Original Communications.

ABDOMINAL NEPHRECTOMY FOR HYDRO-NEPHRYSIS, WITH A REPORT OF TWO OPERATIONS.

Prof. of Clinical Surgery, Med. Dept. Western University.

There can be no doubt that the past years have been progressive ones in abdominal surgery; nevertheless, most practitioners who have attempted any operating in this region will have felt, on many occasions, not only lack of precision in diagnosis, but grave difficulties arising during the operative procedures that become necessary in most of these cases. In studying the operative surgery of the kidney, it is interesting to observe that, while 15 or 20 years ago a larger proportion of the operations were performed after an error in diagnosis, during the last few years a correct diagnosis before operation has been the rule, although many exceptions are to be noted. The difficulty in diagnosis, it would appear, is increased in cases of great enlargement of the organ, where the patient, when seen for the first time, presents a tumor filling the whole abdomen. In the two cases of advanced hydro-nephrosis which I am now about to report, the making of a correct diagnosis appears to me to be singularly difficult. This is owing chiefly to the size of the tumor and the great similarity in each to ovarian cyst. In both cases I have to admit an error in diagnosis, and in both I commenced operation on this wrong opinion; whether a second error was committed in treatment I leave to the judgment of the Associa-
tion, as there is diversity of opinion in the profession as to the operation to be preferred in hydro-nephrosis.

Case I.—Mrs. P., aged 31, married six years and the mother of two children; residing in Thamesford, Middlesex County, but a native of England. Parents living and healthy. No family history of ill-health or hereditary disease. Patient below the average in height and weight, and of pale complexion. She gives a history of fair health in childhood, but during the past fifteen years has suffered from pain in the right side, beneath the liver, and before coming to Canada she attended the out-patient department of St. Bartholomew’s Hospital, but got no relief from treatment. About the first week of May, 1889, discovered an enlargement in the abdomen, which steadily increased in size. On the 18th of June, five weeks after this, she was admitted into St. Joseph’s Hospital and presented a letter from her family physician, Dr. McWilliam, who had examined her and made the diagnosis of ovarian cyst. There was dulness in the median line, fluctuation, and resonance in the flanks. The measurement greatest below the umbilicus; distance from umbilicus to iliac spines equal on the two sides. The tumor occupied all the abdomen from the pubes to the sternum, but the patient said she thought it was more to the right side at first; no tumor could be felt in the pelvis. Examination of the heart, lungs and liver negative. Catamenia regular; uterus normal in size and movable; specific gravity of urine 1028, no albumen or sugar. The patient was carefully examined by Drs. Moore, Macarthur and Waugh, and the diagnosis of Dr. McWilliam confirmed. I wrote him saying the disease appeared to be ovarian, but the tumor seemed to me to be a little higher up than other cases I had operated upon. On June 20th chloroform was given, an incision made in the median line, and an enormous cyst of the right kidney discovered, which, fortunately, had no adhesions to surrounding parts. The incision was enlarged upwards, the intestines drawn toward the left side, the peritoneum divided over the tumor, and enucleation commenced. The ureter was tied and cut off. Much difficulty was experienced in securing the vessels and separating the upper end of the tumor from surrounding
parts. At this point in the operation the cyst burst and a considerable quantity of fluid escaped into the abdomen. This had a peculiar urinous odor, but was quite clear. The abdomen was sponged out with warm water, the edges of the peritoneum adjusted over the raw surface, and the wound stitched up in the usual manner with silk; no drainage tube was used, and the sublimate gauze dressing was secured with plaster and a binder of flannel. All went well for the first week, the sutures were removed on the eighth day, and the wound found united; the highest temperature recorded up to this time being 101\(\frac{1}{2}\)°. On the tenth day the temperature reached 103, later 104\(\frac{1}{2}\), with occasional chills and delirium at night, hay odor of the breath, and for almost three weeks her life was in considerable danger. On the twenty-first day, fearing that an abscess had formed, I passed the aspirator needle beneath the 12th rib into the abdomen, but nothing came through; after this recovery was slow, but continuous, and the patient was able to leave the hospital on the 1st of September and attend to her duties.

