REMARKS ON THE RELATION OF MOVABLE KIDNEY TO HYDRONEPHROSIS.¹

By R. CLEMENT LUCAS, B.S., M.B.LOND., F.R.C.S.,
Surgeon to, and Lecturer on Anatomy at, Guy's Hospital; Senior
Surgeon to the Evelina Hospital for Children.

THOSE who glance at the literature current at the times when Bright and Addison were feeling their way towards the great discoveries with which their names are associated will find that these and other astute observers frequently encountered abdominal tumours of whose nature they knew nothing save that they presented this one peculiarity—that, whereas at one time the existence of the swelling was distinctly evident to the hand, at another it would have entirely disappeared; then, again, without any apparent cause, its presence would be once more evident. Sometimes as the observer was demonstrating the presence of the tumour to his class, it would disappear under his hand, and those who subsequently examined the abdomen would be unable to discover anything abnormal. This peculiarity of the tumour led them to be designated “phantom tumours.” That such inexplicable tumours existed was still the teaching when I was a student, and some with more teaching courage than others were ready with a plausible reason for their occurrence. The one I remember which found most favour was the view that these tumours were caused by irregular spasmodic muscular contraction of the abdominal parietes, and as they were most frequent above and to the side of the umbilicus they were usually attributed to a contraction of a portion of the rectus muscle. I believe a teacher now would not dare to face his class without a better explanation of an abdominal tumour than the possible spasmodic contraction of a portion of muscle. Such teaching may be regarded as entirely exploded. A more careful study of abdominal tumours has demonstrated the fact that a very large proportion of these so-called “phantom tumours” were movable kidneys. The tendency of a movable kidney to slip back into its bed beneath the ribs when the patient lies on the back is sufficient to account for the sudden disappearance so often noticed. A patient who has recently been under my care could, by a sudden deep inspiration, shoot the kidney out from beneath the liver to a position near the umbilicus, and then replace it with his hand so that it could not be felt. A more perfect demonstration of a phantom tumour could not be desired.

Varieties of Movable Kidney.

There are two forms of movable kidney—the one in which the organ moves freely beneath the peritoneum, the other in which the peritoneum passes over the posterior surface of the organ and there exists a kind of mesonephron. The former variety might be distinguished as the subserous, the latter as the interserous. Mobility being the characteristic of both varieties, it is not possible to restrict the term “movable” to one of them; and “floating”—which somewhat suggests the kind possessing a mesonephron (inter-serous)—has been applied without distinction to any kidney endowed with an unusual tendency to displacement.

The subserous variety of movable kidney is by far the more common; so rare, indeed, is the interserous that it need not influence the course of surgical treatment. From a study of the attachments of the kidneys one is inclined rather to wonder that these organs should so well retain their positions than that they should occasionally be found wandering elsewhere; for of ligaments the kidney has none. There are three structures only which can serve to attach it to the back of the abdomen, namely, the peritoneum over it, its adipose capsule, and its pedicle, consisting of its vessels and directly connected with the hilum. Each one of these is liable to variation. The fat may be at one time increased in quantity, at another reduced by absorption and wasting; the perito-

neum, apart from abnormal distribution, may be disturbed by the varying distension of the colon and duodenum; and the vessels, which may vary both in length and point of origin, can exert little influence to prevent the organ from falling downwards, forwards, or inwards. Added to this, the diaphragm on which it lies, being a muscle essential to respiration, depresses the organ at every inspiration to the extent of half an inch or more. This descent of the kidney at each inspiration can always be seen when the organ has been exposed by lumbar incision. Seeing, then, it is not by means of ligamentous connections that the kidneys are held in position, but only by a feeble mass of adipose tissue, we must, I think, attribute their stability in the main to the general tonicity of the abdominal walls and viscera and to the effects thereon of atmospheric pressure—forces which gynaecologists study under the somewhat indefinite and unsatisfactory term, “intra-abdominal pressure.”

An analysis of a large number of cases of movable kidney brings out two very noticeable facts, namely, (1) that the condition is one far more frequent in women than in men; (2) that in an enormous preponderance of cases the right kidney is the one affected. It is not my intention to discuss here the etiology of movable kidney, though it is an inviting topic, but the object of this paper is to draw attention to the fact that the mobility of the kidney may, and not infrequently does, lead to the destruction of the organ.

