theoretically by Savariaud when no bleeding ulcer could be discovered; it does not, however, commend itself as being safe, and it has not yet been put in practice.

Should the bleeding be from an ulcer at the pylorus, the operation of pyloroplasty may be performed, the ulcer being excised, the edges of the ulcer being united so that the line of sutures shall be transverse to the axis of the pylorus.

I would not, however, advise pyloroplasty when there is active ulceration of the pylorus, unless the ulcer can be completely excised, for in three cases of this kind I have had disappointments. In one the patient made a good recovery from the operation, but subsequently suffered from stenosis, for which a further operation had to be done. In a second, recovery took place, and the patient regained his lost weight, but subsequently a tumour of the pylorus developed, which was thought to be cancer, and for which I had to perform pylorotomy; and the third case is the one ending in perforation, which I mentioned in speaking of curing ulcers. I think, therefore, that in cases of ulcer of the pylorus, where a clean excision of the ulcer cannot be done, it would be better to perform gastro-enterostomy or pylorotomy, whichever at the time may appear to be easier.

So far as I can gather, the mortality of pyloroplasty in simple ulcer appears to be about 13 per cent., that of gastro-enterostomy about 16 per cent., and of pylorotomy 28 per cent., but it is most difficult to get at genuine statistics, since many single failures are unreported, and these figures must only be accepted as approximate.

Wherever the pylorus is adherent, as in my experience it is in so many cases of ulcer, I should certainly prefer gastro-enterostomy; but if the pylorus be extensively ulcerated and free from adhesions, pylorotomy can be almost as quickly performed as gastro-enterostomy, seeing that the pylorus is already in the hand.

The operative treatment of parenchymatous or capillary hæmorrhage by any surgical method would seem to be of doubtful value; for, according to a report by Peterson from Czerny's clinic, of three cases operated on for severe parenchymatous hæmorrhage from vicarious menstruation, operation entirely failed to relieve; and of two other cases of post-operative parenchymatous hæmorrhage by Reichard, both died.

Conclusions.

After a careful study of reported cases, as well as from personal experience, I cannot help feeling that operative treatment in acute hæmorrhage gives such a high rate of mortality, "64.2 per cent. as compared with from 5 to 10 per cent. in cases treated medically," that it is better in such cases to rely solely on medical means. But in the repeated chronic hæmorrhages that are responsible for quite half the total deaths from hæmatemesis, the operation of gastro-enterostomy affords a reliable method of treatment, since it at the same time gives rest to the stomach, and removes the hyperacidity of the gastric juice, by an operation that can be done with rapidity and comparative safety; moreover, when the ulceration is at the pylorus, where it so frequently leads to hypertrophy and stenosis, the operation not only relieves the symptoms for which it was undertaken, but proves curative to the disease.

REFERENCE.

¹ *Sem. Med.*, February 2nd. 1898.

THE CAUSES AND TREATMENT OF MOVABLE KIDNEY.

*Being an Abstract of the First Hunterian Society Lecture,
February 28th, 1900.*

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[AFTER thanking the President and the Fellows of the Hunterian Society for inviting him to deliver one of the Hunterian lectures this year, and mentioning his reason for selecting movable kidney as his subject, the lecturer proceeded to explain why the presence of a movable kidney was so often diagnosed during life and so rarely found after death. A distinction was drawn between movable kidney and floating kidney, in which there is a true mesonephron; and it was pointed out that although the kidney might push the peri-

toneum in front of it like a hernial sac, or even possibly insinuate itself between the layers of the ascending or the transverse mesocolon, neither of these could be regarded as constituting a mesonephron—a structure which it was almost impossible to explain on the ordinary view of the development of the peritoneum. The relation of the kidneys to Cunningham's subcostal plane was then described, and the lecturer proceeded to demonstrate that the generally-accepted view that the kidneys were fixed organs was incorrect.]

During life the kidneys, with all their anatomical relations undisturbed, normally possess a range of movement estimated by Albarran at from 3 to 5 centimetres. The movement is especially evident when the kidney is exposed through an incision in the loin. This makes it more difficult to define what should be called a movable kidney. Kendal Franks holds that the extent of surface which can be felt beneath the ribs is the best criterion. A much more satisfactory test, however, is the failure of the kidney to reascend on tranquil expiration (coughing or straining is not fair) when the patient is standing erect, and has driven the kidney down by forced inspiration. I look upon this as sufficient even if the kidney only comes down low enough to enable its inferior extremity to be felt. If, on the other hand, it retains its normal relation to the diaphragm, so that the movement of the one follows that of the other, I do not regard it as unduly movable, even if half of the organ can be felt.

