Movable Kidney

Its Frequence and Causation.

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Distinction between movable and floating Kidney.

There exists a good deal of confusion between the conditions known as "movable" and "floating" Kidney. They are thought by many to be synonymous. The Germans group them together under the name "wanderniere" and the French under the name "rein flottant."

The term "floating" is now applied by most authorities to a kidney which is not only movable but has a meso-nephron. It is a rare condition; but a simply movable kidney, as we shall see, is not uncommon, indeed it has been said by one authority to be the most frequent female abnormality. Sir Wm Jenner says in his lectures, (British Medical Journal. Jany 1869). "A movable Kidney is one thing; a floating kidney

is another. A floating kidney is a kidney that has a mesentery — a fold of peritoneum attaching it very loosely to the spine. A floating kidney, therefore, can be moved about to a considerable extent - to the extent of the length of its mesentery. A movable kidney can only be passed up and down a little: it slips a little under your fingers."

The committee of the Pathological Society of London appointed to investigate this subject gave a similar definition. (Trans. Path. Soc. Vol 27. 1875-76).

They mention a case of movable kidney where it could be moved through a circle with a diameter of eight or nine inches, behind the peritoneum. We could hardly have a greater degree of mobility than this, even in the presence

of a mesonephron, except in a forward direction.

The symptoms of movable kidney, when the movements are free, as in the case just mentioned, are the same as those of floating kidney. Clinically, therefore it may be impossible to distinguish between the two conditions. Newman in his Lectures to Practitioners on the Surgical Diseases of the Kidney, says it is only when we come to operate that it is important to distinguish between the two conditions.

From the report of the Pathological Society it is evident that a movable kidney may have a much greater movement than Sir Wm Jenner had any idea of when he said "a movable kidney can only be passed up and down a little."

The distinction between floating and movable kidney is an anatomical one, and we, therefore, may leave it out of account in speaking of movable kidney.

Frequence of movable Kidney.

The question of the frequence of movable kidney was brought under my notice by an article by D Kuttner in the Berlin. Klin. Wochenschrift for April 14th & 21st 1890. In this paper he states that one out of every five or six women suffer from movable kidney. This is rather startling when compared with previous statistics.

Newman (page 23) quotes a number of statistics of movable kidney

Statistics

1. In a German Hospital out of 5,500 patients 1 in 250 = .4%
2. Skorszewsky: out of 1030 women. 32 cases = 3.2%
   " " " 392 men. 3 " = .8%
3. Oser of Vienna found it in women who had borne children in 10%.

Newman himself found the kidney

movable to more than three inches in 1·8% of the women he examined. In 1888 Lindner in a book on this subject gave the number as 1 in 5 or 6. He says it is the most frequent female abnormality. (British Med. Journal Vol II. 1888)

Between these various statistics there is a great difference, the smallest number being ·4% and the greatest 20%. It is evident that there is something more than locality to account for the difference. There is evidently some difference of meaning as applied to the term "movable" by different men.

Newman gives the amount of movement in his cases as over three inches. We shall see that Kuttner describes a kidney with a much smaller degree of movement than that, as movable.

At the time Dr Kuttner's

paper came under my notice I had charge of the female wards in the Dundee Royal Infirmary and had there an opportunity of making a systematic examination of the women under my care, for movable Kidney. I had at that time two cases of very movable Kidney under my care.

Before giving the results of my own examinations, I may give the principal points in Dr Kuttner's paper. He states that every Kidney, which has a distinct respiratory movement that can be felt by the hand, is pathological. His reasons are:- 1. Because many cases with a small degree of movement give rise to more or less pain for which no other cause than that of movable Kidney can be found.

2. Because under favourable circumstances such as, thin abdominal walls, empty intestines

the kidney in many cases cannot be palpated.

3 Because the anatomy of the surrounding parts seems against any great movement during respiration.

He divides his cases into four classes, thus:-

1. Those in which the kidney can only be felt on respiration
2. Those where 1/3. 1/2 or 2/3 of the kidney can be grasped and moves with respiration
3. Those which are completely dislocated and can be moved about the abdomen.
4. Those which are dislocated and fixed.

S Kuttner denies that the kidney normal has normally a movement with respiration, that can be felt. He admits movement of kidney a forward movement of the upper part of the kidney but says that this movement by is one which cannot be felt by the hand. Landau is of the same opinion. He says (page 244 of his monograph) "Thus during life the kidneys remain almost

immovably fixed. Even deep inspiration does not depress them, although they lie against the crura of the diaphragm, to a great extent above the lowest limit of the pleural cavity. Under these circumstances, as is shown by experiments on animals, as well as by palpation in suitable cases in human beings, the most that occurs, is a slight rotation of their upper parts forwards round their transverse axes. I have searched in vain for any note on this point."

