themselves there is, in my opinion, nothing to equal large quantities of sterilized saline solution given per rectum or subcutaneously. With these we may combine calomel and alcohol, both in fairly large doses. Antipyretic drugs are usually harmful. We do not usually need to treat the pyrexia *per se*, and, if we do, cold water is the best and safest remedy, used either in the form of a bath or cold sponging.

Antistreptococcal serum, I would say, is useful in a limited number of cases only, though probably never harmful.

I have given now a fairly large number of different serums, and time will not permit of discussing this question as its importance deserves. Briefly, the serum should be polyvalent—that is to say, prepared from many strains of streptococci, some of which should have been obtained from cases of puerperal fever. At least 50 c.cm. should be given subcutaneously, and 100 c.cm. are preferable. The dose should certainly not be repeated, as from so doing joint pains and pyrexia are apt to result.

The type of case in which these bactericidal serums are of benefit is that in which the streptococci are present in the circulating blood. I have never been able to satisfy myself that they affect the local lesion at all, and their value in checking absorption of toxins from the lesion is at least problematical. They are not supposed to have any antitoxic value. For myself, I now give them only in cases where the septicaemic symptoms are severe and no local lesion can be found to account for the intensity of the illness.

A Clinical Lecture

ON 3

THE DIAGNOSIS AND TREATMENT OF RENAL MOBILITY.

DELIVERED AT THE MEDICAL GRADUATES' COLLEGE AND POLYCLINIC.

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MOVABLE kidney is a condition which has, during the last few years, become the subject of much discussion, and opinion appears still to be divided upon several points in connexion with it. Is it of frequent occurrence? Is it responsible for the symptoms often associated with the mobility, or are these merely coincident? By what means can the mobility best be combated? Is fixation of the organ followed by relief to the symptoms complained of? These and some other points I propose to address myself to this afternoon. In the first place, let me point out that in the healthy living body the kidney is not an absolutely fixed organ; I mention this because in one of the best modern textbooks of medicine I notice it so described. When operating on the abdomen for other conditions I have had many opportunities of handling the kidneys, and find that both organs may be easily displaced downwards for an inch to an inch and a half. We have, then, in the condition known clinically as "movable kidney," simply an exaggeration of a normal condition, induced probably by loss of abdominal fat, by lax abdominal walls, occasionally by actual violence, influenced also probably by the lumbar pouches being more shallow in some individuals than in others.

SIGNS AND SYMPTOMS.

Of the frequency of undue mobility there should be no doubt; it is common in women, comparatively uncommon in men, though by no means rare in the male. Its detection is generally quite easy with proper method in examination. The patient should first be examined lying on the back in such a way as to produce muscular relaxation. The left hand is used to investigate the right side, the right hand to investigate the left side, the palm of the hand being pressed firmly against the lumbar muscles immediately below the last rib, the thumb lying on the front of the abdomen, close to the costal arch, so that the hand can grasp the patient's side. The patient is now told to take two or three deep inspirations, and at the second or third effort, whilst the palm pushes firmly up from the back, the thumb follows

the retreating abdominal muscles at the beginning of expiration, and when the expiratory act is completed, if the kidney is movable, it may be found either in the grasp of the examining hand, or quite below it, and palpable by the hand which has hitherto not been concerned in the examination. If the kidney is not detected in this way a bimanual examination should be made in the semiprone and in the knee-elbow positions. Finally, the condition of the kidney should be investigated in the upright position, one hand pressing firmly into the loin from the back, the other being used on the front of the abdomen, the patient leaning slightly forwards and resting the hand of the side under examination upon some support. It is important to examine in this position, because there are some kidneys which do not reveal their displacement until the patient is vertical; or if the kidney is already found to be displaced downwards in one of the previous examinations, it will generally be found to come lower down when the patient is in the vertical position.

The kidney having been recognized will, when allowed to do so, often shoot back into the loin with a slip which is absolutely unmistakable, or it can alternatively be gently slid back beneath the costal arch. If the patient has been recumbent for some time mobility of the kidney is likely to be detected only on examination in the vertical position.

