

Nephrectomy (successful after fourteen months) for malignant tumour in a patient under two years of age / by John D. Malcolm.

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Publication/Creation

London : Printed by Adlard and Son, 1894.

Persistent URL

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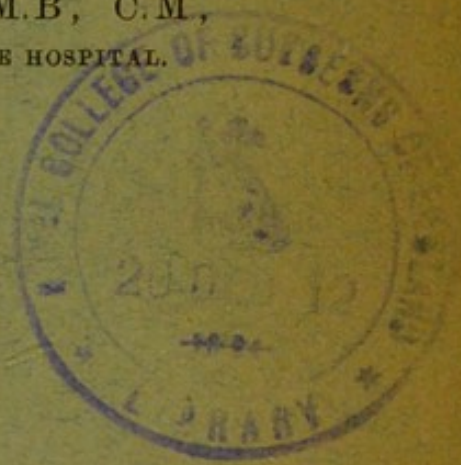
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NEPHRECTOMY
(SUCCESSFUL AFTER FOURTEEN MONTHS)
FOR MALIGNANT TUMOUR
IN A PATIENT UNDER TWO YEARS OF AGE.

BY

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Read January 26th, 1894.



Reprinted from Vol. XXVII of the 'Clinical Society's Transactions.'

LONDON:
PRINTED BY ADLARD AND SON,
BARTHOLOMEW CLOSE, E.C., AND 20, HANOVER SQUARE, W.
1894.



Nephrectomy (successful after fourteen months) for Malignant Tumour in a patient under two years of age. By JOHN D. MALCOLM, M.B., C.M. Read January 26, 1894.

THE child, whose history I bring before the Society this evening, was placed under my care by Dr. Marshall, of Barnes, and Mr. Knowsley Thornton. She had a healthy family history, and was herself strong and well developed. It had been noticed that she had a "full belly" when she began to walk, before she was a year old. This was not thought to be of consequence till a definite swelling was felt in the right side six months later. The swelling steadily increased in size, and the child became less strong and lively, but she did not seem to suffer any pain. When admitted to the Samaritan Free Hospital on November 7, 1892, the child was rather pale, but all her functions seemed in good order. The nurses were not able to collect the urine for twenty-four hours together. It was, however, secreted freely, and no abnormality was discovered in it. Its specific gravity varied from 1010 to 1018.

The abdomen showed a bulging out of the surface over the whole of the right flank and hypochondrium, and well forward into the lower umbilical and hypogastric regions, where the outline of a rounded tumour was distinctly seen. The superficial veins on both sides were distended, especially towards the groins. On palpation, a well-defined, elastic, painless tumour, approximately oval in shape, and scarcely, if at all, moveable, was felt filling the right loin, and passing slightly beyond the middle line below the navel. It was close to the right lobe of the liver above, and extended towards the pelvis to below the level of the anterior superior iliac spine. On percussion the note was dull on the outer side of and behind the tumour, and over the most prominent part in front. The area of resonance overlapped the left side of the tumour so as to form two pointed projections, one between the abnormal dulness and that of the liver, and the other between the dulness of the tumour and Poupart's ligament.

On consultation with Sir Spencer Wells and Mr. Knowsley Thornton, a renal tumour was diagnosed, and its removal was