The kidneys are invested by what has been described by Zuckerkandl and Gerota as the perirenal fascia. This is a development of the subperitoneal tissue, strengthened upon the left side, where it lies upon the ventral surface of the kidney, by some fibrous bands which Zuckerkandl has shown to be the remnant of the fusion of the descending mesocolon with the primitive parietal peritoneum. The corresponding strands on the right side, owing to the different position of the colon, stand in no relation to the kidney. The fascia consists of two layers, anterior and posterior. These are united along the external convex border of the kidney, but are quite separate on the inner side and below. The anterior layer passes across the great vessels, and becomes continuous with the anterior layer of the opposite side. Below both layers are lost in the subperitoneal tissue. Together they form an investment for the kidney, loosely attached to it by connective tissue and fat, open on the inner side and below. Like the recess in which the kidney lies, this fascia offers no resistance to movement of the kidney downwards and inwards. The normal movements of the kidney during respiration, and when the body is raised from a horizontal to an erect position take place inside this investing fascia.

Immediately around the kidneys, "inside this perirenal fascia, is a large amount of fat which differs in colour and consistence from the ordinary subperitoneal fat, and which must be regarded to some extent as a special structure having a special function. It is but slightly developed until the eighth or tenth year, and is so soft and delicate in structure that it appears to be much more suited to facilitate the movements of the kidney than to check them. This deposit is especially thick on the posterior surface, and opposite the hilum, for on this surface the perirenal fascia is closely attached to the transversalis fascia, and this in its turn is firmly blended with the muscles beneath. In front there is comparatively little, for here the anterior layer is more loosely attached to the peritoneum, and both are movable. Atrophy of this fat has been noted in some cases of movable kidney, but much more often it is abundantly developed, and has to be stripped off in the operation for suturing the kidney in place.

Running through this fat are some stouter strands of fibrous tissue which pass from the fascia to the renal capsule. They are best developed above and opposite the hilum, but there are a few below. In cases of nephroptosis these are either torn or unduly stretched. Wolkow and Delitzin have shown that they are not strong enough to support the weight of the kidney, and they believe that their chief function is to maintain the normal shape of the kidney and the relative position of its different parts. If the upper ones are divided, the upper segment of the kidney, according to these observers, falls forward upon the lower. Potain has described this displacement, which he calls anteversion of the kidney; and it is said that sometimes it causes very severe symptoms from the way

in which it presses upon the neck of the gall bladder and the bile duct. However this may be, Newman showed a long while ago that if the abdomen is opened while the body is suspended in the erect position, the kidneys, which are already at their lowest normal point, fall much lower, even though these bands are uncut. Neither the fascia nor the fat is capable of maintaining the kidney in position when the influence of the abdominal pressure is removed.

The same may be said of the peritoneum. This is stronger on the right side than the left, owing to a special fold described by Jonnesco; but the kidneys glide behind it, and it is so easily displaced, even on the posterior wall of the abdomen, that they have no difficulty in pushing it before them. The surrounding organs check the movements of the kidneys and support them, but the kidneys are not in any way tied down or fastened by ligaments, like, for instance, the splenic flexure of the colon.

Kendal Franks described the kidneys as maintained in position by the combined pressure of the liver, acting from above and in front, and the colon acting from below and in front. But the liver and the colon, so far as intra-abdominal pressure is concerned, cannot be regarded as independent agents. Together with all the other organs enclosed by the peritoneum, they form one soft elastic mass, pressing against the kidneys. If any one of the organs that form this mass changes in position or consistence, the rest—so long as the peritoneal cavity is unopened—compensate for it at once. There is no independent action until air has been admitted into the peritoneal cavity.

Glénard regards mobility of the kidneys as merely one of the phenomena of enteroptosis; but in the vast majority of cases in which the right kidney is movable, there is no displacement of the other viscera. When enteroptosis does occur, so that the liver rotates and the intestines sink, movable kidney may follow, owing to the disturbance of the intra-abdominal pressure. Even this, however, will only happen if there is at the same time defective development of the lumbar recesses.