Case II.—Mrs. T., aged 43, a widow, and the mother of seven children; residence, Goderich. Admitted to St. Joseph’s Hospital July 11th, 1889, and gave the following history:—Always had good health and led an active life; never confined to bed except during her confinements; six months ago the abdomen commenced to enlarge, and this had continued to the time of admission; there never had been any pain, but the tumor now began to cause discomfort from its size. Two physicians in Goderich had made an examination, she informed me, and both had recommended operation. The abdomen showed a large, fluctuating tumor extending from the pubes to the ribs, dull in the median line, resonant in the flanks; measurement greatest below umbilicus. No tumor could be felt in the pelvis. Examination of the heart, lungs and liver negative. Uterus movable and natural in size. Catamenia regular. The tumor was much larger than in the case just related. The patient was well nourished and rather stout in figure. Drs. Woodruff, Waugh and McArthur were called in consultation, and as the last case of mistaken diagnosis was still in the hospital, a very careful
examination was made in order particularly to exclude hydro-
nephrosis. The diagnosis of ovarian cyst was made and an
operation recommended. Urine: specific gravity 1030; no
albumen or sugar. On July 13th chloroform was given and the
usual incision made in the median line. The opening revealed
an enormous cyst of the left kidney, filling the whole abdomen.
The peritoneum over this was incised and the tumor enucleated,
the ureter cut off and tied, and the usual vessels secured with
silk ligature. The operation, as in the last case, was difficult,
and the wall of the cyst gave way, notwithstanding all my care,
and the clear fluid escaped, much of it getting into the abdomi-
cal cavity. Warm water was passed into the abdomen, and the peri-
toneum adjusted over the bud of the tumor. There were no
adhesions, but the bleeding was considerable and difficult to con-
trol. The patient had no bad symptoms, the silkworm gut
sutures were removed on the eighth day, and the wound found
healed. On the tenth day the temperature rose to 103°, pulse
quickened, tongue became coated, and the abdomen swelled.
These symptoms continued, the temperature varying somewhat,
but always being above normal. This was followed by a dis-
charge from the vagina, described by the sister on duty as com-
posed of blood and pus, and very offensive. Injections of car-
obilized water were ordered twice a day, and nothing more was
heard of this symptom. After this improvement took place
slowly, and the patient had completely recovered by Sept. 10th,
when she left the city for her home.

In the early stage, before an abdominal tumor is noticeable,
hydro-nephrosis has to be diagnosed from renal abscess, peri-
nephritic abscess, and extravasation of blood. When of small
size, it may be mistaken for hydatid or serous cyst of the liver
or spleen. Between hydro-nephrotic and pyo-nephrotic tumors
the diagnosis is sometimes impossible. In some cases of the
latter disease, however, pus appears in the urine. The treat-
ment being similar in the last two, an error in diagnosis would
not endanger the life of the patient, and no doubt in many cases
suppuration is set up from accident, so that pyo-nephrosis is
simply an advanced stage of hydro-nephrosis. The greatest
difficulty is experienced in excluding ovarian cyst, and my object
in this paper is to show that this is well-nigh impossible—I mean
in advanced cases where the cyst fills the whole abdominal
cavity, as in the last two operations reported. In the first we
have a history of pain in the side and an enlargement com-
mencing, the patient tells us, in the lower part of the abdomen,
a little to the right side. This enlarges in the short space of
four or five weeks until it fills the abdomen. The measurement
is greater below umbilicus, and the distance from this point to
iliac spines is equal on the two sides; fluctuation, dulness on
percussion in the median line, and resonance in the flanks;
examination by the sound shows a healthy and movable uterus.
In the first case, the smaller of the two, the tumor appeared to
me to be just a little higher than the average ovarian cyst, but
this was accounted for by an elongated pedicle. The absence
of the cyst by vaginal examination is also accounted for in the
same way. The rapidity of its growth, its size, and the absence
of urinary symptoms, together with a healthy condition of the
urine, point to ovarian tumor, and negative, one might almost
say, hydro-nephrosis. I cannot think that the mistake in diag-
nosis is due to carelessness. The first case had been examined
by Dr. McWilliam, who sent her to me, then by three other
physicians of experience and reputation, and all came to the
same conclusion. The plea of carelessness certainly cannot be
argued in the second case. This one came into the hospital
while the first was in bed, and not yet recovered from the oper-
ation. She was examined by two of the consultants called in the
previous case. I mentioned to them to be sure and exclude
hydro-nephrosis this time, and the examination was made with
the probability of cyst in the kidney constantly in view and the
diagnosis of ovarian tumor made. In this case, the history of
an enlargement of six months’ duration, giving rise at first to no
symptoms, and later on only those of pressure; measurements
alike from umbilicus to iliac spines, girth greater below umbilicus,
fluctuation distinct, dullness in the median line, and resonance
in the flanks; uterus movable, normal in size, and healthy; tumor filling the whole abdomen from pubes to ribs, and reach-
ing to the same position on both sides. I find from reading that there are at least fifteen cases on record in which hydro-nephrosis or simple renal cysts have been mistaken for ovarian tumors, and laparotomy performed on the erroneous diagnosis. Out of twelve cases in women collected by Morris, no less than seven were diagnosed as ovarian, and three of the seven submitted to abdominal section on the strength of this wrong opinion. From a study of the literature of this subject, and my experience of these two cases, I arrive at the conclusion that a diagnosis between advanced hydro-nephrosis and ovarian cyst is, to the average practitioner, an impossibility. If I am correct in taking this view, it has an important bearing on the subject of treatment, for the question the surgeon has to answer is not what is the best treatment for hydro-nephrosis, but, the abdomen having been opened on the supposition that an ovarian tumor exists and a cyst of the kidney discovered, what are we to do next? Shall we close the abdomen and call it an exploratory incision, or can we not stitch up the wound after opening the cyst and drain from the loin? Can we perform nephrectomy by enucleating the tumor? I must confess that I am not partial to exploratory incisions for diagnostic purposes in private practice. My patients call them operations; the friends imagine a mistake has been made, and say "they do not want to be cut open to satisfy the curiosity of the doctor." I am of opinion, therefore, that something should be done to get rid of the disease. If the distension increases, death will result from the effects of pressure on neighboring organs, from rupture into the peritoneum or suppression of urine or uræmia. I might here revert to the means of different operators in the treatment of hydro-nephrosis in general.