Sir Wm Lennox says on this point "the kidney moves a little with respiration". B. Clement Lucas (B.M.J. Jan 1893) states that on lumbar laparotomy the kidney can be seen moving up and down with respiration.

My own observations lead me to think with Landau and Kuttner

that normally the kidney does not have a movement with respiration that can be felt by the hand. But that a very slight cause, such as the absorption of fat in the capsule, may loosen the attachments of the kidney and make it movable to a degree which is easily felt on respiration.

Coming now to the results of my own examination: I have notes of about one hundred cases which I examined.

Method of Examination. The method I adopted was that with the patient on her back or lying slightly on the opposite side, to the one I was examining; One hand was placed over the abdomen close to the costal margin while the other was placed in the lumbar region close under the floating ribs. The patient was made to take deep breaths and during expiration the hand in front was pressed well down into the

abdomen.

The frequence with which I was able to palpate the right kidney and to feel the respiratory movement, led me at first to think that it was a normal condition, but farther examination convinced me that when the kidney can be palpated, it is an abnormal condition. I had not the same opportunity of examining males as females but I have frequently done so and have never yet been able to palpate a kidney in the male subject. D^r Stalker of Dundee has examined the male patients in his wards, regularly for movable kidney and has so seldom been able to palpate the kidney even in emaciated patients that he has given up the attempt.

Of 98 females whom I examined, one or both kidneys were palpable in 48. Of the remaining 50, the abdomen

was too tense or too tender in 23 to let me get my hand near the kidney: In the remaining 27 cases all the conditions were favourable for palpating and yet the kidney could not be felt.

Thus I may say that in 48 cases one or both Kidneys were palpable and that in 27 cases the Kidney was not palpable although all the circumstances were favourable to its being felt.

These cases were all examined by Dr Stalker and myself on several occasions.

In two cases where abdominal tenderness prevented the kidney being palpated during life, we had the opportunity of making post mortem examinations. In both cases the right kidney was found lying low down where it could easily have been felt during life but for the abdominal tenderness.

One of these cases is especially interesting from the presence of other displacements and the occurrence of thrombosis of both iliac veins.

Case I A woman, aet 26, - no children, was admitted suffering from Phthisis with oedema of both lower extremeties. There was orthopnoea all the time she was in the hospital.

She died two months after the onset of the oedema -

On post mortem examination both lungs were found to be affected with tubercular deposits. On opening the abdomen the omentum was found adherent to the bladder. On removing it the right kidney was seen lying at the crest of the ilium, almost transversely. It was not covered by the colon. The small intestines were lying in the pelvis. The splenic flexure was in its normal position but the ascending and transverse colons passed in a line from below the right

anterior spine of the ilium to the splenic flexure. The right kidney was freely movable up and down and towards the middle line. The right renal vessels were longer than the left and entered the kidney at an acute angle (normally they pass at a right angle). The right ureter passed behind the lower part of the kidney. The left kidney was in its normal position and only slightly movable though its capsule was devoid of fat.

Jordan quotes a similar case to this one in his monograph at page 250.

Case II In this case, which was also one of Phthisis, the right kidney was lying low down and could be moved freely up and down while the left was in its normal position and only movable to a very slight extent. A peculiarity of this case was the length of the vermiform appendix

It measured seven inches.

It is probable that in others of the 23 cases the kidney could have been palpated, but for the tenderness of the abdomen.

Dividing the cases where the kidney was palpable into five classes I found, as follows.

Division of cases.

I	Those where the lower border of the kidney could just be felt.	13
II	Those where ½ to ⅔ of the kidney could be felt.	20
III	Those where the whole extent of the kidney could be felt and moved with respiration	9
IV	Those lying low down and fixed: not moving with respiration	3
V	Those which could be moved freely up and down and across the middle line	3.
		48.

The right Kidney was palpable, in 35 cases
" left " " " in 2 " .
Both Kidneys were palpable in 11 "
48.

In the two cases where the left Kidney alone was palpable there were abscesses in the region of the kidney: in one case the abscess was perinephric and in the other it was due to septic infection after parturition. In every case where both kidneys were palpable, the right was always more palpable and lay lower down than the left.

Right Kidney more palpable than left.

