

A calcified and cured aneurysm of the right renal artery in a boy / by H.L. Barnard.

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A CALCIFIED AND CURED ANEURYSM OF
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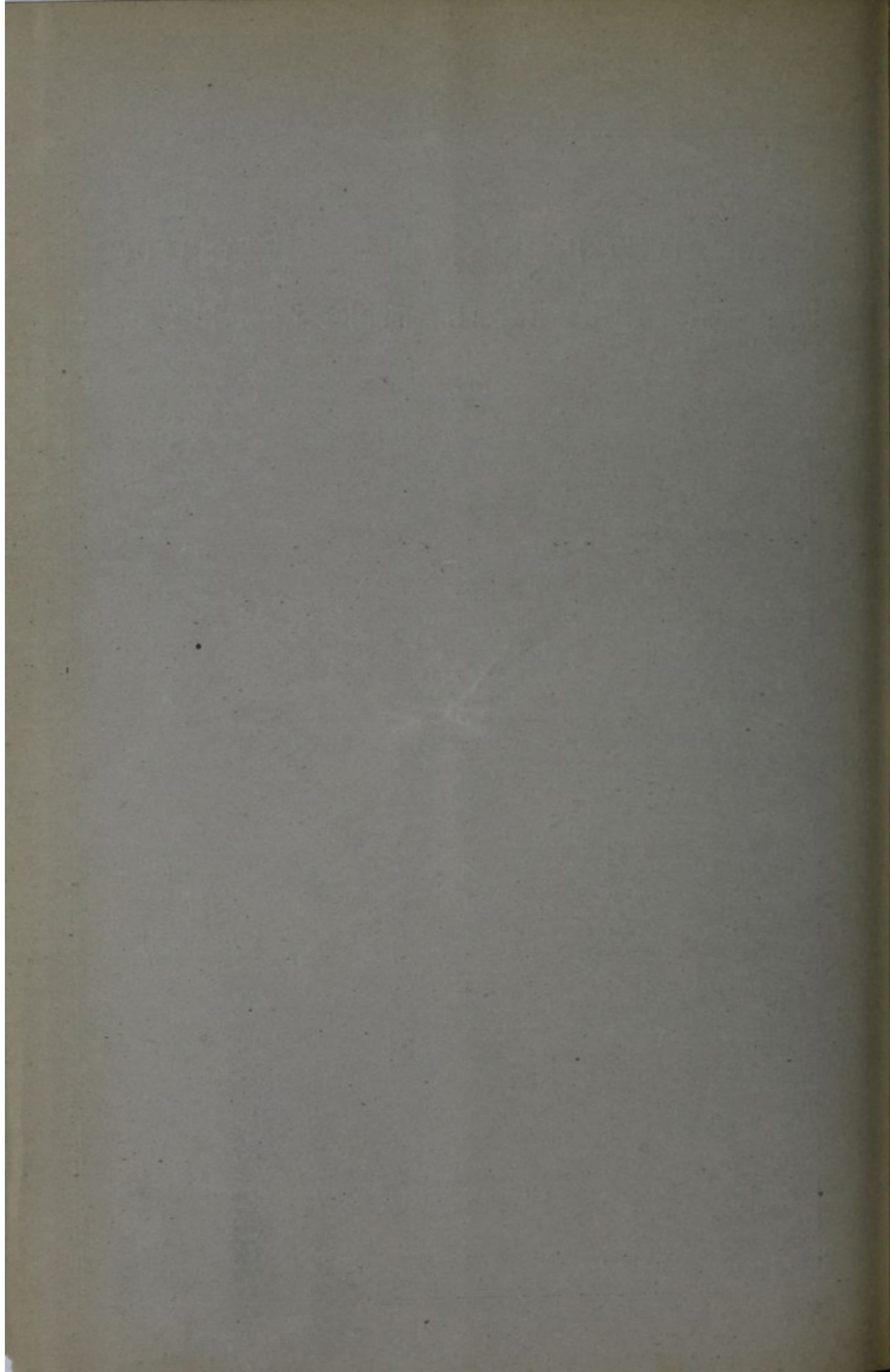
BY
H. L. BARNARD.