advised. The operation was performed on November 15, 1892, nineteen days before the patient was two years old. Having made an incision four inches long through the right linea semilunaris, and having found that the left kidney was, as far as could be judged, of normal size and shape, I divided the posterior layer of peritoneum outside the ascending colon which lay in front of the tumour. The loose anterior connections were easily separated, and the growth was squeezed through the opening in the abdominal wall, the greatest care being taken not to rupture its capsule. It was firmly held behind by strong bands of connective tissue, which were divided bit by bit, and then the growth was separated from a mass of glands and vessels on its inner side. The ureter was apparently quite healthy, and was divided near the kidney, the cut ends being carefully cleansed and secured in forceps. When the tumour was removed by the separation of a few more bands of connective tissue, it was seen that I had inadvertently opened the capsule behind. Although the shreds which remained had for the most part been on a healthy piece of kidney at the back of the tumour, I removed them all very carefully. The glands on the renal artery, some of which were very much enlarged, were then taken away in one mass with the surrounding fat, the artery being redivided at the deepest point reached by the knife. Some other glands close to the neighbourhood of the origin of the renal artery were also removed, but neither the aorta nor the vena cava was actually exposed. Numerous bleeding points which had been secured in forceps were tied with silk, the divided end of the ureter was brought outside the skin, and the wound was closed with silk ligatures without drainage. The supra-renal capsule was not seen during the operation. There was no difficulty at any time from protrusion of the intestines, as Mr. Stormont Murray, who gave chloroform, succeeded in keeping the patient quite quiet during the whole operation, which lasted one hour and twenty minutes. Antiseptic precautions were used throughout.

The child quickly recovered from the chloroform. The highest temperature and pulse were 101° F., in the axilla, and 144 respectively, and were recorded on the day after the operation. At the end of a week there was practically no fever. The patient was ill and peevish for two or three days, but was strong and took nourishment well from the first. The bowels were moved by a saline purge on the third day, and gave no trouble at any time. Much of the urine was lost. A specimen secured the night following the operation con-

tained a little albumen, and after that time no abnormality was detected. The specific gravity varied from 1024 to 1002. The sutures in the abdominal wall were removed eight days after the operation, and the wound healed well.

On November 9, 1893, nearly a year after the operation, the child was still slightly anæmic, but otherwise healthy and well developed. Urine was secreted freely. A specimen examined at this date was acid, and contained no albumen. Its specific gravity was 1019, and nothing abnormal was detected in it by microscopic examination. The whole abdomen was soft and natural in every respect. The scar was three and three quarter inches long, firm, strong, and free from any sign of irritation. The measurements were as follows, and I give also for comparison those of the day before the operation.

