calculus saves the integrity of the kidney, and completely restores the patient to the ordinary avocations and pleasures of life.

Still, it cannot be denied that the proportion which the cases of fruitless search bears to the cases of successful discovery, is, at present, so large, that there might be danger of nephrolithotomy dropping into disrepute if it were not for the repetition of successes it has scored; for the fact that the operation has been proved to be free from any inherent great risk; and is followed by very complete and immediate relief from suffering of an agonising and almost unbearable character.

Probably no other surgical operation, except the relief of retention by the catheter, or the removal of a foreign body from the conjunctiva, affords more immediate and unqualified relief than nephrolithotomy.

But, with the above facts before us, it behoves both physicians and surgeons to look to their diagnoses; to improve, if possible, their knowledge of the symptoms of stone in the kidney, so that the application of this operation should become both wider and more precise; for the precision of our results in operating must depend upon the perfection of our diagnosis.

A striking and consoling fact, however, connected with the cases in which no stone was found, is the remarkable, and, in some instances, prolonged relief which has followed the exploration of the kidney; and it may fairly be expected that, by following up such cases as these, we may increase and adjust our knowledge of the signification and bearing on renal affections generally of those symptoms which have been usually regarded as characteristic of renal calculus.

Different hypotheses suggest themselves as to the mode of relief in different cases, and we will consider them with the hope of learning what the morbid conditions are which may be mistaken for renal calculus.

a. In some, the symptoms may have been produced by excessive mobility of the kidney, and the operation may have given relief by tightening down the kidney in its proper place in the loin. This, I think, explained a case of my own. We know that movable kidneys sometimes cause unbearable pain and hæmaturia, and excite frequent micturition; and we know, too, that the degrees of mobility may vary from a freely floating organ to slight vertical or lateral shifting of position. There is no difficulty in understanding how the inflammatory effusion and subsequent contraction, which follow the free digital examination of the kidney, may lead to the fixation of an organ which is not actually floating.

b. In other cases, as Mr. Annandale supposed, the division of some of the nerves in the neighbourhood of the kidney may have caused the cessation of the pain and renal irritation. The pain may have been neuralgic or reflex, and associated with functional renal changes; then comes the division or stretching of the nerves, and both pain and functional disturbance cease. We have analogous cases in the results of neurotomy, neurectomy, and nerve-stretching, and in those extraordinary cases in which epileptic seizures have ceased after division of the scalp, and after trephining healthy cranial bone.

c. In a third class, the kidney-symptoms may have been due to some chronic perinephritis; and the lumbar incision may have given relief by taking off tension, in the same manner that the incision of the periosteum relieves the pain of periostitis, and the drilling of the bone removes the pain of osteitis. This view receives support from any case in which pus is discharged at the cicatrix from time to time after the healing of the operation-wound. I am indebted to Mr. Marcus Beck for the notes of such a case.

d. In a fourth set of cases, in which intense pain is complained of, and a history of hæmaturia is given, the whole of the symptoms may be due to hysteria. A young man under one of my colleagues, Mr. Hulke, who complained of excessive lumbar and groin-pain, and said he had passed blood with his urine—who had, in fact, the symptoms of renal calculus well upon the tip of his tongue—was explored, but no stone was found. Subsequently, he stated that he had forgotten to

mention that he had swallowed a pin, which had stuck in his kidney. Some chloride of sodium in solution was prescribed, with the object, as he was assured, of dissolving the pin. He made a rapid recovery, and left the hospital quite well. A young woman was sent up to me from Buckinghamshire, with the view of my examining her kidney; and twice since she has returned; but, as we were convinced her symptoms were hysterical, I declined on each occasion to operate. She was much improved by a mixture of burnt sugar and water.

e. An abnormally acid urine, or urine highly charged with uric acid, may give rise to the whole of the symptoms which are excited by stone.

f. Again, though no stone has been formed, a number of crystalline forms or calculous particles may simulate renal calculus. In one case, I have good authority for stating that the temporary relief which followed the exploration was continued after the discharge *per vias naturales* of a small calculus.

In these two classes of cases, the very restricted diet and the absolute rest may explain the relief; or, what is more likely, the manipulation of the kidney may have detached some adhering crystals, or mucous mass, or sabulous material, from a calyx or the renal pelvis.

g. In a certain number of cases, slight and early scrofulous disease of the kidney has been mistaken for a calculus, and relief has followed acupuncture, or incision of the kidney, by giving vent to a little pus. This occurred in another of Mr. Beck's cases, of which he has kindly given me the notes.

h. A stone may be present and yet escape detection, either because of the great toughness and thickness of the renal tissue, or because it has become displaced from the kidney, and impacted in some part of the ureter. Under these circumstances, it is hardly likely that any difference would be made in the symptoms by the exploration.

