Cystic tumour of the suprarenal body successfully removed by operation : with notes on cases previously published / by Alban H.G. Doran.

Cystic Tumour of the Suprarenal Body Successfully Removed by Operation

With Notes on Cases previously published

BY

ALBAN H. G. DORAN, F.R.C.S.

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not mind me troubling you about the matter in the way I have done.

Yours very truly,

Ernest Glynn

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26/1x/08.

Dear Mr. Doran

Very many Thanks for your kind letter in reply and to the case of Retroperitoneal Haematocele. It rained to me after reading your paper that my case was very possibly Supra renal in origin. The patient has I am glad to say been perfectly well since the Operation.

I shall certainly not fail
to come & see the Samaritan
again when the Fates ~~do~~
decree for me a trip home
At present this Country is
so poverty stricken, that
professional work is mainly
philanthropic, & holidays
at home have to be
postponed sine die.

Yours very truly

H. Temple Russell

Cystic Tumour of the Suprarenal Body successfully removed by Operation, with Notes on Cases previously published.

By Alban H. G. Doran, F.R.C.S.

Introductory Remarks.

Many observations have recently been published about the pathology, diagnosis and treatment of tumours of the suprarenal body, and of new growths developing in other organs from "rests," as they are termed, of adrenal tissue. An instance of the latter type of tumour was reported by myself last year.[1] In the autumn of 1906 I removed a kidney subject to "hypernephroma," the patient surviving the operation for three months; but there were secondary adrenal deposits, one appearing as a vaginal polypus. Eleven months later I removed a tumour situated in the left lumbar region. It proved to be a cyst of the suprarenal body itself, unilocular and full of a bloody fluid. Henschen would rank it as a *struma suprarenalis cystica hæmorrhagica*. I will now relate my case, and afterwards make some mention of previously reported instances of cystic tumour of the suprarenal body large enough to be of clinical and surgical interest.

The Case.

C. L., aged 62, was admitted into my wards in the Samaritan Free Hospital on October 1, 1907, on account of an abdominal swelling and pain. She had been married for thirty years and had borne nine children, the last confinement occurring eighteen years before admission. There had been no abortions. All the patient's labours were normal except the last, when the forceps was applied. She had never suffered from any puerperal complications, but enteroptosis developed during the later pregnancies. In 1897 she was laid up with influenza, which left her very weak and liable to bronchitis; at the same time she suffered from frequent attacks of pain after food and vomiting. The influenza troubled

[1] "Malignant Vaginal Polypus secondary to an Adrenal Tumour of the Kidney," *Journ. Obstet. and Gynæc. Brit. Empire*, June, 1907, p. 449; and *Trans. Obstet. Soc. Lond.*, xlix., p. 182.

her again several times; on the last occasion, which was in 1904, she became deaf in the left ear.

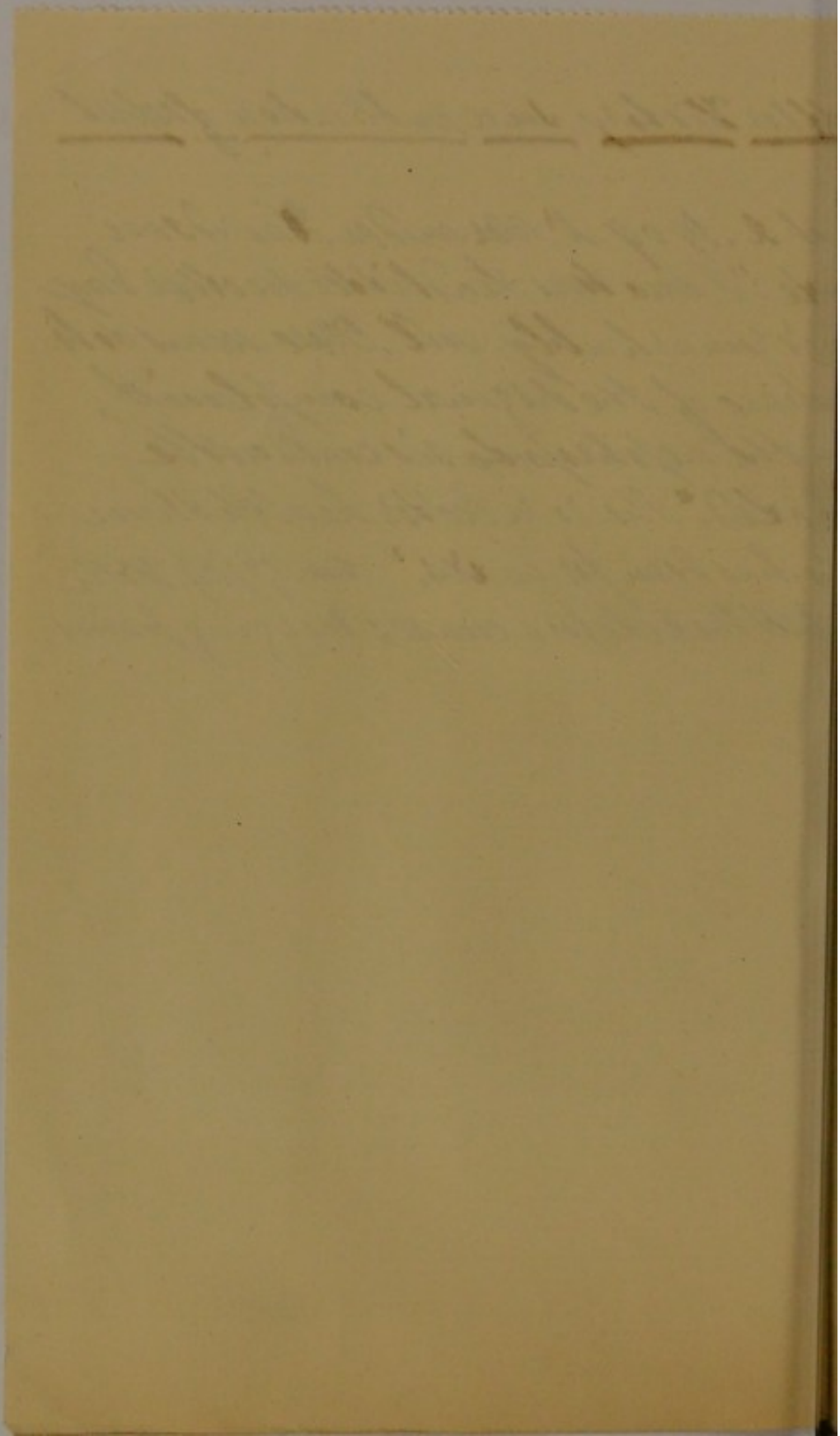
History of the Present Illness.—The dyspeptic attacks, which had never ceased entirely, became severe last summer, and to them were added sharp abdominal pains, which were at their worst during the night, and were referred to a lump in the left side. She was under the care of Dr. Alexander Davidson, of Cornwall Road.