I have passed briefly over these less controversial points, but when I come to consider the symptoms complained of by patients with undue renal mobility I am upon less certain ground, and may fall to carry agreement with what I have to say. That such patients complain of many things is notorious; the real point at issue is whether the troubles complained of are due to the movable kidney, are merely coincident with it, or whether the symptoms complained of and the mobility of the kidney are both due to some common factor, such as gastropnoxis, the stomach dragging down the kidney as it descends.

The symptom complained of most commonly, I think, is tiredness from inadequate cause, whether from physical or from mental work. Worse than the simple exertion of walking in some patients is standing about, whether at the wash-tub or at some social function. If pressed to explain why they get so tired, many patients attribute this to dragging and discomfort in the back on one or both sides. Exertion, such as is involved in stooping or in playing games such as golf, occasionally produces marked discomfort, amounting it may be to pain, and I have known riding also cause pain which is of a sickening character in women who hunt, though a feeling of complete exhaustion the same evening, and for a day or two after, is more often complained of than actual physical pain. Several of my cases have complained of the discomfort they experience when in bed if they turn to the side opposite to the mobile organ. Occasionally this produces a feeling of rather severe nausea; and if both kidneys are mobile, comfortable rest is only obtained when the patient lies on the back. Indigestion is a common trouble, pain coming on at irregular intervals after food, it may be independent of the nature of the food; flatulence is often associated. Suspicion of gastric ulcer may be excited, especially if the patient vomits from time to time. But ulcer and stenosis are generally excluded by the erratic nature of the symptoms, the absence of a fixed point of tenderness, the absence of stasis. The stomach will often be found proptosed and with atonic dilatation; and we may have the converse—marked gastropnoxis and dilatation with nephropnoxis.

As an uncommon condition we meet with attacks of renal pain so severe and so colic-like in nature as to suggest a diagnosis of calculus, blood in considerable quantity and pus may be found in the urine, the kidney may be very tender on palpation, vomiting may be persistent, and frequent micturition completes the picture. Such a case has been under my care during the last few months, a lady sent to me by Dr. Faulkner of Banbury. The symptoms had troubled the patient intermittently for twelve years; both kidneys were movable, but the principal symptoms implicated only the left side. Renal stone recently impacted in the ureter of a movable kidney seemed the appropriate diagnosis, but it was not confirmed by radiography. Exploration, which involved the opening of the kidney for digital examination and the passage of a bougie down the ureter, showed conclusively the absence of stone. A considerable degree of dilatation of the calyces

of the kidney was detected with but little noticeable change in the pelvis. Fixation of the kidney has resulted in complete relief to the symptoms, though there was a stormy convalescence of pain and vomiting for some days after the operation, due possibly to my fixing the kidney so high as to cause undue tension on the ureter. I can recall two other similar cases, and in all renal mobility with some degree of dilatation of the pelvis or its branches was present and appeared to be the only explanation of the painful attacks and the haematuria. Fixation in each case gave relief.

So far the picture I have drawn has been chiefly one of local symptoms such as may, without straining the imagination, be fairly ascribed to the drag of the movable kidney on its pedicle and to torsion of the vessels and ureter; that is, the symptoms are not merely associated with, but are really due to, the mobility.

Other symptoms met with are, however, not so easily explained. Amongst these are headache, very frequently associated with other symptoms such as those I have described, but in a few patients so severe and persistent as to dominate the whole case; it is the thing complained of and does not yield to treatment by drugs and general

another explanation which has much to be said for it—namely, that the symptoms are those of nerve irritation and exhaustion rather than toxic.

The illustration is a reproduction of a photograph from a dissection in the Museum of the Royal College of Surgeons; it was not made for the purpose of my thesis, but I came across it one day when examining some anatomical preparations at the college. The view of the preparation is from the back; it shows the aorta, the vena cava, both kidneys and suprarenal capsules with the renal pedicles, and, most important of all, the great plexus of nerves associated with the semilunar ganglia. The arrangement of the nerve plexus is clearer on the left side; to that I desire, therefore, to direct your attention. You will observe the large ganglion known as the semilunar lying on the lower part of the suprarenal body in the angle between the aorta and the renal artery. Entering the ganglion from above is the great splanchnic nerve. Descending from the lower margin of the ganglion is a large cord which is distributed eventually in the renal plexus and the lumbar ganglia, the branches of the former intertwining with the renal vessels. The splanchnic nerves are made up of fibres communicating with the