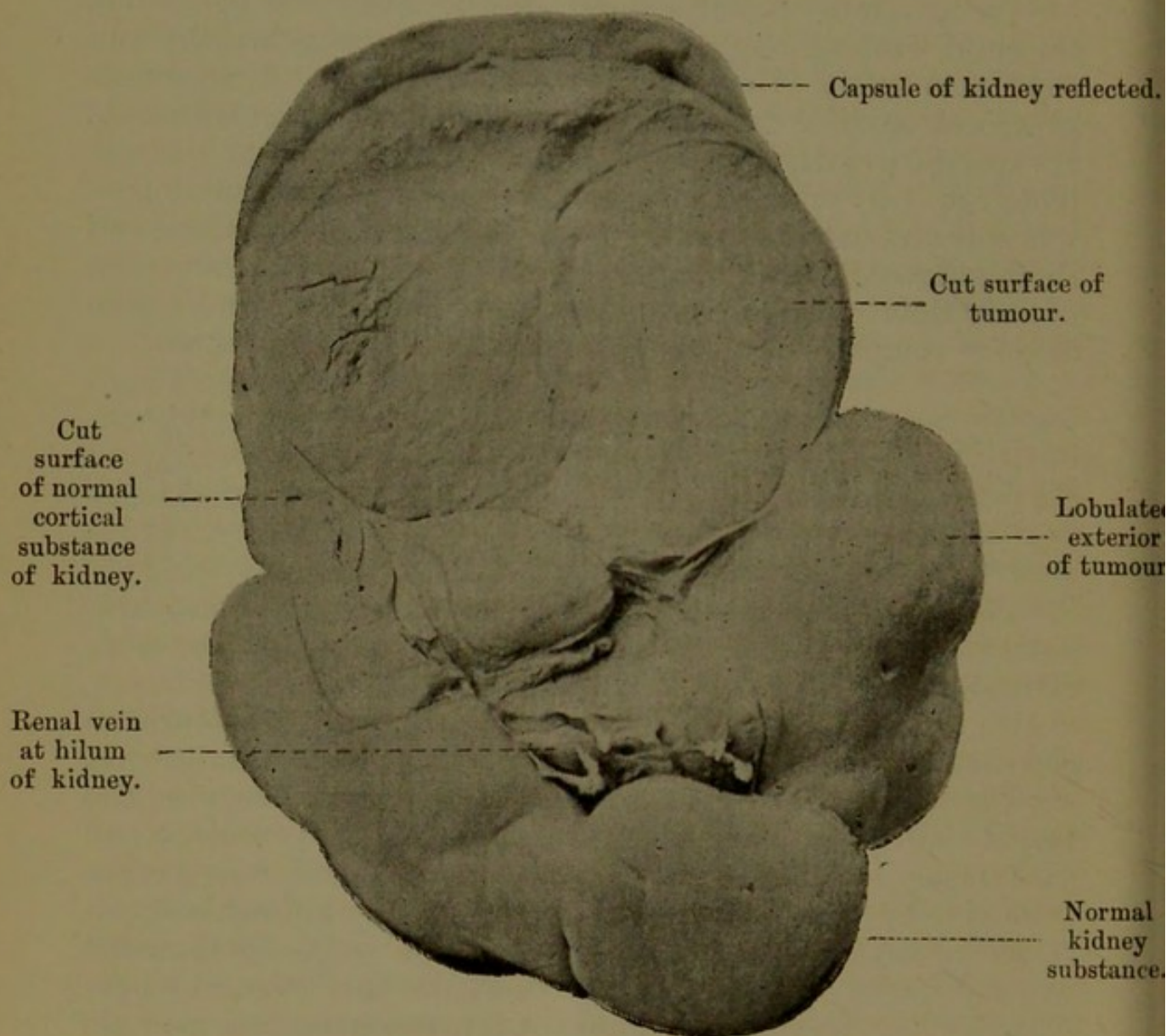
	Nov. 14, 1892.	Nov. 9, 1893.
	Inches.	Inches.
Circumference at umbilicus	21	19
Ensiform cartilage to umbilicus	5	4½
Umbilicus to pubes	4	4
Right anterior superior iliac spine to umbilicus ...	6	3½
Left anterior superior iliac spine to umbilicus ...	4½	3½

Thus, although the child was a year older, all the measurements, except that from the umbilicus to the pubes, were shorter at the later date.

On January 25, 1894 (and on going to press), Dr. Marshall reported the child to be "in perfect health" and well grown.

The tumour (see fig.) has been added to the museum of the Royal College of Surgeons (No. 3597E). It consists of an oval mass measuring six inches vertically and four inches from side to side. The posterior half of the kidney is apparently normal, while the anterior portion is partly replaced by, and partly expanded for a short distance over, the neoplasm. Mr. Targett has kindly prepared some microscopic specimens, and his description of these is as follows:—"Specimens were taken from the margin of the growth, and included a portion of healthy kidney substance. The latter was separated from the growth by a zone of dense fibroid tissue which formed a capsule to the tumour. Microscopically the tumour was composed of tubes cut in various directions and closely packed together. They varied considerably in size, but there appeared to be no special arrangement of large and small tubes. The majority had a definite lumen, but to some (and these were chiefly the smaller collections of cells) the term tube was hardly applicable, as no lumen existed in them. The stroma of the growth was

scanty and exceedingly delicate, save for a few strands of connective tissue which divided the field up into large loculi. The tubes which had a distinct lumen were lined with tall



columnar epithelium having one or two rows of oval or round nuclei at the base. The solid processes were made up of small spheroidal epithelium with darkly-staining nuclei.

"One lymphatic gland taken from the neighbourhood of the kidney was examined, but the evidence of secondary deposit in it was inconclusive. The tumour may be classed with those known as malignant adenomata." Another gland examined by Dr. E. M. Callender showed evidences of hypertrophy and irritation, but no tumour growth.