Condition on Admission.—The patient was fairly well nourished. The abdominal walls were thin, and below the umbilicus extremely lax, forming a flaccid swelling, tympanitic on percussion. There was no evidence of separation of the recti. A firm, oval body, freely movable, occupied the left loin. When the patient lay in bed it retreated for the greater part under the ribs, its lower portion rotating upwards into the epigastrium. It could be pushed downwards and inwards to the extent of over 3 in., until its lower pole lay below the level of the umbilicus; when held downwards there was always more or less resonance on percussing its anterior surface. The right kidney could not be felt. The urine was repeatedly examined; there was no history of hæmaturia, and I never found any trace of blood, but there was always a little rather dense mucous deposit; the secretion was scanty—under 25 oz. in twenty-four hours—and the specific gravity low—as a rule ranging from 1008 to 1022. On October 7 I made a cystoscopic examination of the bladder, with the kind assistance of Mr. Malcolm. The mucous membrane was pale, the right ureteric orifice normal, whilst slightly turbid urine was seen issuing from the orifice of the left ureter. These appearances are worth recording, as they naturally led me to suspect that the left kidney was the seat of the tumour, which was not the case. The tongue was clean, the appetite good and the bowels regular. The pulse was 72, small and regular. The maximum temperature during the first week after admission was 98·8° F. The uterus had undergone senile changes. The menopause was complete by 45. No part of the tumour in the left loin could be pushed down to the level of the pelvic brim. The nature of the tumour was somewhat obscure, and altogether it appeared to be renal.

The Operation.—On October 15, 1907, I removed the tumour, assisted by Dr. William Griffith; Mr. Morley administered the anæsthetic. The patient was placed in the horizontal position. A vertical incision was made through the left rectus muscle, near its outer border, beginning about 2 in. below the costal cartilages and extending 4 in. downwards. I passed my hand into the peritoneal cavity as far as the right loin; the

After History since publication of Records

Feb 2. 1906. Alexander Davidson wrote: "I saw Mrs Leadbeater the other day & she's remarkably well. There seems to be no trace of the original complaint; even the nephritis does not seem to be detected. She is in better health than she has been for years." Nov. 17/06. Well, but the ectopia causes dragging pains.



right kidney was in its normal position and was not enlarged. The splenic flexure of the colon lay in front of the lower part of the tumour, which was drawn downwards and exposed by an incision made through the peritoneum on the outer side of the descending colon. The tumour lay in a capsule made up of connective tissue, whence it was easily enucleated in front, outside and behind, without any subsequent oozing. There were several large vessels running into the tumour internally and from above; the tumour now proved to be a thick-walled cyst, the left kidney lay entirely behind and mostly below it; the tail of the pancreas, which I could feel, did not touch the tumour. I secured the vessels with No. 4 China twist close to the cyst wall and fixed on a Doyen's clamp in two places, as the tumour was heavy and threatened to tear itself away from its connections; on dividing the vessels and surrounding connective tissue it was set free, and the tissue included in the two clamps was carefully tied. By the above manœuvres no large vessels were endangered by the application of clamps and ligatures to parts not thoroughly exposed, and no oozing occurred. I pushed up the kidney and sutured the cut edges of the peritoneum with continuous catgut, uniting the muscle and integument with interrupted silkworm-gut sutures. The patient was troubled with cough, and suppuration of the lower end of the wound occurred, but there was no evidence of any effusion or suppuration in the structures whence the tumour had been removed.

On November 21 the left kidney could plainly be defined—it was not enlarged and was quite free from tenderness; it lay almost entirely below the level of the last rib and could be pushed for about 1 in. upwards. The urine was clear, pale yellow, slightly turbid, with a little mucous deposit containing renal cells but no casts; the specific gravity was 1010 and there was no albumin; the daily secretion was rather scanty.

Dr. Davidson has kept the patient under observation since her discharge from hospital. She suffered badly from cough in the winter months, which caused fresh trouble with the cutaneous part of the abdominal cicatrix. By the middle of February the cough had subsided and the patient's general condition was satisfactory.

