THE COMPLETE REMOVAL OF HYDATID CYSTS OF THE LIVER, ALONG WITH THE CYST WALL, BY ABDOMINAL SECTION.¹

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WHAT are the results of the treatment of hydatids of the liver by tapping? is a question which must be answered by anyone who proposes to substitute for it the more severe operation of abdominal section. There are, it is true, other methods that have been proposed—for example, electricity, which was employed by the late Dr. Hilton Fagge—but such plans have not obtained any general acceptance on account of their uncertainty and their lack of success in other hands than those of their introducers. They need not, therefore, detain us. The treatment of hydatid tumours at the present day lies between puncture with an aspirator or trocar and drainage or removal by incision. It may be conceded at once that puncture does effect a cure in a certain number of cases. What the exact percentage may be is very difficult to arrive at; for, to ascertain it with accuracy, we must have the patient's history before us for some ten years after the fluid has been drawn off. Mr. Jonathan Hutchinson² has made this point abundantly clear by relating the subsequent history of a case which he had reported as a cure some years previously. The patient in question had been tapped by him some twelve years before, a pint of fluid being drawn off. He went into the country, and, in response to inquiries from time to time, stated he was perfectly well; but eleven years later he came back with a swollen abdomen and all the signs of liver hydatids. Mr. Hutchinson opened his abdomen and removed a number of daughter cysts from the liver, after which he made a good recovery. Such a case, unless it was due to reinfection, clearly demonstrates that apparent cures are not necessarily real ones, and should lead us to be more cautious before recording actual cures. But this is not the only disadvantage of puncture; though apparently a simple method, it is by no means free from danger.

Numerous cases are recorded in which puncture has been attended by fatal consequences, and in some instances a *post-mortem* examination has afforded no adequate explanation for such an untoward occurrence—no injury to vital organs, no hæmorrhage, or other sufficient cause, obliging one to fall back on shock as a cause of death. In other instances, where death has supervened on puncture, it has been due to the cyst extending into the lung and rupturing into a bronchus, thus flooding the opposite lung, and causing death by suffocation.

Added to these dangers, there is always the chance, especially if the cyst is intra-abdominal, of an escape taking place into the general peritoneal cavity, not only of the fluid, but of some of the daughter cysts, thus giving rise to a more diffuse dissemination of the hydatids, into situations from which it is almost impossible to remove them with success, even if it is possible to ascertain their existence. It would be interesting to know if Mr. Bond's case alluded to later on had been previously punctured. The history of the following cases will indicate some of the advantages of early and complete removal by abdominal section.

CASE I. Hydatid of Liver: Two Operations at Interval of Fifteen Months: Recovery.—J. W., aged 13. July 27th, 1888.

History.—Small swelling over region of liver. First noticed six or eight months ago, and has gradually increased ever since. It has caused no trouble or inconvenience. Has had no attack of sickness or intestinal trouble.

Present Condition.—The tumour is large and globular, and occupies the greater part of the epigastric region. It is tense and elastic, dull to percussion. The dullness area is continuous with that of the liver: its lower border is well defined; it is quite immovable. Diagnosis hydatid. August 2nd. Abdomen opened in centre of swelling, and the liver exposed, from the middle of which the tumour in question was seen to be bulging. The swelling was punctured with a small trocar, and some clear fluid evacuated, after which the cyst wall was freely incised, and the contents, consisting chiefly of fluid accompanied by a few daughter cysts, were removed. The cyst wall readily peeled off from the surrounding parts, and was removed. The cavity was washed out with hot

water, and the edges stitched to the abdominal wound. Drainage. No trace of other cysts could be seen or felt. September 7th. Patient made an excellent recovery. Left hospital with small sinus. Seen a few weeks later perfectly well, and able to do his ordinary work as an errand boy.