Physical Signs of Movable Kidney.

Before quoting cases which lead to this conclusion I will say a few words on the physical signs and symptoms of movable kidney. The presence of a movable kidney is generally indicated by the appearance of a tumour to one or other side of the linea alba, between the umbilicus and the margin of the ribs. It is solid, smooth, and somewhat of the shape of a kidney. It descends during a deep inspiration, and is more evident and lower after standing and when the patient is placed in the prone position, than when she lies on her back. It can be moved and, occasionally, when the abdominal walls are flaccid, can be grasped in the hand. If the patient be directed to rest on the elbows and knees the organ drops forward, and the loin of the affected side becomes tympanitic and sometimes flattened or even hollow, but it is easy to deceive oneself in endeavouring to discover the condition of the loin. The organ may be readily pushed back into its proper position, but as readily escapes again with any change of posture. The effect of manipulation is sometimes to cause a sickening sensation akin to, but less severe than, what is excited by pressing the testis. Although the organ may come forward so as to touch in part at least the anterior abdominal wall, it is so engulphed in intestinal coils that a distinctly dull percussion note is rarely obtained over it. Roberts speaks of the percussion sound as a “muffled tympanitic note,” but I have found in cases where the organ can be fixed by an assistant whilst the tumour is struck a dull percussion note may in this way be obtained. The evidence to be gained by percussion is, however, of secondary importance, when the tumour admits of direct manipulation.

Symptoms of Movable Kidney.

The subjective symptoms vary greatly in different instances, from a mere sense of discomfort to a pain of the most agonising character, sufficient to drive a patient to distraction. In women the nervous symptoms are much aggravated at the menstrual periods, when the presence of the abnormal swelling is apt to excite in the mind of the sufferer serious misapprehension of danger. Pains of a neuralgic character are also excited by slight errors of diet, and they are noticed to radiate from the tumour. A dragging sensation is often complained of in the back, and aching in the groin and upper part of the thigh. Prolonged discomfort without relief is liable to bring about a state of profound melancholia, and cases have been recorded in which mania induced in this way has been relieved by removal of the organ.

The alimentary tract appears to sympathise in the disorder occasioned by the dislocation, and attacks of vomiting with an irregular condition of bowels may be noticed in association with misplaced kidney. Obstinate constipation has been present in some cases, and has been explained by the pressure of the kidney upon the colon. Irritability of the bladder not

¹ Made in the Section of Surgery at the Annual Meeting of the British Medical Association at Bournemouth, July, 1891.

infrequently accompanies movable kidney, but the urine itself does not often vary from normal.

Persons suffering from movable kidney are liable to sudden severe attacks of pain, accompanied by nausea, vomiting, and collapse. At the same time, the tumour is noticed to increase considerably in size and to become tender, whilst the urine becomes high-coloured and scanty. Headache and dimness of sight may accompany the attack, which may last a few hours, a day or two, or extend over a fortnight. Symptoms such as these are said to indicate strangulation or torsion of the kidney. The increase in size and tenderness of the tumour may suggest a localised peritonitis, but its subsidence without any marked fever is opposed to this explanation. The diminution of the tumour and relief of symptoms are noticed to be coincident with a free discharge of urine of low specific gravity. The explanation of these symptoms usually given is that the kidney has moved upon its transverse axis in such a manner as to cause a twist of its pedicle, and consequent pressure on its vessels and duct. The vein suffering more from pressure than the artery, a turgescence of the organ is brought about, and the ureter being at the same time bent and pressed upon, the pelvis of the kidney becomes distended with urine. In this way the increase in the tumour is accounted for. The nausea, pain, and vomiting are due in part to the disturbance of the renal plexus and in part to the sudden blocking up of the renal excretion.

Damage to Kidney traceable to Mobility.

Should this dislocation of the kidney occur frequently, or should its abnormal position become continuous, it is evident that the kidney structure must suffer from the pressure of the pent-up urine in the pelvis and calyces, and thus gradually a condition of hydronephrosis may be produced.