There are many difficulties in the way of diagnosis. There is a great resemblance in the symptoms of renal calculus and of acid urine. There is no more certain cause of pain in the loins, frequent micturition, and even of a slight amount of pus or blood in the urine, than very acid urine, and urine overcharged with uric acid.

The acidity of the secretion, or the crystals of uric acid, by irritating or inflaming the mucous membrane of the kidneys, causes albuminuria, slight hæmaturia, or the admixture of pus with the urine; and this may go on for months or a year or two without causing any actual or permanent degeneration of the renal tissues. The patients who suffer from these conditions are often of a gouty diathesis; they frequently get a good deal of feverishness, and, though they do not experience acute pain in the testicle, they will sometimes complain of marked testicular tenderness on pressure.

The diagnosis in such cases will be cleared up by the improvement which follows alkaline treatment. The citrate or tartrate of potash or soda, given every four hours during the day, neutralises the acidity of the urine as it is secreted, and thus the cause of the symptoms, and with it the symptoms themselves, disappears. Moreover, these alkaline salts, by producing a supercarbonate of the alkali in the urine, dissolve the uric acid and the earthy phosphates, and thus not only tend to prevent the formation of urinary calculi, but, by diminishing their size, facilitate the expulsion of any small concretions—if so be that such have already formed and are adherent, or otherwise retained.

Where there is a persistent tendency to the formation of uric acid calculi, the symptoms again and again recur; so that the continuance or repetition of the alkaline treatment is necessary; and, as it promotes the descent and discharge of the calculi, the patients are apt to condemn the remedy as being the cause of their trouble, instead of honouring it as the means of their deliverance.

Hæmaturia is looked upon as almost a necessary result of calculus; and probably it would not be far wrong to say that hæmorrhage from the kidney is in a majority of cases caused by renal calculus.

It must, however, be borne in mind that, besides resulting from various other renal affections—non-malignant as well as malignant—renal hæmorrhage sometimes occurs when there is no ascertainable cause for it, from a mere relaxation of the blood-vessels, or from simple increase of intrarenal blood-pressure. If such hæmaturia occur in a rheumatic, or highly nervous or hysterical person, the symptoms of renal calculus may be very perfectly simulated.

On the other hand, a stone in the kidney may not cause hæmaturia at all, or not during the time the patient is under observation. If the quantity of blood passed have been slight, its presence may never have been observed by the patient; and if hæmaturia be intermittent, the most careful examinations, extending over many weeks or months, may not discover it.

The clinical history as to hæmaturia is, however, all important, and will sometimes help to save us from errors of importance. Dr. Owen Rees records how a young lady of marked hysterical disposition had

lumbar pain and frequency of micturition set down to hysteria and treated accordingly; until, at length, due attention to the clinical history revealed that hæmaturia had existed on more than one occasion. A mulberry calculus was ultimately found in her kidney.

Frequency of micturition is also a symptom which requires great attention. It is the offspring of many causes—renal, ureteric, vesical, prostatic, and urethral—but it is a very common symptom of renal calculus. In some cases, the irritation at the neck of the bladder is so excessive that the thought of a calculus in the kidney or ureter does not arise; but catheters and sounds are again and again resorted to on the supposition that the seat of disease is the urethra or bladder. If the frequency of micturition be associated with pus in the urine, cystitis is, perhaps, said to exist; whilst in reality the pus is coming from the higher urinary passages, and any cystitis which is present is the direct result of the so-called "exhaustive examinations" of the bladder with instruments.

I have known a case in which, for many months, the patient was cooked upon, and by eminent men, too, as suffering from subacute cystitis; but the pus in his urine came from the kidney, and in the end he died of a large abscess extending into the perinephric tissue.