The kidneys are maintained in position partly by the pressure in the extra-peritoneal space, partly by the way in which they fit into the lumbar recesses. Neither of these is sufficient without the other. Wolkow and Delitzin in particular, have drawn attention to the importance of the shape of the lumbar recesses. This is best shown by taking plaster casts of the posterior wall of the abdomen, while the body is suspended vertically. In the male they are deep, narrow, and pear-shaped, with the narrow end below. In the female, owing to the greater width of the pelvis, they are shallower and more cylindrical; and the difference in shape is almost always more marked upon the right side than upon the left. This I believe to be due to a slight degree of torsion of the lumbar spine. In right-handed people there is usually a slight convexity towards the right in the dorsal spine. This entails an equivalent convexity towards the left in the lumbar region; and this, in its turn, necessitates a slight degree of rotation. The left transverse processes rotate backwards and deepen the lumbar recess upon that side. The right rotate forwards, and make the lumbar recess proportionately more shallow.

In a very large number of cases of movable kidney there is definite flattening of the right lumbar region. This, of course, cannot possibly be due to absence of the right kidney. Abdominal nephrectomy does not cause it. It really means that the vertebrae have rotated slightly, and is an indication of the cause of the displacement of the kidney, not a consequence of it.

The width of the lumbar recesses is one of the penalties which have followed the assumption of the erect attitude. If the history of the development of the renal organs in the race, as well as in the individual, is worked out, it is seen that, originally, they were distributed over the whole length of the head and body; and that by degrees, as their function became more specialised, they became concentrated together, until in their most perfect form they constitute a pair of organs, which, in the quadrupedal mammalia, are placed in a position of the greatest possible security. They lie close to the spine, immediately under the anticlinal vertebra, almost in the central axis around which all movement of the trunk and limbs takes

place. They are buried in two deep and narrow recesses, protected by the lower ribs, and rest upon a horizontal sheet of fascia, which in its turn rests upon the peritoneal viscera. The slight degree of backward and forward movement which is necessitated by the action of the diaphragm takes place without the least risk, but with the assumption of the erect attitude the greater portion of this security is lost. The backward and forward movement is altered to movement upwards and downwards, in the direction of the line of gravity. The peritoneal viscera and the supporting fascia lie in front and not below. The lumbar recesses, instead of being deep and narrow, become broad. The convexity forwards of the lumbar spine helps to make them still more shallow. The pelvis, especially in the female sex, becomes wider, so that the lower end of the recess becomes more open, and then the development of right-handedness causes the transverse processes of the lumbar vertebrae, which lie under the floor of the lumbar recess, to rotate. From a position of the greatest safety the kidneys are placed in one from which all security is gone; and it is not to be wondered at that comparatively trivial causes—an increase in the weight of the organ without a corresponding increase in the bulk, a sudden violent jerk, or a great lowering of the intra-abdominal pressure, can increase their normal range of mobility. The wonder is not that movable kidney occurs, but that it does not occur more often.

This accounts completely for the peculiar clinical distribution of movable kidney. It is certainly hereditary and common. It is present in women much more often than it is in men; and in women who have borne children more often than in those who have not. And it is much more common upon the right side than upon the left. None of the other reasons which have been assigned for this, such as the weight of the liver or the length of the renal vessels, deserve consideration.

[The lecturer, after detailing the different methods of treatment which have been advised, proceeded:]

The choice lies between wearing an abdominal belt and nephrorrhaphy. In my experience it is only in the milder cases than the former succeeds, and then it must be combined with massage and exercises calculated to strengthen the abdominal muscles. A belt braces the viscera together, and so steadies the displaced organ, but it cannot press the kidney back into its place or retain it there after it has been reduced, if the patient stands upright and takes a deep breath. Pads are useless. For all cases in which there is manifest deformity of the lumbar region, associated with movable kidney, or in which there is real distress, even if the mobility attains no higher degree than the anteversion of Potain, I never hesitate to recommend nephrorrhaphy. In the former case it is advisable, in order to save the kidney from hydronephrosis and other troubles. In the latter I believe it to be the most certain method of giving relief. I have never known it fail when properly carried out if the symptoms have not already lasted so long as to produce an indelible impression upon the patient's nervous system.

A CONTRIBUTION TO THE SURGERY OF PERFORATED GASTRIC ULCER,

WITH SPECIAL REFERENCE TO THE RESULTS OF OPERATION IN
ULSTER.*

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HISTORY AND STATISTICS.

So far as I know, the first successful operation for perforating ulcer of the stomach was recorded by Kriege, a German surgeon, in 1892. The first English success was reported by Mr. Morse, of Norwich, in March, 1894. The first Irish triumph falls to the credit of an Ulster surgeon, Dr. John Campbell, whose operation was carried out in July, 1897; whilst the most brilliant result in the annals of this branch of surgery must be accorded to an Irishman, Dr. Myles, of Dublin, who operated with signal success on an old gentleman

* Read before the Ulster Medical Society.