Readmitted October 2nd, 1889. During the last six months had noticed his abdomen again swelling. No pain or tenderness. Present swelling situated more to the right than the last. It occupies a good deal of the left hypochondrium as well as the epigastric region, and appears to be larger than the previous swelling. It moves on inspiration and distinctly fluctuates. October 12th. Incision made at outer border of right rectus abdominis, and cyst punctured as in the previous operation. Clear fluid withdrawn. There was about half an inch of liver substance over the cyst. The liver was freely incised, and the cyst, together with its wall, was removed as in the previous operation. The liver at the site of the previous operation wound was firmly adherent to the abdominal wall. The present cyst seemed to be quite independent of the last one. The liver edges were stitched to the edges of the abdominal wound as in the previous case, and the patient made an uninterrupted good recovery, leaving the hospital on December 13th. The cyst contained about $\frac{3}{4}$ pints of fluid, and was well surrounded by liver tissue, hence the somewhat lengthened period before he left the hospital. Seen in May, 1892, perfectly well.

CASE II. Hydatid of Liver: Abdominal Section: Recovery.—W. T., aged 37, came under my care at the West London Hospital in May, 1889.

History.—Had noticed a swelling in the region of the liver for some few months. She was under the impression it had increased in size since that time, and once or twice she had had some considerable pain in it.

Present Condition.—A healthy looking woman, married, has a swelling in the region of the liver, extending from the seventh costal cartilage on the right side above to the umbilicus below, and laterally occupying about half of the epigastric and right hypochondriac regions. It is tense, firm, dull, and elastic, but there is no fluctuation to be made out in the swelling. May 4th. An incision made over the centre of the tumour. As soon as the peritoneal cavity was opened, a cyst, whitish in the centre, could be seen on the surface of the liver. It was punctured with a large trocar, and about $\frac{1}{2}$ pints of fluid were evacuated. The puncture was then enlarged, and the cyst found to contain a considerable number of smaller cysts, which were extracted, and the cyst wall itself peeled off with great ease, and removed. Some considerable difficulty was experienced in attaching the edges of the cavity to the abdominal wall, partly owing to the large size of the opening, for a good deal of the front of the cavity had been made up of cyst wall only, and partly because even beyond this the liver substance was so thinned out as to make it difficult to get the stitches to hold. Eventually, however, it was safely moored, and a drain inserted. For the first few days after the operation some pain was experienced round the edges of the wound, probably owing to the occurrence of a little localised peritonitis, but this did not materially retard the healing process, and a good recovery ensued, the patient leaving the hospital within a month with the deep part of the wound completely healed, and only a tiny superficial ulcer remained. She was seen two years afterwards in perfect health. A careful examination at the time of the operation failed to detect any second cyst in the liver or in any of the adjoining viscera.

CASE III. Hydatid of Liver: Abdominal Section: Recovery.—E. L., aged 27, was sent to me by Mr. Stacey, of Grimston, in June, 1891, suffering from abdominal tumour in region of liver.

History.—About six months ago had a slight attack of pain in the region of the right kidney, which soon passed off. This was followed a few months later by a second attack, which was far more acute, and laid him up for a day or two. A swelling in the abdomen was detected at this time by a medical man who attended him. With the above exceptions he has always had good health.

Present Condition.—In the right hypochondriac region there is situated an oval swelling, with its long axis almost vertical. It extends from the anterior axillary almost to the middle line, and from the margins of the ribs above to the umbilicus below. It descends with inspiration, and ascends on expiration. Surface smooth. The tumour is dull to percussion and fixed *in situ*, except so far as it is influenced by respiration. The margin of the liver can be distinctly felt below it. There is no ascites. Urine: specific gravity 1029, acid, no sugar, a cloud of albumen, average amount passed in first two days after admission 17 ounces.

June 13th, 1891. Under chloroform an incision was made about 4 inches in length over the long axis of the tumour, and after all the bleeding points had been secured the peritoneum was opened and a flat sponge was at once placed in the peritoneal cavity. On introducing the finger a cyst was found on the under surface of the liver, and distending its right lobe in a downward direction. Some omentum was adherent to it. There was no trace of any other cyst. The cyst was first drawn gently up to the edges of the wound and tapped with a large trocar. About a pint and a half of clear opalescent fluid was withdrawn. Two stout pieces of silk were then threaded through the cyst wall, and the cyst was pulled by means of them till it protruded from the wound, after which an incision was made into it. A large number of daughter cysts were removed by the forceps and by washing with warm water. After this had been effected, the cyst wall collapsed and separated itself from the ectocyst. It was removed with forceps. The cyst opening was stitched to the edges of the abdominal wound, which was dressed with iodoform and sal alembroth, and a drainage tube inserted.