Note on After-History.—Since I prepared this report the patient came under the care of Dr. Davidson again for attacks of vomiting, which were successfully cured by the end of April by small doses of ipecacuanha, and the constipation and distension associated with the vomiting also subsided. On April 27 I examined the patient; I found that the left kidney was tender to touch, and all of it except the upper pole lay

below the level of the last rib. There was no tumour nor hardening in the left loin, abdomen, or pelvic cavity; the enteroptosis had rather increased. Dr. Davidson saw the patient at the end of May in very good health.

Description of the Tumour.—Before the tumour was taken to the College of Surgeons it was accidentally dropped on to the floor of the operating theatre, so that it burst, and its contents, which consisted of about ½ pint of bloody fluid mixed with broken down tissue, were lost. When fresh the surface of the tumour was of a deep purple bronze colour. At the College it was put into a formalin solution, which became deeply blood-stained and was repeatedly changed. Three months after the operation it was placed in a glycerine solution, which soon assumed a pale red tint. Mr. Shattock removed a piece of the cyst wall at the line of rupture and prepared sections for the microscope.

Naked-eye Appearances.—The tumour had shrunk considerably after rupture, but its walls were, from the first, distinctly rigid, so that it simply became smaller without collapsing. When I examined it three months and a fortnight after its removal, its vertical measurement was 4 in., the horizontal 4½ in., and the antero-posterior 3 in. It had lost its purplish tint and assumed the dull reddish brown colour of a cricket-ball. The surface was fairly smooth, except where some tracts of condensed connective tissue were adherent to it; the walls were from ⅛ in. to ¼ in. thick and of tough consistence; the cut surface was dull reddish brown, although uniformly stained with blood, being of precisely the same tint as the outer surface of the tumour. No fibrous or muscular structure could be detected even by the aid of a hand lens, nor were any yellow spots, calcified patches, minute cysts or lacunæ exposed by the section; I could not even detect a blood-vessel. The inner wall was rough from deposits of old clot on its surface; at one or two points the clot was very pale, but there were no yellow patches or tuberosities. The cyst cavity was absolutely single, not a trace of even a rudimentary septum could be found on the inner wall. Thus, to the naked eye, the cut surface of the cyst wall did not show the appearances characteristic of a blood-cyst of the suprarenal body. There was, in fact, no macroscopic indication of adrenal tissue, yet by the aid of the microscope such tissue was readily distinguished.

Microscopic Appearances.—On February 14 I examined, with Mr. Shattock, some sections of the cyst wall which he had prepared for the microscope. The cyst wall proved to be much less homogeneous than was suspected. There was a stroma of fibrous tissue without any plain

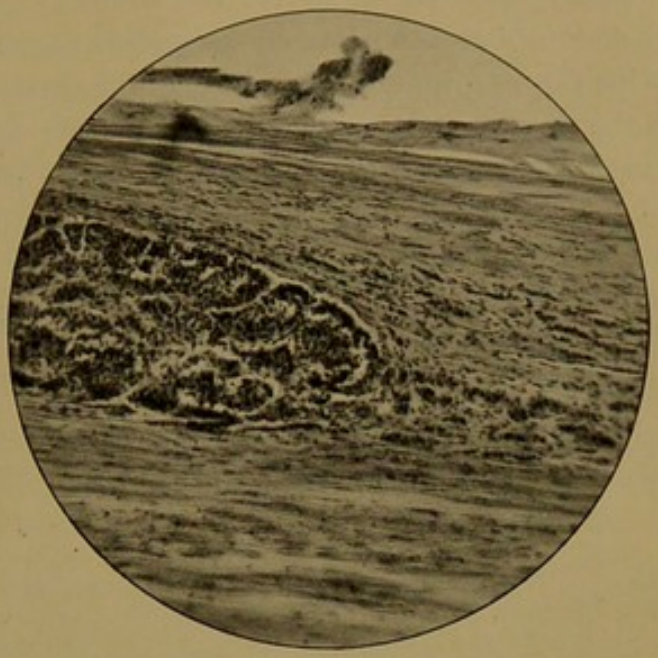


FIG. 1.

Section through the cyst wall showing a nodule of adrenal tissue embedded in the fibrous stroma.

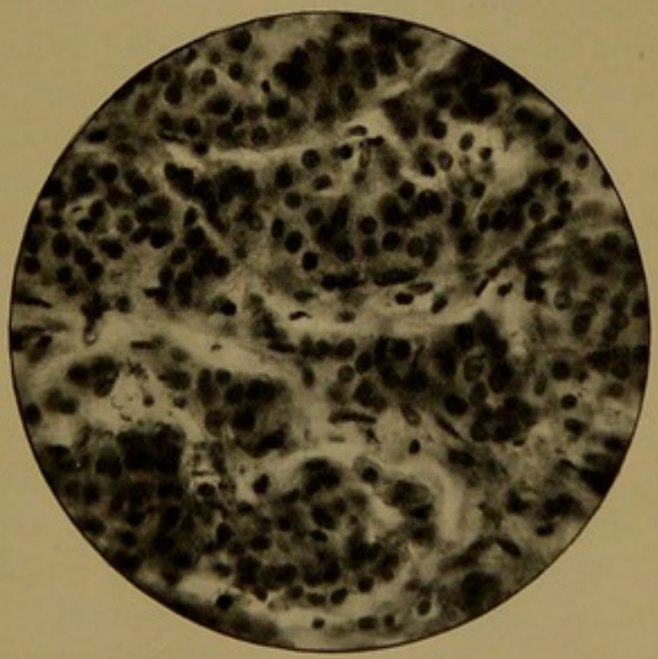


FIG. 2.