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*A calcified and cured aneurysm of the right renal artery
in a boy.*

By H. L. BARNARD.

Clinical history.—A little boy, *æt.* 9, was admitted to the London Hospital on Saturday afternoon, May 11th, 1901. His father was going home from work, and the little lad was riding one of two horses bareback when they ran away, and he fell heavily to the ground on his back and right side.

He was blanched and in a state of collapse when admitted to the hospital. He complained of great pain on the right side, but there was no sign of broken ribs.

On the following day it was clear that there was much blood in the peritoneum, and as distension was rapidly increasing he was operated on. About a pint and a half of black fluid blood was removed from the peritoneum by sponging, and a rent in the right lobe of the liver was found and packed.

On the following day he was very restless, and vomited about a pint of altered blood, which at the time was regarded as post-operative hæmatemesis.

Soon after this he died somewhat suddenly.

Post-mortem.—The peritoneum was found free of blood except about an ounce in the pelvic pouch, and a little more in either loin.

The intestines were pale and distended with gas.

The stomach and duodenum were removed and opened. The former contained a little blood and bile, but no sign of the point from which the hæmorrhage had occurred.

In the second part of the duodenum three or four punctate hæmorrhages were found, limited to a small area.

The liver was examined next. On the upper and right surface a lacerated area was found roughly circular in form, and about three inches in diameter. In the centre of this area was a ragged cavity leading into the liver substance half an inch. There was a large quantity of blood-clot between the right lobe of the liver and diaphragm.

When the liver was removed from the body and its under

surface examined a stellate fracture was found radiating from the inner part of the renal impression. The largest fissure ran from this point round the right margin of the liver into the ragged cavity on its upper surface.

An antero-posterior vertical section was then made through the point on the under surface from which the fissures radiated, and it was found that the pulping of the liver was wedge-shaped on section with the apex of the wedge at the point on the renal impression. The whole of the injury was placed to the right of the gall-bladder fissure.

The right kidney was removed, and a hard mass the size of a hazel-nut could plainly be felt in its hilum. This was supposed to be a calculus in the pelvis. The kidney was smaller than the left one.

The only other point of interest about the *post-mortem* was the existence of mitral stenosis. The mitral orifice would only admit the index finger. There was no recent mischief.