It has been doubted by some authors whether the removal of neoplasms of the kidney from children, unless they are

certainly not malignant, should ever be undertaken. Not only is the mortality from the operation very great, but those cases which have survived the immediate risks of surgical treatment seem invariably to have died of recurrence within a period to be measured by months. In the cases collected by Mr. Godlee, and published in our *Transactions** for 1884, in Dr. Newman's table published in 1888,† and in the table published by Mr. Bland Sutton in 1893,‡ the mortality is over 50 per cent. As regards recurrence, there is a case mentioned by Mr. Bruce Clark,§ in which Hicquet operated, and death did not take place till eighteen months later, but with that exception I have found no history in which it is stated that a child has lived as long as a year after an operation for the removal of a new growth of the kidney.

In view of these records, and of Mr. Targett's opinion of the nature of the tumour, I can scarcely hope that the child on whom I operated will escape the fate of the others whose cases have been published. She has, however, lived a healthy life for over fourteen months without any sign of recurrence, after the removal of a growing tumour which must speedily have induced serious symptoms from its size alone. The operation would, therefore, seem to be justified by the event in this particular instance, even if recurrence should take place in the future. Nevertheless it is clear that if nephrectomy is to be performed for new growths in children, a very careful selection of cases ought to be made, and it would seem that, as a rule, the surgeon should absolutely refuse to interfere. His difficulty is to pick out the few cases in which he may be justified in advising an operation.

In 1884 Mr. Godlee urged that, before an ultimate conclusion is come to as to the advisability of operating on these tumours, surgical treatment should be employed in a number of cases at an earlier stage of the disease, and with smaller tumours than that removed by him. The advantages of early operation will not, I think, be disputed; and Mr. Walsham has removed a renal sarcoma from a child nine and a half months old with temporary success.|| The operation might be undertaken even at an earlier age, but I have not been able to satisfy myself that in those cases in which the longest immunity from recurrence has been observed the tumours

* Vol. xviii, p. 36.

† *Lectures to Practitioners on the Surgical Diseases of the Kidney*, p. 450.

‡ *Tumours, Innocent and Malignant*, p. 120.

§ *Surgical Diseases of the Kidney*, p. 54.

|| *Brit. Med. Journ.*, 1893, vol. i, p. 694.

were specially small, or that the operation had been more promptly arranged than in the less successful cases.

I would be inclined to look rather for guidance in treatment to a careful study of clinical histories and of the microscopic structure of the specimens removed. Mr. Targett calls the tumour in my case a "malignant adenoma," but pathologists are by no means agreed as to the classification of these growths. It is only a few years since they were indiscriminately described as cancers, while at present the tendency is to call all the malignant ones that occur in children sarcomata. Under this heading Mr. Bland Sutton includes those which consist of tubes lined by epithelium, such as are described in the case now reported. Bland Sutton says that these tumours invariably contain cells simulating striped muscle-cells, and these cells are numerous if the tubes are few, but scanty if the tubes are abundant. When these muscle-cells are the most prominent feature of the growth it must closely resemble a spindle-celled sarcoma; but when the tumour consists mainly of tubes lined by epithelium it seems hardly correct to describe it as a connective-tissue neoplasm.

In the tumour described for me by Mr. Targett no striated cells have been found, and I think I am correct in stating that no new growth of the kidney of precisely similar structure to this one has been removed during life and described. The fact that the removal of a tumour presenting uncommon microscopic characters has been followed by an unusual period of immunity from recurrence suggests the idea that the success—I should perhaps rather say the comparative success—of the operation is due to the nature of the growth. If this view should be supported by observations on future cases, and if it could be shown that certain clinical features are constantly associated with peculiar structural characters in the tumour, valuable indications for scientific treatment would be available. Accumulating experience may lead us to such indications, but at present we can only look to those characters which guide us in the diagnosis, prognosis, and treatment of new growths elsewhere. The more definite the outline of the tumour to palpation, the more mobile it is, the slower its growth, and the better the state of the patient's general health—in fact, the stronger the evidence that the patient is only locally affected—the more likely is operative treatment to be followed by prolonged immunity from the disease. Cases may be observed, on the other hand, in which the tumour has no definite outline, being fixed to and

incorporated with the neighbouring structures, so as to be absolutely immobile, being also of very rapid growth, and accompanied by extreme emaciation. Such cases are obviously unsuitable for surgical interference. It does not follow, however, that these latter conditions indicate an advanced stage of the more defined, more mobile, and more slowly growing tumours. The evidence seems rather to show that the symptoms, sometimes at least, depend on the nature of the growth, and that the cases are favorable or unfavorable for surgical treatment from the first.