A portion of the nodule of adrenal tissue seen under a high power.

muscle; some large veins were detected, but there was no indication of angiomatous nor of lymphomatous tissue; a nodule of adrenal tissue was seen embedded in the stroma towards the outer surface of the wall, whilst deeper in the cyst wall lay a plexus of cells of the adrenal tissue type arranged in a highly atypical manner. There was no epithelial lining to the inner wall of the cyst, but a distinct layer of homogeneous tissue, apparently old coagulum, was observed. Under this tissue was another layer of fibres somewhat denser than in the deeper part of the cell wall. This appearance did not, in Mr. Shattock's opinion, favour the view that the tumour was originally a solid cancer of the suprarenal body and that the interior had broken down. The specimen is now to be seen in the Museum of the College (Path. Series, 3,517 A).

Cystic Tumours of the Suprarenal Body.

I will now make some mention of cases of this kind of tumour already published. By "cystic tumours" I mean cysts of new growths of more than purely pathological interest, mostly blood-cysts, more rarely lymphomas or adenomas, which are true new growths. Several cases which I will relate have already been collected by Henschen and by Terrier and Lecène, but I have made some corrections after reference to the original reports, and added other cases. The first and second are interesting because they were originally published in days long past by able observers who had not the resources of modern science at their disposal. I will therefore relate them at some length. A briefer abstract of each of the remaining cases will be sufficient, as they are recorded by surgeons and pathologists quite recently, in publications to be found in most medical libraries.

Case I.—Greiselius.

The original report of this case, headed "Ren Succenturiatus monstrosus cum ulcere," is to be found in a work published in Leipzig in 1670, entitled "Miscellanea Curiosa Medico-Physica Academiae naturae curiosorum, sive Ephemeridum Medico-Physicarum, Germanicarum," &c., observatio lvi., p. 152 (Rayer misquotes the page). A copy of this work is preserved in the Library of the Royal College of Surgeons of England. Greiselius, of Vienna, seems to have been a good anatomist, and evidently conducted the post-mortem examination of this case with much care.

Contemporary French and German writers presently to be quoted seem justified in admitting this case as a genuine instance of the new growth under consideration. There can be little doubt that the tumour had developed in the suprarenal body, and it was, as in several recent cases, filled with bloody fluid.

Nobilis quidam 45 annorum temperamenti sanguineo-biliosi, post diuturnam Colicam, eamq ; contumacissimam, generosissimaq ; remedia respuentem mortuus, a me apertus fuit, ubi Intestini Coli exteriorem tunicam absumtam, et quasi sphacelatam inveni, ex illâ nempe parte quâ Reni sinistro adjacebat. *Ren* vero *sinister* tantus erat, ut figuram Lienis destruxerit, qui multis tunicis et membranis involutus erat, quibus resectis Ren verus in debita figura et situ inventus fuit: *Ren* vero *succenturiatus tantus* erat, ut totam illam quasi regionem à Diaphragmate (quod una cum Liene ex illa parte elevaverat altius) usq ; ad musculum Psoas deorsum occupaverit. In hoc Rene succenturiato erat Ulcus, ita quidem apertum, ut integro pugno transitus pateret. Materia ex hoc ulcere rupto effluxa, erat Aqua rubra ac si bolo armeno tincta fuisset ad libras XII quasi, intus vero adhuc haerens erat densa et glutinosa valdè, fuliginemq ; redolebat ad instar carbonum terrae cum summâ nausea et horrore. Haec massa sine materia jam dum effluxa, et particula abrupta ponderabat liber (*sic*) 2 uncias iii. Notandum penes est, quod Nobili huic jam dum filii eodem putatitio Colico morbo mortui fuerint.—*D. Greisel, comm Viennae Dn. D. Jung.*

Thus this patient, " a certain nobleman," aged 45, died after attacks of colic of long duration and of the greatest obstinacy, resisting the most excellent remedies. Colicky pains have been noted in several recent cases ; the history of colic in the patient's family is of little value. The report of the autopsy is clear ; the left suprarenal body was converted into a big tumour which filled the left side of the abdomen, pushing up the diaphragm and the spleen, and extending downwards to the psoas. In its wall was an *ulcus*, evidently a rupture, big enough to admit the fist. Twelve pounds of red fluid and over 2 lb. of fœtid clot had mostly escaped into the peritoneal cavity. The left kidney was distinct from the tumour.

Traumatism seems highly probable in this case.

Case II.—Rayer.

This case has often been quoted, for it was published by a distinguished French physician over seventy years ago, and the tumour is figured in his (Rayer's) fine " Atlas," illustrating his " Traité des Maladies des Reins," plate 54 and plate 55, fig. 3. The surgeon inspecting plate 54

will note how closely the tumour was associated with several inches of the vena cava. The history of injury and pain is very clear.

A woman, aged 75, was admitted into the Charité, Paris, for violent pains in the region of the right kidney. Since 2 years of age she had been lame in the right leg. Within the five years previous to admission she had fallen five times on the right side without any immediate ill effects. Five years before admission she suffered from an attack of agonizing pains in the right loin running down to the pelvis, so that uterine disease was suspected. It is not stated whether this attack occurred before or after the first fall. A few milder seizures of the same kind followed, and another as bad as the first came on three months before admission. There was vomiting, which persisted and became very obstinate, and the pain extended to the right thigh. A tumour was observed about a month before the patient came under Dr. Rayer's care, and the lower extremities became œdematous. The patient's skin was of a greenish yellow tint. There was a large tumour in the right flank, hard in its upper part, where it seemed continuous with the liver, and fluctuating below. There was no tenderness on pressure. The patient died in hospital, long before the days of renal surgery.