The subsequent progress of the case was all that could be desired, and on July 17th he returned home with the wound all healed with the exception of a tiny sinus into which a probe passed about half an inch. In two months was going about as usual, and has remained well up to the present time.

CASE IV. Hydatid of Kidney: Abdominal Section: Recovery.—W. D., aged 32, came into St. Bartholomew's Hospital suffering from an abdominal tumour.

History.—Three and a-half years ago first noticed a dull aching pain in his left side, and soon afterwards noticed a swelling in his side which has been increasing. Nine weeks before admission his left leg began to swell. Nine months previously had been in St. Mary's Hospital, where his tumour was aspirated, and a small amount of fluid drawn off.

Present Condition.—Poorly nourished, sallow. Thoracic viscera healthy. A large tumour occupies the left hypochondriac and lumbar region, and also part of the epigastric and umbilical regions. Surface smooth. The

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tumour extends $\frac{1}{2}$ inch below the level of the umbilicus, and 1 inch across the middle line. It can be distinctly felt in the flank, and can be easily moved when one hand is placed on the front of the abdomen and the other in the flank. Urine: acid, specific gravity 1018, contains a considerable amount of albumen.

June 27th, 1891. An incision was made over the centre of the tumour, as in the case last described, and a similar mode of procedure carried out. The only difficulty which was in this case experienced was due to the firm adhesion of portions of the cyst to the ectocyst wall, necessitating the leaving of some portions of the cyst wall behind in places. The patient was very ill for several days after the operation, but eventually made a good recovery, and left the hospital on August 21st.

It has seemed to me to be worth placing on record these cases, inasmuch as the plan which was adopted for their removal has but rarely been followed. A somewhat similar plan was pursued by Mr. Bond in a case which was described by him in No. 1580 of the BRITISH MEDICAL JOURNAL, but in this case the hydatid tumours were multiple, and were all situated outside the liver, thus enabling him to close the cyst cavity at once and omit the drain. In the case of the liver this plan might possibly be attended with considerable risk, as the walls of the cavity would not so easily fall together; and, judging from the amount of fluid that drains away during the first few days, might easily give rise to trouble from the presence of pent-up fluid. In my own cases those healed most rapidly in which the cyst was close to the surface of the liver, and was thus able to be readily compressed by the positive intra-abdominal pressure.

The last of the cases recorded above was a hydatid of the kidney. It is here included with a view to show how much such conditions are complicated when adhesions have taken place between the cyst wall and the surrounding tissues. When once the pieces of adherent cyst had come away, the patient began rapidly to mend. If such cysts are to be removed, they should be taken in hand early, before any adhesions have been set up. With due care on the part of the surgeon, it seems likely that this plan of treatment will prove more successful than any other.

ON THE SKIN ERUPTIONS WHICH OCCUR IN SEPTICÆMIA FOLLOWING SCARLET FEVER AND DIPHThERIA.

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In 2.1 per cent. of nearly 6,000 cases of scarlet fever and diphtheria treated under my care in the City Hospital, Birmingham, and in 4.8 per cent. of the patients that were under 5 years of age, a condition supervened which was accompanied by a characteristic skin eruption, increase of temperature, wasting of the tissues, and loss of power; and which, on account of the high mortality that followed, may well be considered one of the most important complications that can become superadded to these diseases.

The exciting cause appeared to be the absorption into the system of a toxic agent or poison which was engendered by tissue necrosis taking place in septic surroundings, and though in the cases at present under consideration, it followed the process of ulceration in the throat, mouth, and nasal cavity in scarlet fever and diphtheria, it may also be brought about by many other conditions, such as sloughing and suppurating burns, or other wounds, in the puerperal state, in the third week of enteric fever, or, broadly speaking, by purulent infection from any cause.