Hitherto the treatment of movable kidney has been undertaken to relieve the patient from the pain and discomfort occasioned by its displacement; but during the last ten or twelve years, in which I have had somewhat exceptional experience in renal surgery, I have gradually arrived at the conclusion that we must regard this mobility in a much more serious light, and must treat it boldly to prevent the organ from bringing about its own destruction. It is to insist upon this view of movable kidney that I will now refer to some recent cases which prove how this hydronephrotic destruction is brought about as a direct result of the movement. One of these cases, in which the hydronephrosis was undoubtedly caused by the displacement, appears to show that the destruction of the kidney in this way may go on without any severe attacks of pain. The attacks of so-called strangulation may be then regarded as in some respects salutary, inasmuch as they draw attention to a condition which sometimes goes on insidiously towards destruction of the kidney.

CASE I. Movable Kidney: Gradual Development of Hydronephrosis.—The first case to which I would refer is that of a lady in the middle period of life, who consulted me first some four or five years ago, on account of a tumour on her right side. Her attention was first drawn to the swelling by pain, which was excited on one occasion by lifting. The tumour was firm, and about the size of a normal kidney. It appeared to drop over in the standing position, and could be replaced by pressure and pushed up under the ribs. There was nothing abnormal in the urine, nor was there any connection between the tumour and the pelvic organs. She suffered from attacks of pain, especially during her menstrual periods. This patient refused to undergo an operation, and the kidney has gradually developed into a hydronephrosis, which becomes distended at intervals and then discharges itself.

CASE II. Movable Kidney: Colic: Commencing Dilatation: Nephrorrhaphy: Cure.—The following case is one of movable kidney on the right side in a young athlete, aged 22, upon whom I operated with a view of fixing the organ, and found at the operation that the pelvis of the kidney and the calyces were already dilated as the result of the mobility.

On Jubilee Day, 1887, he first suffered from a paroxysmal attack of pain in the right hypochondriac region, and from that day at frequent intervals since. It was at first thought by those whom he consulted that the attacks were due to biliary colic, and the tumour, which was subsequently discovered, and which disappeared at intervals, was believed to be a distended gall bladder. He, however, had no jaundice. For these attacks in 1890, he consulted Sir A. Clark, and in December of that year he saw Sir Spencer Wells, who diagnosed a movable kidney, and recommended a belt. No relief was afforded by this treatment, and the attacks, if anything, became more severe. He used to get an attack about once a week, and anything he did out of the common would bring on an attack. The first attack he attributes to the pushing about in the crowd on Jubilee Day. He consulted me first on February 17th, 1891. The last attack had lasted about ten hours, and was unusually severe. An attack came on with a sickening aching pain in the right hypochondrium, and extended from this region down to the groin. The urine throughout had been perfectly clear.

The tumour was first clearly felt by a doctor about a year after the first attack of pain, but the patient was under the impression that it was there before. It was best felt when standing; could be brought into prominence by a voluntary action of the diaphragm, and by pressure could be sent back into its bed with a sudden jerk. When the tumour was evident it was situated to the right of the umbilicus, and had a rounded end like a normal kidney. Its upper surface was also fairly well defined, and it could be prevented from returning by thrusting the hand between it and the liver. There was dullness on percussion continuous with that of the liver, so that it had probably come forward between the colon and the liver. I had no doubt whatever as to the tumour being kidney, and advised nephrorrhaphy. The operation was performed on March 1st, 1891. An incision about four inches in length was made parallel with the last rib, and three-quarters of an inch below it. The muscles were divided in succession, and the perinephric fat reached with very little bleeding. The kidney was found freely movable within the adipose layer. Some of the fat around the kidney was cut away, and the fibrous capsule of the organ exposed. It was now seen that the pelvis of the organ was dilated, but the ureter below was quite normal in size. A thorough examination was made for stone, but none was found. The finger could be invaginated in all directions into dilated calyces, showing the damage which had resulted to the kidney through its mobility.