Whilst a calculus is hollowing out a nest for itself in the kidney, or is growing in a calyx or the renal pelvis, a slight degree of pyelitis goes on and causes purulent urine, and often irritability of the bladder. When this encysting process is completed, and the calculus is comfortably lodged, the pus disappears from the urine, and the frequency of micturition subsides. The length of time this process lasts is very uncertain, and varies from a few weeks to a year or two, or more. If it be not too prolonged, and the sufferer be healthy or robust, perfect convalescence may follow; but, if the process be very prolonged, or the patient be strumous, aged, or weakly, renal abscess, pyelo-nephritis, or perinephritic abscess, and death result. A correct diagnosis may generally be made in cases of frequency of micturition if, besides small quantities of pus, there be also, from time to time, a little blood in the urine, and more or less constant paroxysmal pain in the lumbar region, and in the groin or testicle. When the lumbar or testicular pain is absent, frequency of micturition, with purulent and blood-mixed urine, is insufficient for a correct diagnosis; and, even though renal calculus be the cause, there are no data for selecting one kidney rather than another for lumbar exploration. But should we, under these circumstances, be ever justified in examining both kidneys from within the abdomen? I think we should, if the patient be clearly going into a bad way; more especially if there have been, at any time, marked crystalline forms in the urine, and if a digital examination of the vesical ends of the ureters give a negative result.

Probably, the greatest difficulty in diagnosis is between early strumous kidney and renal calculus. The symptoms are at first almost identical, and the disease has often made great progress before its strumous character is apparent.

When frequency of micturition and slightly purulent urine are met with in a person of strumous habit, and are unaccompanied by history of hæmaturia, the strumous nature of the disease is fairly clear; but when they are associated with a history of hæmaturia and sharp lumbar or testicular pain in an otherwise healthy looking person, calculus is greatly more probable.

It must be remembered that a calculus may be present in a strumous kidney; but this complication is an additional reason for removing the calculus. In certain cases of early strumous disease, it might fairly be expected that the removal or escape of the calculus would lead to the cessation and repair of the strumous changes; whereas, on the other hand, if the calculus be not removed, the destruction of the kidney will progress all the more rapidly.

We need more accuracy of diagnosis as to the whereabouts of a renal calculus when there is one present. Is it in the calyx or pelvis of the kidney, or in the ureter? and if in the ureter, at what part of its course? I am persuaded there are cases, and probably not a few, in which we might cure or relieve our patients by removing a stone from the vesical end of the ureter by vesico-ureterotomy. I have related a case of the sort, and described the method of procedure, in a paper in the *American Journal of Medical Sciences* for October, 1884.

When the patient is conscious that the seat of his trouble has been a shifting one, and has referred his pain to a lower and lower point along the course of the ureter, until at last it remains stationary, and especially if the bladder becomes greatly more irritable; and if, in addition to these symptoms, anuria or a sudden decrease in the urine occur, then it would be right to conclude that a calculus may have become impacted at the vesical orifice—the narrowest part, by far, of the ureter—and to explore the bladder with this view, and remove the calculus in some such manner, and with some such instruments, as I have described.

Again, if, after a vesical calculus has been removed, fresh symptoms of the disease return, as in a case related by Agnew; or if severe constitutional symptoms, with more or less suppression of urine, should occur, as in Dr. Rawdon's case, calculus in the ureter should be suspected, searched for by digital exploration of the bladder, and, if detected, removed by vesico-ureterotomy.

I would also like to suggest to those surgeons who prefer abdominal nephrectomy, to search the ureters for impacted calculus, especially in cases of hydronephrotic and pyonephrotic distension. I feel sure it would be quite possible and safe to set the kidney free by excising a calculus from the ureter by intraperitoneal ureterotomy.

Within the last few weeks, Dr. Cullingworth, of Manchester, in a case of this sort, was about to perform nephrectomy, but, instead of doing so, he examined the ureter, and found a calculus impacted in it, just above the bladder. He excised the calculus, stitched up the incision in the ureter, and brought the divided peritoneum accurately together over the ureter. A glass drainage-tube was placed in the pelvis. Pus drained away through the bladder, and the tumour rapidly subsided to one half its size. Unfortunately, the other ureter too was blocked, and its kidney riddled with abscesses, and this, as Dr. Cullingworth informs me, was the cause of his patient's death. The case gives promise of good results from intraperitoneal ureterotomy, which, however, must be regarded as a more formidable proceeding than the vesical operation.

I shall conclude this part of my subject with the following propositions.

1. Although hæmaturia, associated with frequency of micturition and a small amount of pus in the urine, is, in the absence of disease in the lower urinary tract, strong evidence in favour of renal calculus, yet pain, either in the loin, groin, or testicle, of one side, is also needed to justify the surgeon to explore the kidney through the loin.

2. Pain alone, when persistent, or frequently paroxysmal, and giving rise to sickness and sweatings, or subject to exacerbations during perfect rest, justifies lumbar exploration. When there is a history of hæmaturia without pus, or a trace of pus without a history of hæmaturia, associated with one-sided pain, the exploration ought to be made if alkaline treatment have failed.