The following table gives some particulars as to the numbers, ages, and mortality in the cases under notice.

AGE.

As will be seen, the age of the patient exerted the most powerful predisposing cause in determining the disease; nearly 60 per cent of the cases were under 3 years old. The reason of this is very obvious when we remember how difficult, if not impossible, it is to keep the throat lesions in patients of such tender years in anything like an aseptic condition, and how prone they are to swallow the discharge from the ulcerated surfaces.

PERIOD AND MODE OF ONSET.

The attack came on usually during the second week of the scarlet fever illness; in 80 per cent. of the total cases it was

Age.	Total Number of Cases Treated in the Hospital.	Number of Cases of Septic Rash that Occurred.	Number of Fatal Cases.	Percentage Occurrence on the Total Number Treated in the Hospital.	Percentage Mortality of the Cases Attacked.
Under 1 Year ...	64	12	11	19.0	91.6
" 2 " ...	391	41	35	10.4	85.3
" 3 " ...	587	33	27	5.6	81.8
" 4 " ...	577	15	14	2.6	93.3
" 5 " ...	671	9	3	1.3	33.3
Total under 5 Years ...	2,290	110	90	4.8	81.8
5 Years and upwards ...	3,622	18	12	0.5	66.6
Total ...	5,921	128	102	2.1	79.6

noticed from the seventh to the fifteenth day, but it may appear as early as the fifth day or as late as the thirtieth. The invasion was gradual rather than sudden, and in many cases was even insidious in its onset. As a rule, however, in acute cases from twelve to twenty-four hours before the eruption came out there was an increase of temperature with restlessness, sleeplessness, and an exacerbation of the throat lesions.

CHARACTER OF ERUPTION.

The eruption appeared as red or dark pink coloured spots or blotches, with well defined margins in the skin over prominent bony points such as the ankles, finger-joints, elbows, outer sides of the feet, and the extensor surfaces of the toes; occasionally a crop of small red papules on the arms and legs preceded the blotches. The spots or blotches, when first seen, varied in size in different cases from about that of a six-penny piece to large irregular-shaped patches; they disappeared on pressure, and quickly reappeared when the pressure was removed. In about 80 per cent. of the cases the eruption appeared in the order given above, but sometimes it was first seen on the face, in which situation the most usual distribution was the upper eyelids and malar eminences. I might remark here that I have found this distribution of the rash so uniform in its early stages, and so characteristic of the disease, that in cases where I suspect its occurrence I look most carefully in these situations for its existence. In many cases, after the appearance of the rash, what seemed a halt in the progress of the disease took place; no manifest change occurred for some days, or the spots faded and again appeared, and in some slight cases the disappearance was permanent; in severe cases, however, this check, as a rule, was not seen; the rash extended rapidly over the limbs, in some instances as large irregular-shaped maculæ, red or pinkish in colour, and slightly raised above the level of the skin; in others in the form of diffuse patches of various shapes and sizes. It usually invaded the trunk on the second or third day from its first appearance, in which situation the macular or blotched form was replaced by a diffuse erythema. About this period of the eruption—second or third day—it also became diffuse on the limbs by the rapid increase in size and confluence of the spots. In a less numerous class of cases the eruption remained macular for a longer period, but if the attack were severe and the patient survived long enough the tendency always was for the rash to become general.

The time which the eruption took in reaching its maximum point of development is thus seen to have varied considerably in different cases, and when this point was attained a decline or fading took place which was followed by a profuse desquamation of the cuticle. This subsidence, scarcely ever permanent, was quickly followed by a recrudescence; the temperature, which usually declined with the fading of the rash, again went up, and in from twelve to twenty-four hours a second eruption came out which more rapidly than the former spread over the body; there was also an aggravation of all the local and general symptoms, and the cycle was completed by another desquamation of the cuticle. In this way I have been able to raise three distinct parchment-like layers of epidermis on the hypothenar eminence of a child's hand, which could be turned over like the leaves of a book: (1)