Out of 71 people employed in various capacities at this hospital, in no single instance was it possible to show the presence of the vibrio in the faeces. This speaks well for the excellent precautions adopted by the authorities.

The fact that in nearly all cases which have been carefully investigated it has been possible to establish a history of direct contact, or at any rate a visit to an infected house, has gone far towards establishing the limits of the incubation period. These seem to be from a few hours up to eight or nine days. A man in the poor quarter of Funchal, out of bravado, wrapped himself in the blankets of a cholera patient. He developed the disease in six hours, and died in eighteen hours. His family of three all developed the disease subsequently, but not until six days after his death.

The severe outbreak at the neighbouring township of Machico was traceable to one man who had slept a night in an infected house in Funchal, and developed the disease three days after his return.

Of the "contacts" who were isolated in their own homes, instead of being segregated in the isolation hospitals, a very much larger proportion than the above-mentioned 6 out of 350 subsequently developed cholera. This seems to lend colour to the statement one often sees, that even when carrying the germ one can probably avoid the disease by regular meals and by careful hygiene, such as was observed in the "contacts" block.

Clinical Notes.

The probable explanation of the frequency of ophthalmic complications lies in the fact that the secretion of tears is almost entirely inhibited, as is the case with all the other fluid secretions of the body, owing to the tremendous loss of fluid by diarrhoea. From the same cause stomatitis, parotitis, laryngitis, and bronchitis were of relatively frequent occurrence.

A striking feature of many cases, which I have not seen mentioned in the textbooks, was the continuance of watery, choleraic vomiting long after the diarrhoea had stopped. In the only case I had to treat among the foreign residents this occurred, the vomiting continuing for forty-eight hours after the diarrhoea had ceased.

The fewness of the cases of prolonged anuria in this epidemic was probably due to the use of saline infusion as a routine treatment in all severe cases. Urticaria was just as common among the mild cases as among the severe, where saline infusion had been resorted to.

The disease has been almost entirely limited to the lowest and dirtiest of the population. No English residents have had it.

Pathological Notes.

Autopsies were only carried out in a few cases, owing to the tremendous prejudice of the peasants. In these few instances it was found that there had been great loss of the gastric mucosa, though not to quite the same extent as with the mucous lining of the jejunum and ileum, where the mucosa had been so completely cast off that it is difficult to understand how regeneration can ever take place. In most cases the bacteriological examination of the faeces and vomit seemed to show that the comma vibrio remains in undisputed possession of the alimentary canal for the whole period of the disease, to the exclusion of all the ordinary intestinal flora. Those cases in which the patient subsequently fell into a sort of typhoid state were probably instances of the comma bacillus failing to establish this undisputed possession, so that there was a rapid absorption of intestinal toxins through the denuded mucosa, resulting in a condition of profound copraemia. In these cases, and also in the afebrile secondary diarrhoeas, very good results were obtained with intestinal irrigation and the exhibition of such drugs as salol and benzo-naphthol. There were one or two cases of long-standing enteritis (a common condition among the poor here) in which a complete cure was the result of a sharp attack of cholera. In one case, a woman aged 74, who had been the victim of mucous enteritis for ten years, and had been bedridden for two years, left the hospital after an attack of cholera, with complete cessation of all symptoms of her former malady.

I can cordially endorse the remarks of my colleague, Dr. Scott, in his letter to the BRITISH MEDICAL JOURNAL of

February 18th, in which he attributes the prompt stamping out of this epidemic to the excellent measures prescribed by Drs. Magalhaes and Carlos Franca, who were sent from Lisbon. I must again thank Dr. Lomelino for his great kindness in placing this material at my disposal and for the opportunities which he has given us English doctors of seeing the cases under his care.

THE AFTER-HISTORY OF THIRTY CASES OF MOVABLE KIDNEY TREATED BY OPERATION.

BY

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MORE than one writer on surgical treatment has complained that there are in the literature few reliable statistics of the end-results of the various forms of operative treatment practised for movable kidney. There are a few figures culled from the private practice of individual surgeons, but these always need supplementing by hospital reports before they can be used as indications for treatment by other hands. The writer claims to be unbiassed in favour of any particular operation.

Appended is a list of all the cases of movable kidney treated by operation during the ten years 1900 to 1909 at the Bristol Royal Infirmary. It is possible that one or two may have been accidentally omitted. The after-history has been obtained, occasionally by finding a note of a subsequent visit to the infirmary, occasionally by report of the medical attendant, but in most cases by correspondence. Many of the patients kindly came to be personally interviewed by me. They were examined both sitting up and lying down.