3. When the above symptoms occur in persons with acid urine, or of gouty tendency, or who lead sedentary and indulgent lives, alkaline treatment and diet ought to have a prolonged trial before proposing an exploratory incision.

4. When the urine is alkaline from carbonate of ammonia, and not from fixed alkali, the alkaline-treatment should be tried, on the ground that urine, very acid when secreted, irritates and inflames the mucous membrane, and so causes the alkalinity which is found when the urine is discharged from the body.

5. Under certain circumstances, an abdominal exploration in search of calculus is justifiable when there is nothing to specialise which kidney is the seat of the stone.

6. If strumous, not calculous, kidney causes the above symptoms, the lumbar incision of the kidney may give great relief, by affording exit to pent-up pus. An exploratory incision, under these circumstances, is a very advantageous thing.

7. Under the circumstances previously stated, digital exploration of the bladder, in search of calculus in the ureter, ought to be made; and, if a stone be found in the vesical orifice, it ought to be removed.

8. Removal of a calculus impacted in the ureter, by intraperitoneal urethrotomy, is feasible, and in certain cases ought to be practised.

9. Exploration of the kidney should not be considered complete till incision of its substance has allowed of the thorough examination of the calyces; and nephrectomy for calculus, in kidneys not disorganised, ought not to be entertained until after free incision of the kidney and digital exploration of the bladder have failed to disclose the calculus.

10. Exploration of the bladder, in the female certainly and in the male generally, ought to be made before nephrectomy is resorted to for hydronephrotic and pyonephrotic tumours.

11. A stone in one kidney will sometimes excite sympathetic pain and irritation in the opposite one; but this transferred pain is of an aching character, not spasmodic or colicky, and it should not deter the surgeon from exploring when there is well marked and frequently recurring pain in the opposite loin.

12. Experience suggests that after lumbar exploration of the kidney the patient should keep on his back, and a well adjusted compress should be placed on the abdomen over the front of the organ explored; as there is, though rarely, a tendency for the kidney to fall away from the loin, and delay the completion of the healing of the wound.

B. The next subject is the question as to which of the operations should be resorted to in certain cases, and whether any at all should be performed in others.

Of course, there are some cases which do not admit of any such question; but there are several which do, and the question presses for an answer from surgeons engaging themselves in this field of practice.

I do not here allude to the differences of opinion as to lumbar or intraperitoneal nephrectomy. This subject has recently been discussed at the International Medical Congress at Copenhagen, and more recently still at the Royal Medical and Chirurgical Society. Nor do I refer to any difference in the method of performing nephrolithotomy, because I do not doubt that the almost unanimous verdict is in favour of the lumbar incision. But here I would again suggest that those surgeons who employ the abdominal method should not rest content with an examination of the kidney, but should examine the ureter in all its length besides.

What I have in mind, however, are floating kidneys, wounded kidneys, cancer, strumous disease, and cystic enlargements and distensions of the kidney.

In floating kidney, which causes distress enough to justify any operation at all, ought nephrorraphy or nephrectomy to be practised? I venture to say that nephrectomy is not justifiable until nephrorraphy, as well as mechanical appliances, have failed.

In lacerated, punctured, or ruptured kidney, should the injured organ be at once excised, or the loin opened and drained, thus giving nature a chance to repair the kidney, and restore it to a useful workable condition?

This question, I think, must depend upon whether the great blood-vessels, or the peritoneum, are injured or not; also as to the extent of laceration of the renal substance, and as to whether the injured organ is or is not prolapsed through an external wound. The diagnosis and treatment of injured kidney is too large a subject to be fully discussed now; and I must content myself by saying that, if the indications of injured kidney or pelvis of kidney be marked, and the gravity of the case be urgent, an incision should be made down upon the kidney at once, and drainage or nephrectomy performed according to circumstances. If the injured organ communicate with the surface through a wound in the parietes, we should be guided by the same principles as if the wound had been made by the surgeon. If primary nephrectomy have not been performed, and prolonged and profused suppuration occur, secondary nephrectomy should be practised.

If clots of blood accumulate in the bladder, or be forced into the urethra, and then give rise to obstruction, pain, and such distress as I once witnessed in a case of the late Mr. Hilton, median urethrotomy or lateral prostatotomy should be performed. I well remember this proceeding being discussed in the case to which I refer, and I am sure it would have saved much suffering had it been performed. Dr. Rawdon, of Liverpool, has recently put this treatment to the test of practice, though, unfortunately, at too late a period in the course of the case.