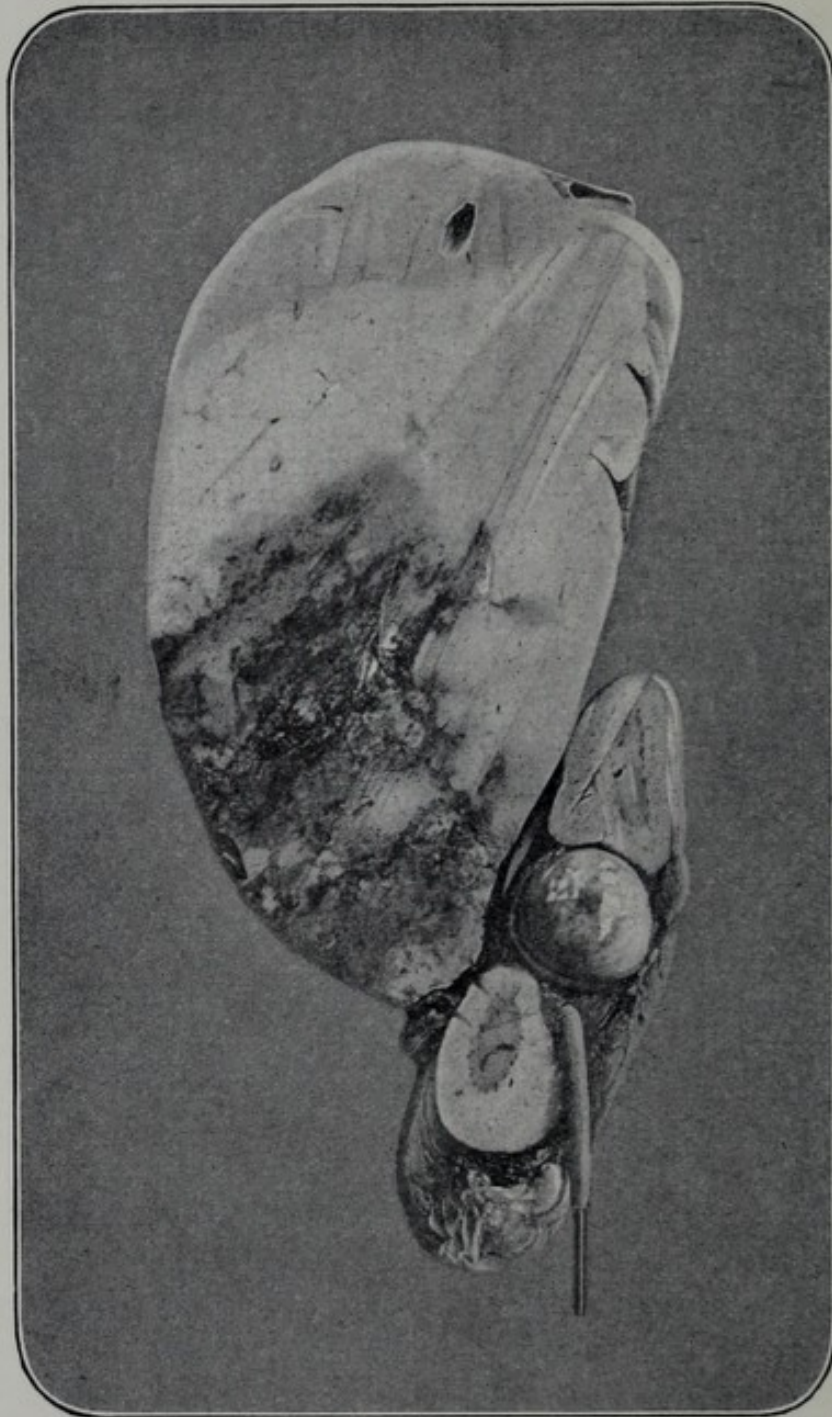
The kidney and liver were at once placed in 4 per cent. formalin, and subsequently the kidney was carefully dissected.

When a vertical antero-posterior section was made through the kidney, so as to strip the inner half off the supposed calculus, it became clear that the former diagnosis as to the nature of the mass was erroneous. The little sphere was with great difficulty enucleated from a fibrous capsule, to which it was firmly adherent.

The hard sphere was first examined. It was much like a nut, light but of cartilaginous hardness, and formed, as decalcified sections showed, of a shell of the densest connective tissue in which calcium salts had been deposited. A small orifice led into its interior, and a pipette introduced into this withdrew pure blood, and this was confirmed by microscopic examination. A section was then made through the little tumour, and revealed inside the hard shell layers of lamellated and partially decolourised blood-clot. The centre was occupied by a *post-mortem* coagulum the size of a pea, communicating with the orifice in the shell.

The hilum of the kidney was carefully cleared of all fat, so as to demonstrate the ureter and pelvis, renal artery and vein, and the sac from which the calcareous tumour described above had been enucleated.

FIG. 17.



An antero-posterior vertical section of the right lobe of the liver and kidney; the latter has been fitted into the renal impression. The inner half of the sac of the aneurysm has been removed to show its calcified contents *in situ*. A glass rod marks the ureter. It will be noticed that the pulping of the hepatic tissue is wedge-shaped, and that the apex of the wedge corresponds with the calcified aneurysm.

The ureter and pelvis were normal and undilated.

The renal vein was adherent to the wall of the sac, but it was apparently quite healthy.

The renal artery divided into two branches, and of these the upper was found to pass into the sac and immediately leave it again.

These orifices of entrance and exit were close together, and corresponded to the hole in the calcified contents already described. A probe passed into the aperture of exit from the sac appeared in a vessel, and sections of this vessel showed it to be an artery.

The above evidence leaves no doubt that this was a renal aneurysm, the contents of which had partially calcified, and had thus brought about a cure.

The kidney itself had escaped injury, but between the true and fatty capsule of the right kidney on its posterior surface was a considerable hæmatoma, and this extended around the posterior surface of the aneurysm.