If we place at the beginning of the division of the cases on the previous page, the 27 cases where the Kidney was not palpable, we see that there is a gradual transition from the normal fixed condition of the Kidney to that of freely movable kidney.

These minor degrees of movement give rise to no inconvenience beyond a slight aching in the side in some cases. They are not important in themselves except in so far as they may be the commencement of the graver condition; but the study of them helps to throw light on the causation and pathology of the graver forms.

Frequent in Wasting Diseases.

Twelve cases occurred in the course of wasting diseases principally tubercular. In several of these the kidneys could not be palpated on admission but as the disease advanced it was possible to feel the kidney becoming gradually more and more movable. This was most marked in one case and as it was confirmed by post mortem examination I give it in full -

Case III This patient was in hospital eight weeks with

phthisis. On admission and for some days neither kidney could be palpated. Then only the lower border of the right kidney could be felt. Gradually it became more movable and descended lower until before death it was felt lying as low down as the crest of the ilium.

On P.M. examination the right kidney was found lying on the crest of the ilium with its lower border pointing inwards & downwards. The ureter passed behind the lower portion of the kidney. The right kidney could be moved freely upwards and downwards. The left could be moved to the extent of about one inch. Both capsules were devoid of fat. The right renal vessels were longer than the left.

There is no doubt that in these wasting diseases the absorption of fat causes the kidney to become movable and to descend lower than its normal position. In the three cases I have given the right kidney has been lying very low down, while the left was nearly in its normal position and only movable to a very slight extent.

The reasons for this we shall consider later on.

If, after rapid emaciation, as from fevers or acute disease, the patient again puts on flesh, the kidneys may again become fixed in their normal position. This I have observed in two cases.

The first was a case of enteric fever where both kidneys were movable & easily palpated, the right lying lower than the left. During convalescence this patient put on flesh rapidly and before she was dismissed neither kidney could be felt.

The second case was one of retroversion of the uterus with great anaemia and emaciation. The uterus was replaced and the patient put on iron tonics. As she put on flesh the kidneys became less palpable and ultimately could not be felt.

Symptoms. With regard to symptoms I do not agree with Kuttner that slight degrees of movement give rise to symptoms. Only in two cases where the movement was limited to an up and down

one, were there any symptoms referable to the Kidney. In one case there was pain and a sense of dragging in the right side on lifting weights. In the other there was irregularity of micturition. In another case which I saw recently there was pain in the region of the kidney at the menstrual period. The movement here was limited to an up and down one and the patient was conscious of it herself when she sat up in bed. As a rule, however, mere upward and downward movement gives rise to no symptoms. It is mostly when the kidney moves towards the middle line that it gives rise to symptoms.

In one of the three cases which were most movable there were no symptoms. She was an emaciated woman with tubercular disease of the foot. She had had no pregnancies.

The other two cases were very much alike in all respects. Neither of the women had had any children and they both ascribed their condition to strain, in one case to lifting a heavy weight

and in the other to throwing up a weight. The chief symptoms were :- frequent attacks of vomiting; pain in the side; irregularity of micturition, and nervous symptoms. Both complained of feeling a lump moving in the side and falling down into the groin when they sat up in bed or went on their knees. One occurred in a woman of 24 and the other in a woman of 40. The latter had suffered from chronic bronchitis for fourteen years She had had a femoral hernia at the age of 16 which was operated on when she was 30 years of age - The irregularity of micturition in this case was very marked. Sometimes for a whole day she passed no water and then made a large quantity at once or small quantities frequently The nervous symptoms consisted in frequent attacks of palpitation, flushing & sweating: also of vague paraesthesiae all over the body & extremities. There were also muscae volitantes.

Position of Ureter

The position of the ureter behind the kidney in cases where postmortem examinations were made, shows how easily it may be compressed by the kidney and thus give rise to hydronephrosis without any twisting of the ureter. This is the explanation, I think, of the irregularity of micturition in these cases. Hydronephrosis is a very common complication of movable kidney and is probably due, far more frequently, to simple pressure on the ureter than to complete twisting of it. Twisting of the ureter would seem to be more frequent in floating kidney than in movable kidney.

The nervous symptoms and vomiting which seemed to be reflex, may be due, as Newman suggests, to irritation of the nervous plexuses in the kidney itself, or, as I think possible, may be due to pressure on the sympathetic plexuses lying in front of the spine lower down. These would be pressed upon when the kidney moved inwards to the middle line.