Unless otherwise stated, the indication for the operation was repeated attacks of dragging pain. It is not customary to operate here unless the kidney is sufficiently movable to allow the hands to get above and hold it down.

I have thought it better to include in the list even those whose after-history could not be traced, owing to removal from residence, etc. The total number reported on is therefore 38, which, however, represents more than that number of patients, on account of relapses on the same or opposite side of the body. During the same period, 21,143 surgical patients were treated at the infirmary.

It may be remarked that all the patients were women, that the ages ranged from 22 to 58, and that the right kidney alone was operated on in every case except one (E. D.), in whom both sides were fixed at an interval of a year.

It has not been customary to prescribe a belt after operation.

OPERATIONS PERFORMED.

Three totally distinct operations are well represented. The first shows a good deal of variety in detail.

1. *Transcortical Suturing.*—The kidney is stripped of its fatty capsule, and as far as possible of its true fibrous capsule. Sutures, usually three, are passed by means of a curved needle through the substance of the organ, and by them it is fixed to the muscles of the loin, taking a deep hold both of kidney and of muscles. In at least three cases (probably more), a turn including the last rib was taken. The suture material has usually been stout catgut, in some cases reindeer tendon, and occasionally silk or silkworm gut. The muscles are then carefully sewn together. An effort has usually been made to avoid injuring the last dorsal nerve. I have included here two cases in which mattress sutures were carried through capsule and kidney substance, muscles and skin.

2. *Fixation by the Capsule only.*—The true fibrous capsule is partially stripped off, and sutures of catgut or reindeer tendon are used to attach the flaps of capsule to the muscles.

3. *Pure Carbolic Acid and an Iodoform Gauze Sling.*—The kidney is exposed by the usual lumbar incision, the fatty capsule removed, and the whole surface painted with pure carbolic acid. Then a sling of iodoform gauze is arranged to support the lower pole, the ends being brought

out and tied over a supporting strand of dressing placed on the wound. The muscles are sewn up in layers (in the earlier cases they were sewn by a through-and-through suture of silkworm gut). The gauze sling is left in for about a fortnight.

REPORT OF CASES.

I. Cases in which the Kidney was fixed by Transcortical Suturing (Sixteen Cases, with After-History in Fourteen).

Case 1.—A. M., aged 18, was seen in 1904 on account of pain in the right side and vomiting. The appendix had already been removed without giving relief. The kidney was fixed with catgut sutures. The nephropexy relieved her for only a short time.

This patient was again seen in 1907, when the symptoms were as before. The kidney was found to be lower than normal, and moved with respiration, but not freely. It was again fixed, catgut sutures being employed as at the previous operation. After-History: Little or no relief was obtained. Later in 1907 gastro-jejunostomy was performed, and the patient has since been perfectly cured of her symptoms. The kidney was found satisfactorily fixed when the gastro-jejunostomy was performed.

Case 2.—M. M., aged 48, was operated on in 1905, the kidney being fixed with catgut sutures. After-History: The patient was seen and examined in February, 1910. She considers that the operation has given her great relief, and regards it as a success. She still gets a little pain when weary. The kidney has become quite loose; hands can be got above it.

Case 3.—S. V., aged 29, operated on in 1905, catgut sutures being employed. After-History: More than a year afterwards the doctor wrote to say that she was quite well. No recent information.

Case 4.—A. H., aged 32. Operation took place in 1908, the kidney being fixed with catgut sutures. After-History: In February, 1910, the patient writes: "I feel great benefit from it."

Case 5.—E. S., aged 23, was operated on in 1905; the kidney was fixed in position by catgut sutures. No information has been obtained as to the subsequent history of this patient.

Case 6.—L. D., aged 25, underwent operation in 1900, reindeer tendon being employed for suturing. After-History: In February, 1910, the patient writes: "I do not find much permanent relief from the operation. . . . I still have much pain in my right side at times. This may be due to the fact that I am obliged to earn my living by machining."

Case 7.—M. A., aged 25, operated on in 1900; the kidney was fixed with reindeer tendon sutures. After-History: Five months later was quite well, with no pain. No recent information.

Case 8.—E. B., aged 40; operation in 1900, reindeer tendon sutures being employed. After-History: The patient was seen and examined in February, 1910. The kidney pain was quite cured. For the past three years she had had some pain periodically in the groin. The kidney was not palpable.