Although I incline to the belief that the structure of the growth in the case under consideration is a principal factor in the success which at present attends the treatment, yet the methods of operating on such tumours are also worthy of our close attention. It may be questioned whether I was justified in prolonging the operation and running the risk of damaging important structures by attempting to remove glands which were not obviously diseased, especially in view of the fact that the tumour might fairly have been presumed to be a sarcoma, and therefore probably would not tend to spread along the lymphatics. I could, however, only decide what to do by the naked-eye conditions observed, and the glands near the kidney were certainly enlarged and hard. Moreover the records seem to teach that if a surgeon undertakes to perform this operation he should do it in a most thorough fashion. In spite, therefore, of the fact that no distinct evidence of disease has been found by microscopic examination of the lymphatics which I removed with the tumour, if I should meet with a similar case in the future I would certainly take away as many of the glands as possible.

It was also in view of the intensely malignant character of these growths that I endeavoured to avoid opening the capsule of the tumour, and to remove all vestiges of it which had accidentally been separated. The importance of this point has been strongly urged by Mr. Knowsley Thornton. On the other hand, Mr. Henry Morris and Mr. Bland Sutton advise that in operating on solid tumours of the kidney the surgeon should cut down on the growth, should carefully open the true renal capsule, and should enucleate the tumour from within it. When we have to deal with a growth which is probably malignant, and which is surrounded and sharply defined by a firm fibrous capsule—if we have a choice between, on the one hand, enucleating the growth from within its capsule, and, on the other hand, removing the growth and its capsule without

opening the latter,—there can, in my opinion, be no hesitation as to which of the two methods should be adopted. If, further, we remember that the operation for the removal of the tumours under consideration, when not directly fatal, has an unbroken record of death from recurrence, the evidence seems conclusive that the surgeon, in performing this operation, must not leave any portion of the renal capsule which has been in direct contact with the tumour if he can possibly remove it. To cut as widely of the growth as he can is the only scientifically sound method in view of the pathology of the disease, and therefore the only method by which we are likely to secure an improvement in the results of the operation in the future.

The manner of dealing with the divided end of the ureter is also a matter of great importance in nephrectomy. Some surgeons pay very little attention to this, and tie the ureter separately, or in one mass with the vessels, as is more convenient or easier in the particular case. Others adopt the plan introduced by Mr. Knowsley Thornton, and bring the divided end of this duct outside the incision. When there has been much perirenal inflammation there may be no choice but to tie the ureter and leave it at the bottom of the wound. In many cases, however, and especially in the great bulk of cases of renal neoplasm, the divided end of the ureter can be easily brought outside the skin, either at the anterior incision or through an opening made for the purpose further back, without any undue stretching, and without any risk of causing an obstruction of the bowels. By bringing the open end of the ureter outside, every chance of fouling the wound by the contents of this duct, and very often the necessity for using a drainage-tube, may be avoided. If there be no tube in the wound much less after-disturbance is necessary, a point which is all-important when we have to deal with a child. For these reasons the securing of the cut end of the ureter outside the skin is as desirable from a clinical point of view as the removal of the tumour complete within its capsule is essential from the standpoint of the pathologist.

I have much pleasure in expressing my thanks to Mr. Targett for the sections he has shown to the Society, and to Mr. Bousfield for his beautiful photograph. I also desire to acknowledge the kindness of Sir Spencer Wells and Mr. Knowsley Thornton in advising me in this case, and in thus sharing to some extent the responsibility of the operation.