The kidney was now raised till its lower margin was on the level with the upper edge of the incision through the muscles. Four stout chromicised catgut sutures were used to secure the lower part of the kidney to the edges of the muscles and tendons: two of these were passed twice through the muscles and through the fibrous capsule of the kidney, and the other two transixed the edge of the muscles and the convex lower end of the kidney. It was found that in this way the organ was rendered quite secure in its position. Three deep wire sutures were passed through the skin and muscles to bring together the edges of the wound, and two superficial ones were used through the skin alone. A drainage tube was inserted at the dependent angle, and carbolic dressing employed. There was nothing to note in the course towards recovery. The wound ran an aseptic course without fever, and he was quite convalescent on April 9th. Subsequently I received a note from him, dated June 5th, in which he says, "I cannot, by any formula of words, express my deep gratitude to you; all I can say is that beforehand life was a misery, and now, thanks to your wonderful cure, I am able to enjoy it." Allowing for the exaggerated expressions which gratitude is apt to excite, I think we may conclude that, in this case, although hydronephrosis had commenced, the effect of stitching up the kidney has completely relieved the pain, and in all probability has saved the kidney from further destruction.²

CASE III. Movable Kidney: Secondary Hydronephrosis: Nephrectomy.—The next case is one of fully developed hydronephrosis secondary to movable kidney. The kidney had been destroyed by the backward pressure of the pent-up secretion, and I removed the shell remnant.

The patient, a woman about 30 years of age, had been under the care of Mr. Travers and Mr. Ticehurst, of St. Leonard's, and was sent up to see me on November 21st, 1890. In February, 1890, she first noticed a swelling on the left side of her abdomen. It caused her little pain, but inconvenience from its increasing size. There was no history of the tumour discharging itself and re-collecting, but it slowly and gradually increased in size. Mr. Ticehurst met Mr. Travers in consultation, and they decided it was a case of hydronephrosis. Nothing abnormal had been noticed in the urine.

When admitted into Guy's Hospital in November last there was a large tumour on the left side of the abdomen, extending from a short distance below the ribs to the anterior superior spine of the ilium; laterally it extended to a little to the right of the umbilicus, and it caused a bulging of the loin posteriorly. Distinct fluctuation could be felt between the front and back of the abdomen. In spite of its large size the tumour was freely movable. It was dull on percussion except at the upper part just beneath the ribs.

On November 25th, 1890, I aspirated the tumour and drew off 24 ounces of fluid, with a specific gravity of 1012, containing 1.5 per cent. of urea. The tumour quickly refilled, and on December 9th, with the assistance of Mr. Travers and Mr. Ticehurst, I proceeded to remove the kidney. An incision, 4 inches in length, was made below the last rib, and the muscles divided till the posterior surface of the kidney was reached; it was then tapped, and 18 ounces of fluid were withdrawn. The shrunken organ was then drawn out of the wound. The ureter was found below the level of the kidney to be normal; it was divided after ligation. The vessels were secured separately and the organ removed. It consisted of dilated intercommunicating calyces and diverticula, with scarcely any secreting structure remaining. The orifice of the ureter was found to be patent, and no cause existed in the interior of the kidney to account for the hydronephrosis. The ureter below the level of the kidney was undilated, showing that the obstruction did not exist at a lower point. The mobility of the kidney and the pressure of its lower end upon the ureter alone remained to account for the hydronephrotic destruction. The wound ran an aseptic course without fever, and was completely healed on January 2nd, 1891; the patient left for the country quite well and feeling strong two days later.

CASE IV. Movable Kidney: Secondary Hydronephrosis: Nephrorrhaphy.—The fourth case is one of hydronephrosis due to movable kidney, in which the destruction of the organ, though considerable, had not so far advanced as to render it useless. Finding this to be the case, I made use of my former experience, and secured the organ in its proper position, thus saving the kidney and curing the attacks of distension from which she had previously suffered.

A married woman, aged 29, mother of three healthy children, was first admitted into Guy's Hospital under my care on April 17th of this year. After her last confinement in January, 1890, she had never felt well. Influenza and pneumonia of the right lung followed the confinement, and since that time she has been troubled with pain in the left loin at frequent intervals; and she had noticed that a swelling on the left side of her abdomen rose up during the pain, and subsided when the pain ceased. The subsidence of the swelling was accompanied by an increased flow of

² I have seen this patient as late as November 30th, and the organ still retains its normal position.

urine. She attended as an out-patient for some time, during which the swelling was noticed to rise and fall more than once. The attacks were brought on by any unusual exertion, and she was seldom a fortnight free from pain.