The right kidney was then carefully fitted into its impression on the under surface of the liver, and the hard aneurysm was found to correspond to the point from which the fissures radiated and to the apex of the wedge-shaped pulping.

Microscopic sections of the liver and kidney were made. The cells of the liver contained a slight excess of fat, but not enough to render the organ friable or form an important factor in the rupture.

The vessels of the kidney were engorged with blood, and there was a slight excess of fibrous tissue.

This case contains two points of the greatest interest. The first is scarcely open to doubt. It is that a small calcified and cured aneurysm existed in this boy of nine, and was probably a consequence of his mitral stenosis leading to embolism.

The literature of renal aneurysm is meagre.

W. W. Keen, of Philadelphia, read a paper before the American Surgical Association in Washington, and published it in the 'Philadelphia Medical Journal,' May 5th, 1900. His remarks were based upon his own case, for which he successfully performed nephrectomy, and twelve others which he collected from the literature.

Henry Morris contributed a very complete paper to the

'Lancet,' October 6th, 1900, and brought the recorded cases up to twenty-two.

A case reported by Oestreich ('Berliner klinische Wochenschrift,' 1891, Band xxviii, p. 1042) is in some respects like the one recorded above. The aneurysm was of the right renal artery, and was the size of an apple. It was found at the *post-mortem* on a young man who died of malignant endocarditis and multiple embolisms therefrom.

Some years ago I had the opportunity of examining a little girl who was dying of malignant endocarditis, and who suddenly developed a large diffuse swelling in the left loin behind the colon. This was shown at the *post-mortem* examination to be a large collection of blood which had escaped from a ruptured aneurysm of the renal artery.

In the museum of St. Bartholomew's Hospital (Catalogue 1882, vol. i, No. 1536) is a specimen described as a small renal aneurysm, the wall of the sac and the adjacent part of the artery being thick and calcareous. I have seen this specimen. It is an irregular bulging of the wall of an atheromatous artery, and shows no signs of spontaneous cure.

The second point of interest is even more extraordinary, for the facts appear to show that had the hard aneurysm not existed in the right kidney the fall would not have led to rupture of the liver or bruising of the duodenum, and the boy would not have lost his life.

The lesions found at the *post-mortem*, viz. the pulping of the liver, the punctate hæmorrhages in the duodenum, the calcified renal aneurysm, and the retro-renal hæmatoma, are in one and the same straight line, and we can scarcely doubt that they were due to the same violence. The aneurysm is an indispensable link in this chain, and must have either conducted the violence from the loin to the duodenum and liver, or *vice versa*.

The force can hardly have been communicated from before back along this track of violence. The history is against such an idea, for the lad said he fell on his back and right side; moreover, had he fallen face downward he would have saved a blow upon his right hypochondrium by alighting upon his hands and knees. Such an application of force could not produce a converging pulping of the liver or conduct the

violence so as to bruise the duodenum behind it, much less could it produce a hæmatoma on the far side of the kidney without bruising that organ.

The only tenable theory to account for these complicated injuries appears to be that the boy fell on his right loin, and produced the retro-renal hæmatoma by direct violence.

The blow was not severe enough to bruise the kidney, as so often occurs, and the soft kidney substance diffused the force and did not communicate it further.

In the case of the hard resistant aneurysm the facts were very different. This was driven forward to meet the liver, moving back with all the momentum of the fall, and the second part of the duodenum lying over the hilum of the kidney was caught and crushed between them. The duodenum was bruised over a small area, as described, and the liver was starred by fissures radiating from the point at which the aneurysm was driven into it. The violence spread as it travelled through the substance of the liver, and produced the cone of pulping already mentioned, the base of which appeared upon the surface of the liver, and allowed the free escape of blood into the peritoneum. Perhaps the strangest fact of all in this strange case is that the aneurysm and renal artery escaped uninjured.

I wish to express my thanks to Dr. Bulloch for help in the diagnosis of the aneurysm, and to Dr. Hunter for the preparation of the various sections mentioned in the above account.

July 6th, 1901.