Case 9.—E. J., aged 45, operated on in 1902; reindeer tendon sutures. No information as to after-history.

Case 10.—E. W., aged 30, seen and operated on in 1901, silk sutures being employed. After-History: Seven months after operation the patient was relieved of the original pain and the kidney was securely fixed, but there was pain on the left side. She was readmitted in 1907, complaining that she had had abdominal pain ever since. The kidney was not palpable and appeared to be fixed. Enteroptosis and neurosis was diagnosed.

Case 11.—E. D., aged 22, first seen in 1907. Both kidneys were painful and movable. At operation the left kidney was fixed with silk sutures. The patient was seen again a year later, when the right kidney was fixed, the same material being employed. After-History: Seen and examined February, 1910. She is completely cured, both kidneys remaining securely fixed. "Has not been so strong and well for four years."

Case 12.—A. R., aged 30, operated on in 1900, the kidney being fixed by means of two reindeer tendon sutures tied round the last rib. After-History: Seen February, 1910. Is quite cured. The kidney was recently examined by her doctor and found fixed.

Case 13.—M. P., aged 27. At the operation, in 1907, the kidney was fixed with catgut sutures carried over the last rib. After-History: The patient writes, February, 1910, that she was free from pain for six weeks, but since that time has been "more or less troubled with the pain in the lower part of the back." She has worn a belt, but still "finds it a great deal in walking."

Case 14.—A. S., aged 37, underwent operation in 1909, the kidney being fixed with two catgut sutures carried over the last rib. After-History: Seen and examined February, 1910—an in-patient for gastric ulcer. The kidney pain has been quite cured for the seven months which have elapsed since operation. The kidney is fixed; it lies rather lower than usual.

Case 15.—M. T., aged 52, operated on in December, 1908, two Halstead sutures (catgut) being carried through the kidney substance, capsule, muscles, and skin. The patient was very ill; vomiting; explored for possible growth of bowel. After-History: Seen and examined February, 1910. Right side quite satisfactory; left side now gives pain; not able to work. The right kidney is fixed—lower than usual; the left is movable.

Case 16.—L. T., aged 34, seen in 1907. At the operation the kidney was fixed with two Halstead sutures (silkworm-gut) carried through the kidney substance, capsule, muscles, and

skin. After-History: She writes, February, 1910: "Have never felt the slightest inconvenience since the operation."

II. Cases in which the Kidney was fixed by stripping up Flaps of Capsule and suturing them to the Muscles. (Twelve Cases, with After-History in Eight.)

Case 17.—E. E., aged 39, operated on in 1900, reindeer tendon sutures being employed. The kidney had been fixed in 1896 by transcortical suturing, stripping the fatty but not the true capsule. It was loose in 1898; very loose and painful in 1900. After-History: The patient writes in February, 1910, that "the operation has been of no benefit whatever." Pain and violent vomiting returned in a few weeks; has been an invalid ever since. A little better recently.

Case 18.—A. D., aged 49, operated on in 1902, the kidney being fixed with catgut sutures. After-History: Writes, February, 1910, that she "has had no return of the pain," and "considers her cure permanent."

Case 19.—M. W., aged 26, seen in 1902, catgut sutures being employed at the operation. After-History: Writes, February, 1910, that she is "thoroughly cured."

Case 20.—A. R., aged 30. At the operation, in 1903, the kidney was fixed by means of reindeer tendon sutures. After-History: Five weeks after operation pain returned as before; no cause found. No recent information.

Case 21.—A. M., aged 33, operated on in 1903, catgut being the material used. The patient died of sloughing of the wound, a few days after the operation.

Case 22.—H. C., aged 35. The kidney was fixed in 1904, by means of catgut sutures. After-History: Seen March, 1910. The kidney is quite fixed and she has had no further pain.

Case 23.—H. T., aged 56, operated on in 1905, catgut sutures being employed. After-History: Writes, February, 1910, that she is much better. She gets pain in the side sometimes, because, she says, a few months after operation she strained herself getting out of a high dogcart, after which the kidney "slipped"; her doctor examined her and confirmed her opinion. However, except when working hard, she is in fair comfort.

Case 24.—A. G., aged 39, was operated on in 1905, catgut being used for suturing. After-History: Seen and examined February, 1910. Nervous, twitching patient. She says pain has not been at all relieved; she also has frequency of micturition. The kidney is quite loose, and hands can be got above it.