Causation: The kidneys have no distinct ligaments keeping them in position. They are held in position mainly by the peritoneal covering and the adipose tissue which forms a capsule round them. The general intra abdominal pressure also helps to keep the the various organs in position, the kidneys among them. The renal vessels may also help to keep the kidneys in position especially on the left side when they are shorter and more firmly fixed by adipose tissue than on the right side.

Normal attachment of Kidney.

The adipose capsule, however, is the most important structure. And this being so we would expect that anything affecting it, would also affect the position of the kidney

According to most authors, absorption of fat in the capsule is a frequent cause of movable Kidney.

Absorption of fat in capsule.

Landau (page 265) says "It is one of the most important and frequent causes." Newman also gives this as a cause. He says he

has noticed diminution of fat round the kidneys without general emaciation; and this I think may explain some cases where no other cause can be found.

I mentioned twelve cases in which I had observed the movement of the kidney increasing as emaciation went on, and two cases in which on fat being freshly formed again in the body the kidney becames once more fixed. In all these cases the absorption of fat was rapid.

There is in this, I think, sufficient proof to allow us to say that absorption of fat is one of the most frequent causes of movable kidneys, if it is not a factor in every case -

It is not only the fatty capsule that becomes absorbed but the fat lying behind the peritoneum also. The peritoneum is thus slackened, and the kidney not only becomes loose in its capsule but is allowed to descend farther behind the peritoneum.

The fat is absorbed equally from both renal capsules but in every case I observed, the right kidney descended lower and more movable than the left where both were movable. and in many cases the left did not become movable even where the right had a considerable degree of movement. Three different reasons are given to explain why the right kidney is more frequently movable than the left. Hey are :-

Right Kidney more movable than left.

1. The anatomical connections of the Kidney
2. The presence of the liver on the right side
3 The use of stays and similar garments which compress the chest and abdomen and which owing to the anatomical reasons (1 & 2) act on the right kidney alone. With regard to the anatomical connections of the kidney Landau states 1. That the splenic flexure is fixed higher up than the hepatic flexure and farther to the left so that the mesentery is shorter on the left side and binds the kidney down more firmly. 2. That the peristaltic movements of

the ascending colon acting against gravity tend to pull the hepatic flexure downwards and so slacken the kidney.

3 That the descent of the left kidney is prevented by the position of its vessels above the horizontal part of the duodenum the left artery is shorter and is more closely bound to the head of the pancreas by connective tissue. Jordan denies that the position of the liver or the use of stays has anything to do with it.

The true explanation I believe to be a combination of all three causes.

Action of liver.

During inspiration the chest wall is moved normally, forwards and upwards: the margin of the liver which usually corresponds with the costal margin, moves forwards along with the chest wall: the posterior part of the liver is pushed downwards by the diaphragm and pulled slightly forwards by the chest wall and thus it glides over the kidney

Now if this forward movement of the chest wall be impeded by anything, the forward movement of the liver cannot take place and consequently it presses downwards and backwards on the kidney. It then either presses it directly downwards, or as Cruveilhier says, squeezes it out like a nut between the fingers. When the kidney becomes loose by the absorption of fat it will be acted on the more readily by the liver. It will descend slightly beneath the liver and be pushed down by the liver during inspiration.

There is no doubt that the liver is compressed by stays and similar garments for we frequently find the impression of the ribs left in the liver after death. Sometimes the liver is almost divided by these impressions. In addition to stays the weight of heavy skirts tightly fastened round the waist prevents proper expansion of the chest.

The vessels of the right Kidney I have always found rather longer than those of the left, sometimes by as much as two inches. When once the right Kidney has become movable this allows it to descend much farther than the left can do.

Cough. In Chest complaints another factor comes into play viz cough. Each fit of coughing acts as a shock on the Kidney and repeated shocks acting through the liver render the Kidney movable. This refers to the right Kidney. The left not being in the neighbourhood of a large solid organ is not affected by these shocks. Landau gives this as a frequent cause of movable Kidney. (page 274).
Apart from the cases I have mentioned as occurring in Phthisis, a good many occurred in cases of chronic bronchitis and these I ascribed to this cause.

Strains : Sudden or repeated strains are often the cause of movable kidney just as they frequently cause displacements of the virgin uterus and ovaries. Two of the cases I last quoted were ascribed to strains.

In all cases where this condition is thought to come on suddenly with some exertion, I think it is most probable that there has been a certain amount of movement previously, especially when we find it among women who have been in the habit of lifting weights. Most of the women whom I examined were jute workers and had frequently heavy weights to lift. To this I partly attribute the frequence with which small degrees of movement were found among them.