"Puncture," writes Knowsley Thornton, "may also be tried as a means of treatment, though I believe there is no good evidence that cures are often effected by it. It should be performed by the aspirator, the needle being introduced far back in the loin to avoid risk of puncturing the colon, the peritoneum, or allowing extravasation of urine into the cavity of the latter. If relief follows, it may be repeated from time to time; but if
the fluid reaccumulates, some more radical operation must be undertaken. I have completely failed in two cases with incision and drainage, and I believe that nephrectomy is the proper treatment in all cases which do not improve after one or twoappings.” Mr. Morris writes thus of drainage: “This practice has been very successful, and ought certainly to be adopted when aspiration fails and before nephrectomy is dreamt of. In a few cases a complete cure will be effected and the wound will quite close; in the majority, however, a fistula must be expected, and gives very little inconvenience to a person of ordinary intelligence and patience.”

Barker writes “that free drainage for hydro-nephrosis is not much more successful than aspiration, and not devoid of risk. Of course a larger sac will be in a better position to contract if freely and continuously drained than if occasionally emptied, but the time consumed in the process of drainage, the necessity often lasting for months, for constantly changing the wet dressings; again, there is always the risk of suppuration in the sac, with subsequent septic infection.” Mr. Barker, therefore, favors early nephrectomy. Jacobson recommends that in healthy patients nephrectomy should be had resource to after two months trial of drainage, providing the other kidney be healthy.

Spencer Wells, in his work on abdominal tumors, records the case of a woman, aged 43, who was operated upon at the Samaritan Hospital for supposed ovarian tumor and an enormous renal cyst found. This was tapped, but no attempt at removal was made. The wound was closed and the patient died thirty hours after the operation.

The authors quoted are evidently discussing the treatment of hydro-nephrosis in the early stages, when a diagnosis is possible, when we are able to say not only that a cyst of the kidney exists, but likewise the side of the body it is on. In the class of cases under consideration we approach the subject from a very different standpoint. We are expecting to find an ovarian tumor, and an incision has been made in the median line at least four inches long, preparation has been made for an operation, and the patient has gone under chloroform, with the understanding, no doubt, that she will soon be rid of her disease.
Under these circumstances two operations might suggest themselves to the operator,—"nephrectomy" by somewhat enlarging the incision and at the same time an examination of the other kidney to ensure its soundness, or "drainage" by incision in the loin. It might be well for the operator to consider the age and general constitution of the patient in weighing the merits of the operations and deciding which to perform. The immediate danger of nephrectomy is much greater than after ovariotomy, and is certainly much more to be dreaded than tapping from the loin and stitching up the abdominal wound. In one case, however, the disease is removed, the patient rid of the useless organ, and recovery complete. In the other, a cyst is being drained which is larger than the patient's head, with little prospect of a complete cure; at least there remains a fistulous opening, the patient requires to wear a urinal, there is always the fear of suppuration being set up and septic infection following, and the danger of lardaceous disease from the former is not to be lost sight of. In either case we must constantly bear in mind the fact that the patient has only one kidney, which renders any operation more dangerous to life.