Case 25.—M. F., aged 32; operation in 1902; catgut sutures. No after-history.

Case 26.—E. I., aged 31; operation in 1903; catgut sutures. No after-history.

Case 27.—E. F., aged 37; operation in 1905; catgut sutures. No after-history.

Case 28.—A. A., aged 45; operation in 1905; catgut sutures. No after-history.

III. Cases in which the Kidney was fixed by Painting with Carbolic Acid and a Gauze Sling. (Ten Cases, with After-History in Eight.)

Case 29.—G. W., aged 24, operated on in 1900, carbolic acid and a gauze sling being used for fixing the kidney. After-History: Writes, February, 1910, that "the operation has proved very successful," and she is "quite free from pain." She was examined at Guy's Hospital, and told the kidney was securely fixed.

Case 30.—M. M., aged 25, first seen in 1900, when the kidney was fixed by painting with carbolic acid and a gauze sling. She remained well for nine months, then pain of the same nature as that she had previously experienced returned. She was again seen in 1901, twenty months after the first operation. At the second operation the kidney substance was transfixed with silkworm gut and the muscles sutured in layers. At the operation the kidney was thoroughly embedded in firm adhesions, and was accidentally cut into; it was not at all movable. No subsequent information beyond the first few weeks, in which she was completely relieved.

Case 31.—A. D., aged 33, was operated on in 1901, carbolic acid and a sling being employed. After-History: Writes, February, 1910, that the operation has given her relief, and that she can perform her duties as a saleswoman with a fair amount of strength. She was seen again in April, when the right kidney was found to be low, but fixed and not painful; the left kidney was movable, but she did not say that it hurt her.

Case 32.—E. K., aged 47, had her kidney fixed in 1903 by painting with carbolic acid and a gauze sling. After-History: She went on well till 1905, with no more pain in the kidney; in that year she was admitted and operated on for perforated gastric ulcer, and died. At the autopsy the kidney was found firmly fixed in adhesions and could not be shelled out.

Case 33.—L. N., aged 30, operated on in 1904, carbolic acid and a sling being employed for fixing her kidney. After-History: Writes, February, 1910, that "the operation has put her all right." She gets a little aching at times.

Case 34.—K. C., aged 39, seen and operated on in 1906, her kidney being fixed by means of carbolic acid and a sling. After-History: Writes, February, 1910, that "since the operation she has been much better. It appears to have been a permanent relief from the pain." In May, 1910, gastro-jejunostomy was performed, on account of gastric pain. The right kidney was found fixed and not painful; the left was movable but not painful.

Case 35.—E. S., aged 58, operated on in 1908, carbolic acid and a sling being employed. *After-History:* Writes, February, 1910, that she is "much better; can get about and do a little of her work. The pains are entirely gone, and everything is very satisfactory."

Case 36.—A. S., aged 44, seen and operated on for movable kidney in 1908, carbolic acid and a sling being employed. Appendicectomy also was performed. The patient had long been an invalid; Mr. Grieg Smith had removed her ovaries on account of pain. *After-History:* After the operation in 1908 she was well for a year, but since then she has had much pain in the appendix region, and is a chronic invalid. She was seen and examined in February, 1910, when the kidney could not be felt and appeared to be fixed. No general enteroptosis. I thought some such condition as mucous colitis probable, from the history and character of the pain.

Case 37.—A. B., aged 33, was operated on in 1902, carbolic acid and a gauze sling being employed; the kidney was stitched to the rib to rotate it. The patient had hydronephrosis and kinked ureter. Two months after operation she was relieved. No subsequent information.

Case 38.—E. W., aged 22; operation in 1905; carbolic acid and sling. No after-history.

It will be observed that I have been able to obtain some after-history in 30 out of 38 cases, not including one (A. B.) who was well two months after the operation. Of these 30 cases a classification may be made as follows:

Operation.	Cases.	Cured.	Considerable Relief.	Little or no Relief.	Death.
1. Transcortical suturing	13	9	1	4	0
2. Suturing of capsule	8	3	1	3	1
3. Carbolic and sling	8	5	1	2	0
Total, all methods	30	17	3	9	1

One patient had both kidneys fixed with complete relief, but I have only counted her once.

It may be simplest to use the information at our disposal to find an answer for certain important questions.

Is the Operation for Movable Kidney to be Urged on Patients?