The tumour weighed 4 lb.; it pushed up the liver and descended into the right iliac fossa. It contained 1½ lb. (*une livre et demie*, not *litre*, as in some second-hand reports) of black, liquid blood. The kidney, greatly flattened and altered in shape, was found entire and adherent to the posterior aspect of the tumour; the renal tissue and ureter were normal. The left suprarenal body showed no sign of disease; the corresponding kidney was the seat of chronic inflammatory changes.

The above account is from Rayer's "Recherches anatomico-pathologiques sur les capsules surrénales (Capsulæ atrabiliariæ)."[1]

Case III.—Chiari.

A man, "over 60 years of age"[2] and very corpulent, died of heart disease. The place of the right suprarenal capsule was occupied by a spherical cyst nearly 6 in. in diameter. It contained old coagulum, its walls were thin and included circumscribed collections of the cortical tissue of the suprarenal body. No elements indicating a

[1] *L'Expérience*, November 10, 1837, i., p. 17.

[2] Misprinted "68" in some second-hand reports.

neoplasm could be found in the cyst, which was separated from the kidney by loose connective tissue. The left suprarenal body showed no signs of any change, save senile degeneration. There was no bronzing of the skin, and the existence of the tumour had never been suspected during life.

Case IV.—Routier.

Woman, aged 35. Three years epigastric pain and vomiting. Six months[1] tumour observed in left hypochondrium, extending from under ribs down to iliac fossa, dull on percussion, fluctuating at one point. Operation: Median incision, retroperitoneal tumour discovered holding 1,600 grm. of brown fluid. Relations not definable, deep adhesions, drainage, cyst wall tense, its sutures tore away; fatal peritonitis. Cyst found replacing suprarenal body, villous-like growths on inner wall composed of adrenal tissue.

Case V.—Pawlik.

Woman, aged 40. Two years; fall from a ladder, followed by abdominal swelling. Spherical, tense, elastic, fluctuating tumour, descending colon in front. Operation: Incision to left of umbilicus, cyst containing 17 pints of bloody fluid enucleated excepting a small piece left on a kind of pedicle close to vertebræ. Kidney seen on inner side of lower pole of the cyst. Recovery. A small piece of unaltered suprarenal capsule ran on to cyst wall. The tumour was defined as a large hæmorrhagic cyst of the left suprarenal capsule. Its wall included islets of adrenal tissue.

Case VI.—Triepcke and Bier.[2]

Woman, aged 69. Tumour size of adult head, right side of abdomen. Incision along outer edge of rectus; cyst tapped, 3½ pints of turbid fluid with coagula; drainage of cyst cavity, which was first scraped with the curette; death soon after operation from "shock." The cyst, which proved after death to be easily enucleable, occupied

[1] "Six" in the original report, misprinted "dix" in Terrier and Lecène's monograph.

[2] Triepcke: "Ueber Blutcysten in Nebennierenstraumen." I have not been able to procure or see a copy of this thesis; the above is quoted from Henschen, and Terrier and Lecène.

the place of right suprarenal body, kidney pushed downwards into iliac fossa. In cyst wall, adrenal elements associated with microcystic degeneration.

Case VII.—Oberndorfer.

Man, aged 34, no symptoms; death from intestinal obstruction. Round tumour, size of small apple, replaced greater part of left suprarenal body, the unaltered part capping the tumour, a thin-walled cyst which contained clear, pale yellow fluid; lymphangiectasis[1] of remainder of suprarenal body. Right suprarenal body normal.

Case VIII.—Marchetti.

Woman, aged 50. Died in hospital of purulent peritonitis; uncertain origin, but not connected with tumour, which was tense, elastic, fluctuating and situated in region of right kidney. Autopsy: Cyst bilobed, remains of right suprarenal body ran into its wall above; vertical diameter of cyst 4½ in., contents thick, pale yellow fluid; a complete fibrous septum internally. Cyst adhered to vena cava. Adrenal tissue in cyst wall and septum. Compensatory hypertrophy left suprarenal body.

Case IX.—Henschen.

Woman, aged 41. Twenty years pleurisy, from then attacks of pain in left hypochondrium, with vomiting. Three years puerperal thrombosis. During attack of acute rheumatism, big, tense, smooth tumour discovered, extending from left hypochondrium to loin and pushing ribs outwards. Operation (Krönlein): Left pleura tapped, much chocolate-coloured fluid; oblique incision under border of ribs to loin; tapping of cyst, chocolate-coloured fluid as in pleural cavity. Complete enucleation; adhesions to diaphragm and tail of pancreas, inferior mesenteric vein damaged and ligatured. Left kidney lay internal to cyst. Gauze drainage. Death fifth day, from severe thoracic complications. Tumour a unilocular cyst; on inner wall opaque yellow deposits consisting of adrenal tissue.

[1] Bossard reports a case of lymphangioma cysticum of the right suprarenal body, discovered at an autopsy on a woman, aged 25 (*see* Henschen).

Case X.—Terrier and Lecène.

Woman, aged 52. Four years constipation and attacks of pain in umbilical region, mostly to *right*. Oval, smooth, distinctly fluctuating tumour, size of ostrich's egg, in *left* loin. Operation (Terrier): Median incision above umbilicus. Peritoneum external to descending colon incised; enucleation of tumour easy, only half of it removed, being taken for a pancreatic cyst; base drained. Left kidney found to be distinct from cyst. Contents of cyst lemon-coloured fluid. Walls thin, contained suprarenal tissue. *Right* parotiditis fifth day; recovery; no fistula in cicatrix.