At the time of her admission the swelling was distinct and easily movable within the abdomen, but it quickly subsided, possibly as the result of the manipulation to which she was subjected, so she was discharged three days later. She was readmitted on May 20th, when the tumour was again very distinct, filling up the left loin and left side of abdomen, fluctuating, and freely movable. She had suffered a great deal of pain since her last admission, chiefly in the back of the left loin.

On May 23rd ether was administered, and I proceeded to expose the kidney by an incision about 5 inches in length below and parallel with the last rib. Since her admission the kidney had again partially emptied itself, so that when it was exposed it was not much distended. The pelvis of the kidney was now thoroughly explored for stone, but no evidence of stone was found. The ureter was next traced down from the pelvis and it was found to narrow suddenly to its normal size opposite the lower end of the kidney. To make a more thorough examination of the organ the kidney was slipped out through the wound, its lengthened pedicle allowing this to be done with ease. We were thus able to see exactly the amount of damage done to the organ and determine how much secreting structure remained. Although the pelvis of the kidney could be invaginated into hollow cavities in all directions, it was evident that there was still a considerable amount of cortical substance left undamaged. I accordingly resolved to replace the kidney and stitch it into its normal position. Five chromicised gut sutures were used to attach the kidney to the muscles. The wound was then closed by wire sutures and a drainage tube inserted at the posterior angle. The temperature after the operation at no time rose so high as 100°, and the patient made an uninterrupted recovery, leaving the hospital with the wound healed just a month after the operation. Since then she has been free from pain, and there has been no evidence of any reaccumulation of fluid in the kidney.

I think we may claim in Case IV to have made a new departure in the treatment of hydronephrosis when due to movable kidney, by which the malady is arrested, the patient relieved from pain, and the organ saved for future service.

Conclusions.

The conclusions to which the study of these and other cases lead are:—

1. That movable kidney is a condition which during displacement may, and often does, lead to hydronephrotic destruction, owing to twisting of the pedicle or pressure of the organ upon its duct.
2. That to avoid such danger and to relieve the patient from pain all such cases should be treated by nephrorrhaphy, which is a simple and safe operation.
3. That even when hydronephrosis has already advanced, cases in which the hydronephrosis is clearly due to the mobility may be cured by nephrorrhaphy, and the remains of the organ saved from further degeneration.

A CONTRIBUTION TO THE TREATMENT OF HEPATIC ABSCESS, WITH CASES.

[By NEIL MACLEOD, M.D. EDIN.,
Shanghai.]

THE advantages claimed for the method of operating here set forth are these: Before emptying the abscess a means of estimating the size and position of the cavity, and so determining the best site for opening and drainage; no hæmorrhage; certainty of free drainage, better fixation of the liver than by a rubber drainage tube, no necessity for excision of a portion of rib, and rapid, certain, and easy introduction of the tube in any position both at the operation and at exchange of tubes.

I presume that no one now regards the treatment of liver abscess as other than surgical. In my thesis for the M.D. degree I recommended early antiseptic incision and drainage as a promising method of dealing with hepatic abscess. That was 11 years ago, when aspiration was looked upon as the best method of treatment, a proceeding which, I think, at the present time will find few if any advocates. In these days of abdominal surgery it has been proposed to explore this condition and deal with it by abdominal incision, a mode of treatment which has been carried out in the case of suppurating hydatid cysts, but not, so far as I am aware, with tropical liver abscess. In my experience most abscesses that might appear capable of being dealt with in this way may be evacuated without opening the abdomen as proposed, while those situated in the upper or back part of the convexity hardly admit of such treatment. Certain difficulties arise out of the location of these abscesses in a movable organ not normally attached to the outer wall of the body and closely related to two large serous cavities and several important organs. For-

tunately in the great majority of cases that come under treatment the liver is adherent at some part of its surface so that the normal movement is restricted but never abolished. As will be seen from some of the cases here recorded another kind of movement caused by reduction in size of the inflamed organ and by contraction of the abscess cavity may give rise to considerable trouble during after-treatment and may even lead to fatal results. The following cases presented difficulties which suggested to me the method here presented of obviating them.