1, Posterior aspect of abdominal aorta. 2, Intercostal artery. 3, Renal artery. 4, Renal vein. 5, Adrenal body. 6, Great splanchnic nerve. 7, Semilunar ganglion. 8, Suprarenal artery. 9, Left kidney. 10, Right kidney. 11, Pelvis. 12, Ureter. 13, Spermatic artery. 14, Spermatic vein. 15, Inferior vena cava. 16, Inferior phrenic artery.

therapeutics. Sleeplessness is a not uncommon complaint; hysteria, irritability of temper, recognized not only by the friends but also by the patients. In a few patients flightiness and silliness of character and conduct is observed; such may complain of mental obscurity, of inability to remember or to think clearly; and finally we arrive at the worst group, in which there are well-marked delusions, varying in character and degree, at times of the religious mania type, at others of the persecution type, in many there is marked melancholia and suicide is either threatened or actually attempted. In practically all suffering from this group of symptoms just briefly outlined loss of weight is a very marked feature.

Is it permissible to assign these symptoms to renal mobility when that condition is found to be present, or is the condition of the kidneys a mere accidental association? I think the assertion of the latter is often made without due consideration, and I purpose now to indicate to you why renal mobility may produce these general nervous symptoms. It has been suggested that they are due to toxæmia, the higher nervous tissues being irritated by waste products imperfectly excreted by kidneys the circulation in which is interfered with or the excretory duct of which is rendered less patent than it should be.

I should like, however, to suggest for consideration

thoracic ganglia, and through them with the anterior primary division of most of the dorsal spinal nerves, with filaments from both nerve roots. Through these roots the splanchnics have a wide distribution in the spinal cord. How does this arrangement of the nervous apparatus affect the question of renal mobility? In my view as follows: When the kidney descends below its ordinary position it leaves the suprarenal capsule behind. Closely connected with this body is the semilunar ganglion, which is also fixed by the attachment of the splanchnic nerves coming from above. When the kidney descends its pedicle is no longer horizontal, but is more or less vertical; it pulls directly on the great ganglion and through the splanchnics on the thoracic ganglia and on the branches of several if not all the dorsal nerve roots. The wide distribution of these spinal nerves in the cord ensures a very open path of communication with the higher centres in the brain through which stimuli can easily reach those centres. Is it unreasonable to believe that the frequent descent of the kidney, with its drag upon the nervous apparatus, is a source of nervous exhaustion from over-stimulation—a neurasthenia indeed? The kidney sometimes under the costal arch, at other times inches below, dragged down by its mere weight or at other times actually forced downwards by muscular effort,

does this make no impression on the sympathetic and cerebro-spinal systems? What does experience tell us when operating on the kidney for stone or in nephrectomy? Is it not that drag on the renal pedicle produces the most marked reflex disturbance of respiratory and at times of cardiac function, and is not the same true when, in operating, any part of the solar plexus is treated with any want of consideration? It may be said that the explanation is plausible so far as neurasthenic symptoms, such as headache, is concerned, but is insufficient when we are confronted with mania and delusions. Perhaps; but given patients with ill-balanced nervous systems, who can limit and determine in them the ill effects of slight but constantly repeated over-stimulation of nerves?

However plausible a theoretical explanation such as I have suggested may be, it is to the practical test of experience we eventually turn.

What are the results of treatment, and what methods give the best result? As to methods, we may advise the patient to resort to some mechanical apparatus for the support of the kidney or to operative measures. I have tried several forms of support, but on the whole the results have been disappointing; the best device with which I am acquainted is the truss devised by Sir Frederick Treves, but even this is far from satisfactory; it is sometimes painful to wear, although produced by the most skilful surgical instrument maker; it is generally irksome, and often fails to give relief even when applied by the most intelligent of patients—and, needless to say, the hospital out-patient is hardly to be described under this heading. Even if some form of support is effective in relieving the symptoms, the apparatus will have to be worn a very long time, if not permanently, a discouraging outlook for the patient. To the alternative—namely, to operative treatment—I resort more and more readily, on the ground that it generally gives relief to the symptoms, that it is attended with but trifling risk to life, and that by increased experience satisfactory methods of fixation have now been devised which can, almost without exception, be relied upon to maintain the kidney fixed in its new position.