On looking up the literature of hydro-nephrosis, I find that about one-third of the cases are congenital. The affection is due to obstruction somewhere between the kidney and meatus urinarius. It is most commonly situated in the ureter. Among the cases mentioned are twists or contractions of the ureter, impacted calculus, stricture of the urethra, enlarged prostate, tumors of the ovary, bladder or uterus. Of 32 cases recorded by Roberts, the cause was found to be impacted calculus in the ureter in 11. From the records of post-mortems in the Middlesex Hospital, it appears that in every eighteenth case there was sufficient hydro-nephrosis in one or both kidneys to be mentioned in the report. Although the disease is quite common, the proportion of cases in which the enlargement of the organ is sufficient to form an abdominal tumor is very small. The fluid is usually clear and almost odorless, but there are many exceptions to this rule. The disease is twice as frequent in females as males, occurs at any period of life, and affects each kidney
about equally, but may occur in both. The quantity of fluid is sometimes enormous. One case is reported where the woman measured six feet four inches around the abdomen, and the cyst contained thirty gallons. The enlargement may lessen in size or intermit from escape of fluid into the bladder. Morris says: "Up to the present time there have been 27 nephrectomies for hydro-nephrosis, of which 16 were abdominal and 10 lumbar. Of the 16 abdominal cases 7 recovered, and of the lumbar the same number. In one the character of the operation is not stated. Four of the fatal cases were diagnosed ovarian, and three of the successful abdominal cases were also diagnosed ovarian or broad ligament cysts." It would appear, therefore, from reading this author, that up to the present time abdominal nephrectomy has been more fatal than lumbar. We must recollect, however, that most of the abdominal cases were ones of mistaken diagnosis; in fact, cases supposed to be ovarian, and therefore advanced cases at a time when any operation, abdominal or lumbar, would have been hazardous. I am firmly of opinion, however, that in these cases where a large tumor fills the whole abdomen, the lumbar operation cannot be entertained, as it is difficult or impossible to say which kidney is the diseased one and the cyst too large for this plan of operation. In closing this very imperfect survey of the subject of hydro-nephrosis, I would beg leave to submit the following conclusions:—

1. That in a large proportion of cases of advanced hydro-nephrosis, where the tumor fills the abdomen, it is impossible for the average operator to say whether there exists a cyst of the kidney or an ovarian tumor.

2. That supposing hydro-nephrosis is suspected, it is not possible to say which kidney is the diseased one.

3. The last two propositions being admitted, it follows that, in all those advanced cases, incision in the loin and drainage cannot be advocated, as the surgeon is unable to say which side ought to be incised.

4. In view of these difficulties in diagnosis, it would seem preferable to make an incision in the linea alba and complete the diagnosis with the hand. If the case be a cyst of the kidney,
carry the incision upwards and complete the operation by enu-
cleating the tumor.

(5) This operation is suitable alike for hydro- or pyo-nephrosis, 
the danger, of course, being greater in the former.

(6) That abdominal nephrectomy by the median incision is a 
difficult operation, owing to the high position of the tumor and 
the close relations of the aorta and vena cava, the large size of 
the renal vessels, and the fact that the tumor is behind both 
layers of the peritoneum.

(7) If a correct diagnosis could be made, I am of opinion that 
abdominal nephrectomy by incision along the linea semilunaris 
is the best operation for the class of cases under consideration; 
but I do not think it possible to remove such large cysts by in-
cision in the loin.

(8) In the case of a weak patient, or one advanced in years, 
supposing the abdomen to have been opened, it might be the 
safer procedure to open the cyst and drain from the loin. This 
operation is safer than nephrectomy, but it usually leaves a per-
manent fistula.

(9) In view of the symptoms observed in the two cases re-
ported, I think it would be advisable, in completing the operation 
of abdominal nephrectomy, to secure drainage by making an 
opening in the loin.