In cancer of the kidney, the question has been asked; Is nephrectomy ever justifiable? I think that, in the very early stage, before the lymphatics are involved, *if the growth could then be detected*, nephrectomy would afford a chance of prolonging life, and lessening suffering. In the middle and later periods of the disease, nephrectomy is useless, and, therefore, as it seems to me, unjustifiable.

In strumous disease, nephrotomy will often be found to give relief; and, in cases in which it is not far advanced, the disease may be checked altogether by the operation. In advanced cases, where the kidney has become a large abscess-cavity, or a congeries of smaller abscess-cavities, or where suppuration has been lighted up in the perinephric cellular tissue, nephrotomy, followed by antiseptic irrigation and drainage, is still the operation.

Nephrectomy in that form of tuberculous disease in which the kidney-affection is but a local manifestation of a wide spread constitutional disorder, would be useless, and should not be performed. But, when the strumous disease is limited to one kidney, nephrectomy promises much as a means of prolonging life, and should be performed (but only after nephrotomy has failed) if there be a fear of lardaceous disease occurring from prolonged suppuration.

It is in scrofulous disease especially that the surgeon must be prepared for the catastrophe of removing a kidney, only to find, on the *post mortem* table, that the opposite kidney has been destroyed by the same disease. It is in these cases very particularly that we so much need the means of ascertaining the working capacity of the second organ; and it is in these also that the difficulties of so doing are most insuperable.

It is, perhaps, in cases of hydronephrotic and other cystic tumours of the kidney that the greatest divergence in practice has prevailed.

Some surgeons have punctured; others have performed nephrotomy; whilst a few have resorted to, and still recommend, nephrectomy.

I think nephrectomy ought rarely, if ever, to be performed, unless the tumour be of immense size, and nothing of the kidney but a cyst-wall remain. Even then, puncture or nephrotomy should have preceded nephrectomy. Not a few hydronephrotic tumours have spontaneously subsided; several others have completely yielded to a single tapping, or a repetition of tapplings; several have recovered well and readily after nephrotomy; and some have gone on well and prosperously for a long time after nephrotomy, with an urinary sinus in the loin.

I would say of renal cysts and of hydronephrotic distension generally, that, as soon as the tumour has reached a size which causes inconvenience by pressure, not to say danger from rupture, it should be tapped; and that, if it refills, it should be cut down upon, punctured, and emptied, and then incised, and the edges of the cyst stitched to the edges of the wound. Under these circumstances, the cyst will collapse and probably close. If a fistula should remain and prove troublesome to the patient, the question of nephrectomy may be considered, and ought to be decided upon chiefly by the characters of the fluid which is discharged. If it be found that the kidney-structure is functionally sound, and secretes several ounces of urine each day, what remains of the organ ought not to be sacrificed without specially strong reasons; for it is safer to possess a healthy kidney and a half than only one healthy kidney.

I have already discussed the subject of opening the ureter in cases of obstructive distension of the kidney from impacted calculus; and I shall be much surprised if the next few years do not give us practical proof of the success of the treatment.

There is one point bearing on the frequency of micturition which has, I think, an importance in relation to hydronephrosis. The anatomy of the vesical orifices of the ureter and neck of the bladder is such that, during contraction of the bladder, the ureteric orifices are kept closed by the small muscles of the ureters. Now, when there is frequency of micturition, these orifices are constantly being closed, and obstruction in the ureters is the result. This, acting together with some other obstruction, such as a calculus, in one or both ureters, becomes an important auxiliary in the production of hydronephrosis. For this reason alone, it is very necessary to stop the frequency of micturition; and, should medicines fail to do so, there remains a most powerful and certain method, namely, median urethrotomy. This should be done, then, both as a means of relieving pain and preventing the increase of the hydronephrosis; but, at the same time, advantage ought to be taken of this opportunity of making a digital examination of the orifices of the ureters, to see if either be blocked by an impacted stone.

c. Much ingenuity has been spent upon instruments and plans for ascertaining the character of the urine secreted by the separate kidneys; and we have here to-night the gentleman who was, I think, the first to devote much labour and thought to this subject. Dr. Tuchmann will, I hope, demonstrate to us his method of closing the ureters. But I do not think he will greatly disagree with me, when I say that all the methods which have hitherto been suggested are either too unsafe, too unreliable, or too little practicable in hands which have not been trained by some hundreds of experiments, to meet with much favour. I would go further, and say I fear this must almost always be the case. The proceedings have about them something necessarily uncertain. If a tendon or nerve be divided, an artery or vein tied, or an organ of sense interfered with, a definite result ensues, whereby we are sure of what has happened. But, in closing one ureter for a few minutes, we have only the relative quantity of urine discharged meanwhile to guide us to the conclusion that one ureter has really been closed, or catheterised; and this, I fear, is but a broken reed to trust.