Case XI.—Bosanquet.

Woman, aged 56. In hospital for carcinoma of stomach. Freely movable, firm, rounded tumour below left costal cartilages; not tender on pressure. Fatal hæmorrhage from malignant ulcer (spheroidal-celled carcinoma ventriculi). Tumour an almost spherical cyst, over 3 in. in diameter, in front of left kidney; descending colon on its outer side. "The left suprarenal body was attached to the upper and back part of the tumour and looked normal"; author defines tumour as "cystic adenoma *of* adrenal." I will return to this interesting point further on. Cyst wall thick and fibrous, lined with cells of the adrenal type; contents a semi-fluid, turbid orange jelly, evidently mucoid degeneration of the adrenal tissue. Right suprarenal body bore small white nodule, an adenomatous growth showing fatty or early mucoid degeneration.

Case XII.—McCosh.

Woman, aged 45. Three years dull pain radiating from left loin. Severe attacks of lancinating pain. Slight bronzing of skin. Smooth, globular, elastic, fluctuating tumour in left side of abdomen, pushing out ribs; colon on its inner side. Operation: Oblique incision, complete enucleation of universally adherent cyst, attached to aorta and bodies of lumbar vertebræ; contents 9 pints of dirty yellow fluid. Left kidney much displaced downwards. Forcipressure and drainage; recovery; bronzing of skin disappeared. Wall of cyst thick, containing distinct adrenal tissue.

Case XIII.—Author.

Related above.

Doubtful Case.—Lockwood.

Woman, aged 20. Two years painless swelling, slow growth. Freely movable tumour, size of ostrich's egg, hard, tense, in left hypochondrium, reaching downwards to level of umbilicus; colon defined to its outer side. Operation: Incision outside left rectus, easy enucleation after incision through descending meso-colon; end of duodenum adhered to inner side of tumour. Ureter lay behind tumour. "Recovery" (private correspondence). Thick-walled cyst, fibrous tissue, inflammatory changes, "no glandular structure of any kind could be discovered." Contents, altered blood-clot.

Remarks on Lockwood's Case.—Considered from a clinical and surgical standpoint, this cyst reminds us of several of the blood-cysts in the above series. In outward appearance it closely resembles the tumour which I removed and which is preserved in the Museum of the College of Surgeons, and it also seems very like that described and figured by Henschen. I may refer the pathologist and surgeon to Mr. Lockwood's specimen, which is to be found in the Museum of St. Bartholomew's Hospital, Pathological Series, No. 3,372*a*. The thick wall, blood-stained as in my case, and the single cavity containing "a chocolate-coloured, semi-fluid mass," are features very distinct in the "hæmorrhagic suprarenal cyst." Lockwood himself, referring to the researches of Weldon, Janosik and Rolleston, implies that his cyst might have originated in the suprarenal body, which organ is probably developed from, and is certainly down to a late period of intra-uterine life continuous with, the front part of the Wolffian body. I cannot help suspecting that there may be, in the walls of Lockwood's cyst, some adrenal tissue which has been overlooked. The pathologist doubtful about the homologies of Lockwood's important case should study that surgeon's original report in conjunction with Henschen's well-known monograph.

Mr. Lockwood informs me that about a year ago he removed a similar tumour which adhered to the *lower* end of the right kidney. The same authority describes, in the report above quoted, a case of *multilocular retroperitoneal cyst* removed by Mr. Bowlby, who tells me that the patient was free from recurrence nine years after the operation. It resembles a case of a similar cyst presented by Dr. Bantock to the Museum of the College of Surgeons (Pathological Series, 303*a*). The splenic flexure and descending colon lay on its surface. The patient is living, twenty-two years after the operation for

Lockwood wrote to me June 10, 1909 "I believe I have at last found a renal tumour low down in the pelvis"

TELEPHONE 369.

25, THE CIRCUS,
BATH.

Mar. 10. 1911

Dear Sir,

I am extremely obliged to you for your letter calling my attention to the case which you reported in 1908 and which I have read with great interest.

It seems very possible that if, in such a case as that reported, the damage to one adrenal was insufficient to

prevent recovery taking place,
that the other adrenal
might become converted into
a cyst, and I suppose it
might, though this seems to
be unlikely, continue to
increase in size.
There seems to be no
reference in the cases collected
by you to any illness
resembling that associated
with haemorrhage into the
adrenals, but as any such

illness would most probably have taken place during infancy the absence of any med. history goes for practically nothing. Other references than those I gave in the "Lancet" across which I came when looking up the literature of the subject and to which you may care to refer are -

Arnaud Arch. gen. de Méd 1900 CLXXXVI

Hamill Arch. Pediat. 1901 XVIII 81.

Locper Clinique medicale de l'Hotel Dieu 1906 V 90

Spencer Trans. obst. soc. Lond. 1892 XXXIII. 256

Thomson Journ. of the Amer. Med. Assoc July 6. 1907 19

Laignel-Lavastine Bull. et mem. soc anat. de Paris 1903 LXXVIII 158

Vaso Incunabili Napoli 1906 XXI 692.

Yours very truly

Rupert Waterhouse.

its removal. Mr. Shattock has kindly examined sections from the wall of Bantock's multilocular cyst, but cannot find any adrenal elements. This case and Bowlby's are even more doubtful as to their nature than Lockwood's, as far as origin from the suprarenal body is concerned.[1]

Summary.