AFTER HISTORY OF PATIENTS.

For the purpose of this lecture I have been making inquiry as to the condition of patients operated upon at some distance of time as well as recently. My inquiries confirm the general impression I had formed as to the advantage of fixation in the majority of patients. Better than grouping them all together will be to divide them roughly into three groups: (1) Those in whom local discomfort, pain, dragging, and back-tiredness have been the main reasons for seeking relief, including the most severe cases with colic, haematuria, etc.; (2) those in whom exhaustion, headache, sleeplessness, and so on have been added to local discomfort, or have been by themselves the great subjects of complaint; and (3) those in whom the symptoms have been chiefly mental—either the patients have been uncertain and silly in their behaviour, merely depressed and hypochondriacal, or actually the subjects of mania and delusions.

Of Group (1) I have little but good to tell; they are nearly all relieved of their symptoms by fixation, and are restored to active participation in the affairs of life; few operations give more satisfactory results.

Of Group (2) the report is not so good, yet better than will be anticipated by many. Of these I think I may say that a considerable majority get fairly complete relief—that is, their lives are rendered comfortable and useful, whereas beforehand they were reduced to a condition of semi-invalidism.

Group (3) is not so hopeful, and yet it furnishes examples, I think, of real utility—that is, fixation of a movable kidney or of both organs has been followed by recovery complete and permanent up to the present. It would take too much of your time were I to quote at length all the cases of this class upon whom I have operated, but very briefly I may mention that I have operated upon eight patients with marked mental symptoms, chiefly delusions of varying type, of whom four had either attempted or threatened suicide.

CASE I.—A young married lady, a patient of Mr. George Elkington, upon whom I operated at the request of Dr. Suckling, and rather against my own judgement, about five years ago. The patient was very depressed, the subject of

delusions, much pigmented about the face, very thin, and with a very bad family history of lunacy. The movable right kidney was fixed; speedy recovery followed. The patient has since borne two children, and has remained well to the present time.

CASE II.—A young athletic man, under the care of Dr. Orton and Dr. Suckling, was the subject of delusions, silly in his behaviour, hysterical at times, and greatly exhausted after physical exertion. Fixation of the right kidney was followed eventually by complete recovery; and the patient remains well, nearly four years after his operation.

CASE III.—A lady of about 30 years of age, under the care of Dr. Suckling, was the subject of long-continued delusions, mainly of the persecution type. She was deceitful, and suffered from violent outbursts of temper. The right kidney was fixed nearly four years ago, but there has been no improvement.

CASE IV.—A married woman of middle age, very depressed and suicidal, complaining greatly of headache, failure of memory; referred to me by Dr. Suckling. The operation of right kidney fixation was performed nearly four years ago, but there has been no permanent improvement; it should be mentioned, however, that the kidney was found to be rather freely movable again a few months after the operation.

CASE V.—A man of middle age, suffering from extreme depression, delusions, and loss of memory; referred to me by Dr. Suckling. Kidney fixation was performed two years ago without improvement at the time, and with little, if any, since, according to an account I have of him by letter.

CASE VI.—A lady somewhat past middle life, the subject of delusions of long standing; referred to me by Dr. Suckling. Both kidneys were movable and were fixed at one operation, when they were found in an advanced stage of chronic intestinal nephritis with marked cystic degeneration on one side. Uraemic coma set in on the fourth day, and although improvement occurred, death from uraemia took place on the ninth day.

CASE VII.—A young lady with well-marked delusions, religious mania, and periods of excitement; referred to me by Dr. Suckling. Kidney fixation was performed a year and a half ago; slow but steady improvement followed, and I hear from a doctor with whom the patient has been staying that she is at the present time quite well.

CASE VIII.—A young lady who suffered from periods of excitement, from delusions, and from suicidal tendencies. She was under the charge of two nurses who found it impossible to restrain her. Her medical advisers were Dr. Oswald Lewis, Dr. Suckling, and Mr. Billington, and I was asked to operate upon her because the last mentioned had an infected finger. Kidney fixation was performed nine months ago, and I learn from Dr. Lewis that the patient is now quite well.