So far as I can learn at present, we must be content to rely upon the clinical history and course of the case, together with frequent examinations of the daily quantity and quality of the urine. In some cases, the line of research which has been followed by some of the Germans, and by Drs. Thudichum and Ralfe in this country, namely, of ascertaining the proportion which the amount of urea bears to the whole amount of solids passed, is likely to prove of considerable value. In estimating the condition of the kidneys from the amount of urea excreted, it should always be borne in mind that, under a low diet, the excretion of less than one half the standard daily quantity is quite consistent with two healthy kidneys.

In ascertaining the existence of a second kidney, the instruments for closing the ureters may possibly be more useful; because, if no urine at all flowed during their application, a safe inference might be drawn that there was no secretion passing into the bladder from an organ on the opposite side to the closed ureter. But, if allowance be made for cases

of congenital malformation and deficiency of the genito-urinary organs—under which state of things it would be always right to suspect a single kidney—there is an intrinsic improbability against either congenital absence or congenital atrophy. Out of 8,068 *post mortem* cases, there were but two instances of congenital absence, and one only of congenital atrophy, of the kidney.

LETTSOMIAN LECTURES

ON

DISORDERS OF DIGESTION: THEIR CONSEQUENCES AND TREATMENT.

Delivered before the Medical Society of London.

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LECTURE III. (*Concluded from page 270.*)

Another cause of imperfect indigestion is fatigue. When we start on a walk, it does not matter much whether the road be rough or not; any little obstacle is avoided with ease, and we thread our way over rough stones, through tangled heather, or over a quaking bog, without difficulty. Our nervous system is in full vigour, and preserves perfect co-ordination amongst the movements of the different parts of the body; so that one helps the other, and all difficulties are surmounted. But when we are tired, the case is very different; a little roughness in the road will cause us to stumble, and an unexpected stone may give us a sudden fall. The wearied nervous system no longer co-ordinates the movements of the various parts of the body, so that they no longer work together for a common end. The same thing occurs with the various parts of the intestinal canal. In my first lecture, I described the mechanism by which the acts of chewing and swallowing appeared to act as stimulants to the circulation and nervous system, and thus to ensure the proper co-ordination between the functions of the mouth, stomach, intestine, and liver. But, if the nervous system be exhausted by previous fatigue, or debilitated by illness, the requisite co-ordination may not take place, and indigestion or biliousness may be the result. How often do we find that the meal taken by a person immediately after a long railway-journey disagrees with him, and either causes sickness, or diarrhoea, or a bilious headache. Forty winks after dinner is by no means a bad thing; but forty winks before dinner is frequently much better. How often do men who have been working hard all day, with their mental faculties continually on the stretch, go home and have dinner forthwith. Exhausted as they are, how can they expect to digest properly what they eat? Almost the only saving point is, that many of them live some distance from their places of business, and have a short time during the homeward drive to sit still and rest. This is sufficient for some, especially for young men; but it is insufficient for elderly men, and they ought to make a point of having a little rest at home before dinner. Some men, unfortunately, are so misguided as to believe that exercise after a hard day's work will do them good; and, instead of utilising the little time they have for rest after a day's labours are over, they walk three or four miles, or take a tricycle-ride of several more, before dinner. The consequence is that, under the combined mental and physical strain, their digestion is impaired and their strength broken down.

Effects, somewhat similar to those of fatigue, may be produced by depressing or disturbing mental emotions, or bodily conditions. We know how readily excitement of almost any kind will destroy the appetite in some people, and depressing emotions will do it in almost every case. We not unfrequently hear of girls in whom consumption appears to have been brought on by an unfortunate love affair. If we accept the view that consumption depends upon the presence of the tubercle-bacillus, we might, at first sight, think that there can be little or no connection between consumption and disappointed love; but the depressing effect of the disappointment will lessen the digestion, impair the nutrition, and render the body more likely to afford a suitable nidus for the bacillus.

Different emotions appear to affect specially, not only different organs, like the heart and intestinal canal, but different parts of the digestive apparatus. Thus, disgust affects the stomach, causing