The figures have been collected by writing to hospital cases, in several instances many years after the operation was performed. This is to put a severe strain on the reputation of any operation. Such highly esteemed procedures as appendicectomy and gastro-jejunostomy would be considerably criticized by such a testing. The patient may include all sorts of subsequent troubles in the reply, and call a success a failure in consequence. In many of the "failures" here recorded the fixation of the kidney was excellent. Again, these patients are hardworking women, unable to take care of themselves and rest when weary. Nevertheless, they were well pleased with the result in 20 out of 30 cases. As we shall see, the failures were often due to an erroneous diagnosis. It may be concluded that when other possible causes of the symptoms can be eliminated the operation for movable kidney is usually satisfactory.

What are the Usual Sources of Failure?

There are two. The first is slipped kidney. In the list before us we have clear evidence that in two cases (A. M., M. M.) following the transcortical operation, and in probably two cases (A. G. and probably H. T.) following the operation of suturing the capsule, the kidney has become loose again. In a case operated on before 1900 by the transcortical method relapse occurred (E. E.), and she had a second fixation in 1900. There is no proof of relapse following the carbolic and sling operation.

It does not necessarily follow that the symptoms will return in full force. Two of the cases of slipped kidney have been classed as having obtained "considerable relief."

Some care is necessary before deciding that a kidney has really become loose again. In many cases the kidney is fixed lower than its normal anatomical position, and it may move an inch or two with respiration, and even allow the hands to meet above it, without becoming abnormally mobile.

The other source of failure is an erroneous diagnosis. Evidence for this is fairly clear in some of the cases. One patient (A. M.) had her appendix removed and her kidney fixed twice without relief; she then had a gastro-jejunostomy for slight dilatation of the stomach from healed gastric ulcer, and has been perfectly well for more than two years. Another (E. W.) had general enteroptosis. Another (A. S.) had already had her ovaries removed, and her appendix was removed when the kidney was fixed. In one other patient (M. M.) relapse appeared to be due to dragging on the scar, the muscles not having been sutured in layers.

After how long an Interval may the Patient be regarded as in all probability Cured?

Various dates are given for relapse of the pain—five weeks, six weeks, four months (kidney slipped during accidental strain), nine months (scar became weak), and one year. This last was the patient (A. S.) referred to above, in whom the kidney was probably not at fault.

What Method of Operating Gives the Best Results?

While the aggregate numbers are large enough to judge of the success of the operations considered as one, I do not consider that they are adequate to decide with authority between the three operations practised. I was particularly unsuccessful in tracing the after-histories of the second operation, and so may have missed cases that would have put it in a more favourable light. When larger statistics are available to be added to these, we may be able to speak with more confidence. We must give the third method credit that it is not yet proved that the kidney can slip afterwards, but it would be unwise to build too much on the negative evidence of only 8 cases.

Is the Suture Material of any Importance?

Three kidneys were sutured with silk, and are known to have remained fixed. In 12 cases catgut was used, and 4 have failed, possibly on account of slipping. In 6 cases reindeer tendon was used; of these 2 were not relieved, possibly owing to slipping of the kidney. Cases in which the return of pain was certainly not due to the kidney are not included here.

SUMMARY.

1. Complete or considerable relief was afforded in 20 out of 30 cases, treated by several different methods of operation.
2. In at least 3, probably 4 cases, the kidney again worked loose.
3. Several of the failures were certainly due to a mistaken diagnosis as to the cause of the pain.
4. No cases of slipping were found in 8 cases treated by the carbolic paint and gauze sling method, and followed from two to ten years.

THE "CARDIO-SPLANCHNIC PHENOMENON" OF ABRAMS.

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In the *American Journal of Medical Sciences* of January, 1904, p. 125, will be found a paper by Dr. Albert Abrams, of San Francisco, on what he terms the "cardio-splanchnic phenomenon," and defines as follows:

"If the lower sternal region—that is, the sternum contiguous to the heart—is first percussed in the standing and then again in the recumbent posture, one may appreciate a decided alteration in the percussion tone; in the former attitude it is resonant or even hyper-resonant, in the latter it is dull or flat. This is the cardio-splanchnic phenomenon."

Now this description is absolutely contrary to fact, and, thus defined, there is no such thing as the "cardio-splanchnic phenomenon." I was unaware of Dr. Abrams's statement till my attention was called to it last year, when I published a paper¹ dealing with the rightward edge of the cardiac dullness and the changes which occur in it with change of position. This paper slightly amplified what I had already pointed out in 1905.² I showed that, alike in health and in disease, the rightward margin of the