Constipation Straining at stool from constipation may act in the same way as other strains.

Pregnancy Repeated pregnancies have been ascribed by most authorities as a frequent cause of movable Kidney. Their mode of action is said to be by slackening the abdominal walls, and so lessening the intra-abdominal pressure. Newman suggests that they act by causing absorption of adipose tissue also.

Dr Sawyer in his article on this subject says "All the examples which have fallen under my notice have been observed at some period after child bearing."

The most marked cases I have seen have occurred in those who have not borne any children. In the minor cases I have found it as frequently in virgins as in multiparae. Kuttner says (page 363) he has found movable Kidney as frequently in maidens as in married women.

I may mention another case here which

I met with in private practice.

A young married woman who had had no children came to me with severe pain in the right side, & frequent attacks of vomiting which did not seem to be due to any stomach lesion. I discovered that her right kidney was very freely movable & very tender to touch. I got an abdominal belt made for her & this gave her relief. She afterwards became pregnant and during her pregnancy had little or no trouble with her kidney but after her confinement the trouble returned. She was very thin and there was a suspicion of phthisis about her. I think it probable that in this case absorption of fat was the cause of her condition.

In speaking of the attachments of the kidney I said that the general intra abdominal pressure helped to keep

the kidney in position. Pregnancy undoubtedly slackens the abdominal walls and thus lessens the intra-abdominal pressure. Normally with rest in bed and proper bandaging the abdominal walls return to their normal condition. Among the working classes, however, women frequently get up on the fourth or fifth days after confinement while the abdominal walls are still slack. The result of this is that the abdomen remains large and pendulous & the internal organs tend to become displaced.

Menstruation. Menstruation is thought by some to have something to do with the causation of movable kidney. Sawyer and Newman are of this opinion. Newman and Kuttner note that the symptoms of movable kidney are markedly increased during ~~respon~~ menstruation. Recently

had a case in which the only symptom viz pain, was most marked during the menstrual period.
Landau thinks that if menstruation is a cause of movable Kidney every woman ought to have one and I am inclined to agree with him. Menstruation may readily ~~increase~~ aggravate the symptoms in a movable Kidney without having anything to do with its causation.

Why is M. Kidney more frequent in women.

Many of the causes I have mentioned are common to both sexes yet we rarely find movable Kidney in the male. The anatomical relations of the Kidneys are the same in both sexes. Emaciation with absorption of fat in the renal capsule, strains; coughs etc are common to both. The chief difference lies in the condition of the abdominal walls

and the garments worn. Normally the abdominal walls in women are much softer and less resistant than in men Any one who is in the habit of palpating the abdomen must notice how much more resistant the male abdomen is and how much more difficult it is to get the hands well down into it than in the female – It is probable that slight degrees of movement exist in the male as in cases of emaciation but they are much more difficult to diagnose on account of the thickness and resistance of the abdominal walls.

The softness of the abdominal walls is increased in women by pregnancy and by lessening the intra abdominal pressure tends to make the kidney movable. I have already explained how the use of stays acts on the right Kidney through the liver, by compressing the chest wall and this I think

is the principal reason why movable kidney is so much more common in women than in men.

In concluding I would say that normally the kidney does not move with respiration to an extent which can be appreciated by the hand; and that any movement which can be felt is abnormal though in itself it is not important except in so far as it may be the beginning of a graver condition. These slight degrees of movement are much more common than is usually supposed. The more marked forms, even in those cases where they are ascribed to sudden strains are I think produced gradually. Considering the frequence with which I have found these slight degrees of movement, this seems to me very

∴ and so hampering the normal movements of the liver

probable. The strain is only the actual cause which has increased the movement in a previously movable kidney.

The most frequent causes are:-

1. Absorption of fat.
2. Strains
3. Pregnancy and anything which slackens the abdominal wall.

The right kidney becomes more movable than the left on account of its position beneath the liver, the length of attachment of its vessels & its looser attachment by peritoneum. The use of stays by compressing the chest, * explains why the right kidney is more frequently movable than the left and why it is more common in women than men.

I have no intention of entering fully into the treatment of this condition.

There is only one means of cure, that is by operation.

Rest in bed with good feeding and iron tonics does good but does not cure.

I have found an abdominal belt give some relief but at best it is only slight.

My principal object when I made the examinations on which I have founded this paper was to ascertain the frequency of these slight degrees of movement and their causation. I have found them even more frequent than Dr Kuttner states in his paper in the Berlin Klin Wochenschrift.