Surgical Pathology.—The blood-cyst is not a true new growth: it owes its origin to hæmorrhages into the medullary substance of the suprarenal capsule. There was a history of injury in Rayer's and in Pawlik's cases, which was very probably the cause of hæmorrhage in either one or both; perhaps some pathological change within the organ contributed to the development of the blood-cyst. Such changes, on which it is not necessary to dwell, are probably the sole cause in the majority of cases. The operator, should he recognize the true character of the tumour during the operation, need not search for any extension of disease in its vicinity, and when he can make sure that it is a blood-cyst he need not fear recurrence.

It is certain that adenoma, lymphoma and other new growths seldom convert the suprarenal body into a cystic tumour of interest to the surgeon. Henschen gives in his monograph a good synopsis of the pathology of these cysts, of which there is in the above series one instance of lymphangioma (Oberndorfer) and one of cystic adenoma. Marchetti's bilocular cyst and Terrier and Lecène's big cyst might have owed their origin to old hæmorrhages, as pale yellow fluid is often seen in very old blood-cysts elsewhere.

Those who are interested in the genesis of cysts of the suprarenal body will find much valuable information in the writings of H. D. Rolleston, Ogle, Raymond Crawfurd and Charlewood Turner. The latter writer reports an instance where there were also cysts in the cerebellum, liver and kidney; the adrenal tumour was, I must add, of the size of a fist, but the patient died of the cerebellar disease and the primary seat of cyst formation was not evident. One point very much to our purpose was clear: the cyst in the suprarenal body was certainly not due to hæmorrhage.

[1] I have recently published a clinical report of these two cases, with notes on Monprofit's account of the removal of a Wolffian cyst: "Cases of Multilocular Retroperitoneal Cysts in Women," *Journ. Obstet. and Gynæc. Brit. Empire*, 1908, xiii., p. 257.

x. Dr Rupert Waterhouse. A Case of Suprarenal Apoplexy. Lancet March 4, 1911, p. 577 (a few good references to similar cases in infants [illegible]

Lastly, I may turn the reader's attention to a preparation which is to be seen in the Museum of the College of Surgeons (Pathological Series, 3517), taken from a woman, aged 55, who died after ovariotomy. It shows "a suprarenal capsule in section with a large, rounded mass in its substance. The remainder of the capsule is distended into a cyst. The enlargement is due to a hypertrophy of the cell columns of the suprarenal capsule, with fatty degeneration of the contained cells." I may add that this report was made by Dr. Goodhart. The preparation may, I think, explain how, in a case of cystic disease of the suprarenal body, the greater part of that organ may be found on the cyst wall, as in the tumour included in the above series, described by Bosanquet.

Symptoms and Diagnosis.—The number of cases of cystic tumour of the suprarenal body remains small, yet the above records show that it gives rise to fairly definite symptoms. I have already noted that a history of *injury* has been obtained in more than one case. *Pain* appears to be the rule; it usually assumes the characters of dyspepsia or fits of colic and leads to the discovery of a tumour. In my own case it was very definite, and the above abstracts show that distinct pain was specified in those reported by Greiselius, Rayer, Routier, Henschen, Terrier and Lecène, and McCosh, making in all seven, to which we may safely add, as an eighth, Bosanquet's case, where, as the original report explains, this subjective symptom seemed mainly, though not entirely, due to coincident malignant disease. The *tumour* in this respect differs from a simple hydronephrosis, although attacks of renal colic may be associated with the latter. Fluctuation seems far less marked than in hydronephrosis, nor does the cyst descend so readily, as the suprarenal body is more firmly supported than the kidney or, we must add, the spleen. In my own case the cyst was, I admit, freely movable, but it always slipped up again when drawn down and did not naturally lie well below the ribs under the abdominal wall, after the fashion of renal and splenic tumours of its own size. The cystoscope may aid in diagnosis, as will be seen in the original report of Pawlik's case. The descending colon is usually anterior to the cyst, but that point is not always accurately indicated. Other symptoms seem far less marked, whilst one, so familiar in association with another disease of the suprarenal body, deserves special notice.

Bronzing of the Skin.—This well-known symptom of Addison's disease was only observed in McCosh's patient. It was slight, yet

distinct, and disappeared soon after the operation. McCosh's experience seems to be unique; Henschen, who wrote before the case was published, declares that this "classical symptom" is always wanting (*immer fehlte*) in cases of benign cystic suprarenal tumours, and is absent, "almost without exception," in patients subject to other tumours of the same organ. I may add that in my own case of malignant vaginal polypus secondary to an adrenal tumour of the kidney there was distinct bronzing of the skin during the patient's last days, three months after the operation. The left suprarenal body was found to be free from new growths or any other visible morbid condition. The state of its fellow remains uncertain—it was not found at the autopsy. I mention this case because it shows that cutaneous bronzing, which Dr. W. T. Evans informs me was much more distinct in this instance than my own report could lead the reader to believe, may be present in a subject where one suprarenal body is healthy and where there is no evidence of Addison's disease. None of the cystic tumours described in this communication were bilateral.

Surgical Treatment: Results of Recorded Operations. — Without doubt the right treatment for a cyst of this kind is removal by operation. It should be enucleated from the kind of capsule of connective tissue in which it lies. The suprarenal body is normally kept in its place by fascia which separates it from the capsule of the kidney and holds it well up, far back in the loin. Hence the suprarenal body does not descend with the kidney when the latter becomes movable. When the suprarenal body, on the other hand, becomes converted into a heavy cystic tumour it descends along the outer border or anterior surface of the kidney, stretching its supporting connective tissue, which forms a capsule. The operation essentially consists in the enucleation of the cyst from this capsule.