CASE I. Abscess of the Convexity and Back Part of the Liver: Operation: Recovery.—In a married woman, aged 26, a severe chill on December 16th, 1881, was followed by suppression of the menses and ill-health, and ten days later by severe pain in the right shoulder and chest. She was seen thence before January 6th, and no fever or hepatic enlargement was observed. From that date till March 1st the temperature ranged in the morning from 98° to 104°, in the evening from 99° to 103.9°, the pulse from 91 to 120. During the last week of that period there was increased fever, evident increase of hepatic dulness, and a loss of weight. Stitch-like pain had been felt in the side and back, the shoulder pain persisted, and at one time there was hyperæsthesia all over the liver region. There was no bulging of ribs or obliteration of intercostal spaces, nor was there any history of diarrhoea. Personal and family history were good. On March 1st, in the seventh intercostal space in the anterior axillary line, at a depth of 1½ inch, pus was found by aspiration, and 8 ounces evacuated by incision. Before the abscess was emptied of its contents the point of an ordinary pair of dressing forceps, tilted forward, was felt to touch the anterior wall of the cavity, so that the latter was not in front of the anterior axillary line. Backwards the forceps passed to the handle, and also freely upwards. As the abscess emptied itself, repeated introduction of the forceps was only successful as the point was directed more and more backwards and upwards. The diaphragm tendon could be felt by the finger in the wound, and was firmly adherent to the chest wall. A large drainage tube was introduced with difficulty. At 8 P.M., on the same day the temperature was 104.4°, pulse 116; there was great pain in the region of the navel, and the legs were drawn up. Next day the whole abdomen was tender, the breathing rapid and shallow, the knees had to be kept raised on a pillow, and all movement was painful, but the temperature fell to 102°. On the third day 99° was the highest temperature; the tube was withdrawn, requiring some force, and it and the dressing changed. On the fourth day there was no pain in the belly, and on that and the following days the temperature was 100°, 99.8°, 99.7°, 99.6°, and then normal. On the fourteenth day the drainage tube was shortened, and in the evening I was sent for, and found my patient in great distress, afraid to move or breathe deeply, the temperature being undisturbed. At noon I had withdrawn a 2½-inch tube and introduced the dressing forceps along its track easily, while eight hours later the forceps passed but one inch, the tube track in the liver being no longer in line with that in the wall. A shorter tube was left in the wound, and removed two days later, and the wound was healed in the beginning of the fourth week without further trouble.

Here it is to be observed: (1) Before emptying the abscess, its anterior wall stretched transversely opposite the puncture, and after emptying sloped well backwards. (2) Peritonitis was probably set up by the escape of pus into the peritoneum. (3) There was anchoring of the liver to the side by drainage tube when long, accompanied by a good deal of discomfort; but when the tube was shortened on the fourteenth day the liver shifted its position, the shortened tube could not be replaced in the track through the liver, and the discomfort was relieved. I have seen this accident require chloroform and a second opening, and in a case seen in consultation it led to a fatal result. These various troubles suggested the question, how could one before evacuating such an abscess determine its size and relations with a view to opening at a better point? Having found pus in my next case, through the aspirator cannula (Matthieu) I passed an ordinary knitting needle, and tilting it forwards, backwards, upwards, and downwards, each time withdrawing it a little and pushing it as far as it would go, I was enabled to tell whether the bulk of the cavity was opposite to, above, below, in front of or behind the point of aspiration. Also by slowly withdrawing the cannula and observing at what depth the pus ceased to flow, the distance of the outer wall from the surface of the body at that point was ascertained. In such a case as the one just related, an opening 2 inches posterior to that made would probably have prevented the peritonitis and been much more comfortable to the patient.

CASE II. Dysentery: Multiple Abscess: Operation: Death.—A merchant, aged 37, who had lived freely and exercised little, early in September, 1887, had an attack of subacute dysentery. In the end of October he had disturbance of pulse and temperature, accompanied by hepatic enlargement and shoulder and side pain. Till December 5th the temperature varied in the morning between 97° and 106°, occasionally reaching 101° or 102°; in the evening it was usually over 100°, and higher than in the morning, frequently 102°, and on November 25th, 104°, and accompanied by the first and a severe rigor, and followed by a heavy sweat, perspiration at night having been fairly well marked for some time previously. The weight fell from 198 to 148 pounds. On December 5th, through an opening in the seventh interspace, half way between the costal cartilages and the anterior axillary line, a cavity of some size was demonstrated by the