It is very desirable that patients of this type should receive careful after-treatment, and that they should for a time be kept apart from their ordinary home surroundings.

When discussing these cases of unsound mind with medical friends, especially with those who are alienists, I am often told by them that the recoveries are mere accidental coincidences due to traumatism and so on; and cases are from time to time quoted to me in which some injury, possibly self-inflicted, has been followed by complete recovery. Again, many people the subjects of delusions recover when under proper control and restraint. All this I am familiar with from my own experience, but I am not convinced by the arguments, and I would ask you to keep an open mind on the matter; on the one hand not to refuse to consider operation because of prejudice, perhaps excited by too rosy a view put forward of the benefits likely to be obtained from kidney fixation; on the other hand, not to promise too much if invited to give an opinion on the wisdom of kidney fixation as a means of helping to restore mental balance. Two patients referred to me for fixation were epileptics whose trouble had existed for years; neither of them was benefited by operation.

Were the operation one involving considerable risk to life, we might naturally hesitate to advise it unless there were something like certainty of success, but the risk to life is trifling. I have operated upon upwards of 100 patients, quite frequently fixing both kidneys at the one operation, and there has been one death, to which I have already referred, a death which was not due to any surgical mishap but to an unrecognized chronic nephritis; no doubt death was precipitated by operation.

METHODS OF FIXATION.

I have only now to deal with the methods of fixation. Numerous operations have been described, and I should encroach far too much on your time were I to go fully into the details. This is the less necessary as experience has led to many being discarded; either they have been

followed by relapse, were too complicated, or involved unnecessary risk. I shall speak only in general terms, and in the first instance I would recommend a vertical as opposed to an oblique or nearly transverse incision; the first mentioned gives easy access to the kidney, the abdominal wall is but little weakened, and a high reposition of the kidney is facilitated.

The kidney can easily be brought quite outside the wound, when the capsule should be unsparingly freed from the surrounding fibrous and fatty tissue; the former is extremely tough, and often can only be properly got rid of by free use of scissors. Whilst this clearance is being effected a careful look-out should be kept for accessory renal arteries, which are not infrequent at the upper pole of the kidney, and though not large may prove troublesome to secure if not recognized before they have been divided. There is practically no danger of opening the peritoneum; as far as my memory serves me, it has only happened when I have operated upon a relapsed case. The kidney once freed, we may decapsulate the upper part with the purpose of securing firm adhesions between the new surface of the kidney and the bed to which it is returned, at the same time using suspension sutures through the capsule after the method of Goelet, to retain the organ in position until firm adhesions have fixed it. Or we can separate portions of the capsule, leaving them attached at one margin to the kidney, and either suture the free margins of the flaps to the lumbar muscles or use a strip of the capsule to pass over the upper margin of the last rib, and so suspend the kidney. The last method, suggested, I think, by Mr. Jordan Lloyd, is probably the best, that is, the least likely to be followed by relapse, which has been the serious drawback of several methods. A good description of the operation is to be found in the *BRITISH MEDICAL JOURNAL* (November 30th, 1907), in a paper by Mr. Billington. Whatever the method of fixation, before the kidney is replaced in the loin a fresh cavity should be made for it as high as possible under the costal arch, and close to the quadratus lumborum, so that the posterior surface of the kidney may become adherent to firm supports, and not merely to loose fatty tissue. I practically always insert a tiny gauze drain at the lower end of the incision to provide an exit for blood if there should happen to be any unusual oozing from the separated tissues.

The abdomen should be firmly supported by bandages in case anaesthetic vomiting should be severe, and the patient should be kept strictly horizontal for at least three weeks. Relapse, if it occurs, most frequently happens, I believe, very soon after operation from tearing out of the fixing sutures or capsular flaps, and the best security against this accident is the precaution I have just mentioned. I have had occasion to operate on relapsed cases of my own and on those of other surgeons. The history in practically all has been of reappearance of mobility speedily after giving up recumbency, which points to early breaking away of the anchoring materials rather than to slow stretching of recent adhesions.