Diagnosis is difficult; if the cyst be taken for a renal tumour and exposed through a lumbar incision, enucleation might be effected with ease and safety, but in some of the above cases that incision would have proved very unsatisfactory. Therefore the cyst is far more safely dealt with if exposed by a vertical incision through the outer margin of the rectus, as Mayo Robson recommends in operations on solid tumours of the suprarenal body. It allows of efficient exploration, and the above series of operative and post-mortem experiences teaches us that in dealing with a tumour of this kind exploration should be very efficient, seeing that the cyst may adhere to the vena cava, aorta or pancreas.

Incision and Drainage.—Experience teaches us that this incomplete procedure is unsatisfactory. The cut edges of the cyst have been fixed

to the edges of the abdominal wound ("marsupialization"); unfortunately the cyst walls, though thick, are not tough like those of the more familiar pelvic and renal cysts. In Routier's case the sutures cut through the tissues, so that the cyst retracted and some of its contents escaped into the peritoneal cavity, with fatal results. In Triepcke and Bier's case it was found after death that enucleation would have been easy. Terrier encountered no difficulty when he enucleated the anterior portion of his cyst, but, suspecting that it was pancreatic, he refrained from completing the process and "marsupialized" the base. The patient recovered, but convalescence was retarded by inflammation of one parotid.

Complete removal by enucleation should always be undertaken if possible. It may be attended with dangerous complications. I have related how Krönlein, in the case reported by Henschen, bravely completed a very difficult operation, but the patient was the subject of pulmonary disease of very long standing, with fatty degeneration of the heart and sclerosis of the coronary arteries, so that the fatal result was not surprising. McCosh's tumour was attached internally to the wall of the aorta. When the connective tissue capsule was incised to allow of enucleation very large vessels were divided. Some lay so deeply that they could not be ligatured; three long artery forceps were applied to them and left on for a time. We are not informed how long after the operation the forceps were removed. The patient recovered. The dangerous proximity of the aorta in McCosh's case reminds us of the observations of Rayer and Marchetti on subjects in the post-mortem room. Both these writers publish drawings of their cysts, which were in the right suprarenal body; they were closely connected with the vena cava.

Pawlik had to deal with a kind of pedicle which ran inwards towards the lumbar vertebræ. It was not secured without much difficulty, and when it was divided, after ligature, a piece of cyst wall as big as a shilling remained on its proximal portion, which receded so far that the operator feared to draw it down in order to excise the fragment. The patient recovered. The after-history of this case and of Terrier and Lecène's, where still more of the cyst wall was left behind, would be of interest.

In my own case enucleation was unattended by any difficulty; I was careful to apply the pressure forceps to all large vessels within sight, avoiding the dangerous practice of pinching tissues in the dark. The surgeon operating on a tumour in the lumbar region is liable to assume that it is renal, and this assumption may induce him to fix a clamp forceps

Gerota's capsule (perirenal fascia) does not completely surround the kidney below, but its two lamellæ unite at the upper end of the kidney & send fibres to the under surface of the diaphragm. Some fibres pass between the upper pole of the kidney & the suprarenal body. The connective tissue here is loose so that when the kidney is removed the suprarenal body usually remains behind unless there are inflammatory adhesions

on a part of the aorta, vena cava, pancreas or intestine when he is under the impression that he is simply securing the renal vessels. Lockwood found no difficulty in enucleating his cyst of doubtful origin, although the small intestine adhered to its wall.

In conclusion, I may observe that the pressure forceps, that invaluable invention of Koeberlé, generalized by Spencer-Wells, must be the sheet-anchor of the surgeon engaged in enucleating a cyst of the suprarenal capsule.

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Cysts of Suprarenal Body

Kroeke ("Münchener med. Wochenschr." Vol. 36 (1908) p. 1905) exhibited before a Society 4 cases of adenoma of the suprarenal body, all operated upon successfully. One case was in good health two years after the operation, though the tumour was found to have invaded the vena cava.

Haller "Rein unique. Absence congénitale du rein droit et de l'uretère correspondant." Bulletins et mém. de la Soc. anat. de Paris, May 1909. p. 309. Man 52, died of intracute pulmonary oedema. The left kidney was hypertrophied, but otherwise normal & capped by the suprarenal. The right suprarenal body was normal & lay in its natural position enveloped in fat: there was absolutely no trace of the right kidney or ureter.

Movable Kidney & the Suprarenal Body. In 20 7. [illegible] Tables "Pathology of the Movable Kidney" 44% [illegible]. Both the case left kidney and suprarenal body lay in pelvis. In Douglas Russell's case of Pelvic at Kidney (Trans. Path. Soc. Vol 35 1910 p 39 the suprarenal body was not found out of its normal position

Apert La portion corticale de la capsule surrénale, ses relations physiologiques et pathologiques avec le cerveau et avec les glandes ~~[illegible]~~ génitales" Presse médicale Oct. ~~[illegible]~~ 28, 1911

Auvray Fibrome utérin chez une femme pseudo-hermaphrodite à organes génitaux externes masculins, accompagné d'une tumeur d'une des capsules surrénales. Études sur les tumeurs de l'utérus chez les hermaphrodites et sur les tumeurs des capsules surrénales envisagées au point de vue chirurgical. Rev. de Gynéc. et de chir. abd. Vol. XVIII (April 1912) p. 353. Any case quoted from a thesis no result (p 375) I sent Auvray a copy July 24/12

H. Temple Mursell "Successful Removal of a Tumour in the Adrenal Gland" Brit. M. J. II 1912, p. 1179 Tumour now in Mus. R.C.S.

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