Finally, if both kidneys are movable, should both be fixed or one only? If we seriously believe that mobility of a kidney causes certain symptoms, how can we be so illogical as to advise fixation of one only? Whether both should be fixed at one operation or on separate occasions is a question which may reasonably be discussed. Personally, I have no hesitation in expressing the opinion that both should be dealt with at one time in nearly all cases. The operation, even if double, is of very moderate severity, and is well borne. The alternative of asking a nervous patient to wait a few weeks or months and then to face another anaesthetic and operation for the fixation of the second kidney has little to commend it.

AN attempt is being made in Sierra Leone to pass an Act entailing registration by medical men, dentists, and chemists. It is meeting with a certain amount of opposition, which, so far as medical men are concerned, appears to be based upon the fact that the Act will give them no greater security against irregular competition by unqualified practitioners than the Act now in force in Great Britain and Ireland, and that it will subject them in their work to the jurisdiction of a body having the same powers as the General Medical Council, but formed of persons not deemed by the objectors to be sufficiently experienced or independent to wield such authority.

A CASE OF URETERO-TRIGONAL ANASTOMOSIS FOR ECTOPIA VESICAE.*

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EXSTROPHY of the bladder has exercised the minds and taxed the ingenuity of surgeons for many years. It is a rare condition—occurring once in six or seven thousand births—in which through defective development the anterior wall of the bladder and the abdominal wall in front of the bladder are wanting, and the mucous membrane of the posterior wall pouts forward red, inflamed, and even ulcerated and covered with stringy alkaline mucus. Numerous operations have been devised and practised, but the ideal has not yet been reached, for no one has been able to devise an operation which will secure a "*restitutio ad integrum*." The condition is much more common in males than in females. Cases are recorded where the patients have lived to a good age without any surgical help or treatment, but usually they die from kidney or other intercurrent disease. Their plight is indeed a miserable one, and as operation as presently practised provides a considerable degree of palliation to the sufferer, who can thereby lead a fairly normal existence, it is urged on the surgeon by the parents. Operation, however, should not be done too soon, certainly not before the fifth year of life.

Short of operation, instrument makers have striven, but only with partial success, to fashion protective shields fitted to portable urinals of indiarubber. Of these Earle's is probably the best, and gives a certain degree of comfort. The operations originally practised aimed at covering the defect by the transplantation or lateral gliding of abdominal flaps. Many ingenious plans, such as those associated with the names of Roux, Wood, Thiersch and Neudörfer, were tried, but it may be said of all of these, that if successful—which they often were not—they merely provided a reservoir from which urine trickled constantly into a specially fitted urinal. Moreover, cystitis was a constant accompaniment, and concretions and calculi were formed which required further surgical interference. To secure a successful result meant generally a long series of operations over many months—in one recorded case nineteen operations in 22 months.

Trendelenburg, of Leipzig, then suggested a more severe but more successful form of plastic operation. As the pubic bones are widely separated in these cases, he advised division of the sacro-iliac synchondroses on both sides and approximation of the pelvic bones. This allows the soft parts at the front of the abdomen to be brought together over the bladder, the edges of which are likewise sutured. It can be done with safety up to the 7th or 8th year, but is much more difficult and dangerous in adults. I saw two of these cases in Trendelenburg's clinic some years ago, but the treatment seemed somewhat protracted. Trendelenburg¹ still advises this operation in preference to osteotomy of pelvis or ureteral transplantation, and suggests that moulding of the pelvis be begun at the earliest possible age, so that as little as possible may require to be done when the child comes to the operable age of five or six.

The defect of all these operations is that no sphincter is provided for the bladder, and accordingly a plan which was advised as early as 1842 is now more generally followed, namely, to take the bladder away altogether and to implant the ureters. The objection to this, however, was that infection passed along the ureters to the kidneys, and the patients rapidly died from "surgical kidney." This is true both of implantation of the ureters into the loin—a plan which should never be followed—or into the bowel—the ordinary uretero-intestinal anastomosis.

Maydl of Vienna in 1894 pointed out that the true guardians of the kidneys from ascending infection were the ureteral valves or sphincters. He suggested an operation, which is probably the best at the present day, by which the trigone of the bladder, with the ureteral attachments intact, are transplanted into the sigmoid flexure.

* A paper read before the Aberdeen Medico-Chirurgical Society, November, 1907.