remedy had been tried with success, though he had tried it in others without any good effect. Three-grain doses of the extract in the form of tabloids (B. W. and Co.) were prescribed three times daily.

On November 22nd—that is, a calendar month after the last operation—the patient came to me complaining of discomfort at the front of the neck low down to the right of the tracheal opening. The skin was tense and fluctuating, but there was no redness of the skin or tenderness. This fluctuating tumour was separated from the hard mass above by a groove which had apparently been caused by the tracheotomy tape. A small incision was made and several drachms of curdy whitish matter evacuated. It was obviously not pus, and I considered it was caused by some necrotic process taking place in the growth; and I remember thinking it strange that if necrotic softening were taking place it should not preferably start where the tumour was bulkiest and most remote from the blood supply. The possible influence of the patient's thyroid gland did not then occur to me. After daily examination for three or four days no more discharge appeared, and the wound was allowed to close.

The patient returned on December 12th with the same symptoms as on November 22nd. The same treatment was carried out, but this time the discharge persisted longer; the wound was finally allowed to close in the first week of January.

The treatment by thyroid extract was continued without interruption from October 28th. At the end of three months (January 24th, 1911) it appeared to me that the growth was not quite so large, but I hardly trusted my observation. At the end of four months there was no possible room for doubt on the matter. The infiltration round the glands had disappeared, and the glands themselves were certainly smaller; and at this time (February 27th, 1911) the patient reported that for the last week he had been quite free from the shooting pains on the right side of the neck which had been in existence for a considerable time previously.

The glands continued to diminish in size. Early in March the dose of thyroid was increased to 12 grains per diem. The patient had previously tried to take this amount, but could not tolerate it. On March 27th there was no more than a suspicion of any abnormality in the neck, and six months after the treatment was started no evidence of tumour could be felt. Sir Thornley Stoker saw the patient with me in consultation at this time, and advised the continuation of the thyroid treatment.

So far as I know, the only cases in which success by this treatment has been recorded have been those of lymphatic recurrences where the primary growth was first extirpated.

This, the most recent of a series of well-authenticated cases of cancerous recurrences in lymphatic glands cured by thyroid extract, opens up some very important and interesting questions.

1. What is the nature of the influence of the thyroid extract, and by what process did the tumour melt?
2. How far does the existence of such cases go to prove that one of the conditions necessary for the occurrence of cancer in an individual is some defective or abnormal internal secretion?
3. Why does thyroid extract cure a few cases and leave others unaffected?
4. What was the influence, if any, of the vaccine on the subsequent suppuration?

Whatever answers are given to these questions, we must keep in view the important fact that cancer can sometimes be made to undergo a recessionary cure under the influence of an animal extract, and that such a fact justifies us in looking forward with confidence to the time when the secret of its existence will be wrested from this scourge of humanity, and its prevention, or at least its cure, merely a question of the knowledge and the drug.

IN view of the disadvantages accruing to the Chelsea Hospital for Women from the noise of traffic and lack of adequate space for nurses' accommodation and out-patient work, Earl Cadogan has presented the institution with a new site. It is over an acre and a quarter in extent, and though within short distance of present building, is very quiet.

A Clinical Lecture

ON

SOME CASES OF CHRONIC JAUNDICE IN WHICH OPENING THE DUODENUM WAS REQUIRED.

DELIVERED AT THE MEDICAL GRADUATES' COLLEGE AND POLYCLINIC.

BY

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My observations will be based upon ten cases in which I have found it necessary to explore the duodenal end of the bile duct to unravel the cause of a more or less persistent jaundice.

In proceeding to make a diagnosis in chronic jaundice it must be remembered that jaundice is not a symptom of stone in the gall bladder. It is not present unless there is some associated infection spreading to the hepatic or common ducts related or not with the passage of a stone which has left the gall bladder on its way downwards to the bowel; should this be suspected, the recovery of a stone from the faeces would solve the riddle, but in many instances when a stone has passed into the common duct it remains retained there. The accidental jaundice occurring with stone in the gall bladder will, as a rule, be of only a transient character.

Now, retained stones in the common bile duct may be of fair size and yet not produce any special diagnostic symptoms. This is frequently found in operating on a "gall bladder" case; the additional duct stones will most probably occupy the supraduodenal or widest part of the duct. In most cases, however, one would expect special symptoms to be present, which may be as follows.

Pain may not be particularly complained of. If present, it may be specially referred to the epigastrium or to the back; it may be associated with a typical colic with vomiting, but the latter symptoms are in many cases due really to a still present stone in the gall bladder.

Jaundice is a characteristic symptom and varies in intensity and duration. The attacks of jaundice may extend over a long period with intermissions, and in other cases the jaundice, although slight, may never completely disappear. The jaundice is caused not only by the blocking due to the stone, but by the attendant inflammatory swelling of the mucous lining in the presence of an infection. After a while dilatation of the duct and reduction of the catarrhal swelling allow the onward passage of the bile and subsidence of this symptom.

Fever with the jaundice is common, and may be only of a mild continued type; but what is most striking when it occurs is the intermittent form with big rises and falls resembling that of malaria, and to which our attention has been drawn by the writings of Charcot, Osler, and others. This intermittent fever may be accompanied or not by rigors and sweating, and usually at the time there is an increased depth of the jaundice. These attacks are explained by a renewed activity of a bacterial infection, while in the intervals of more or less immunity the severe symptoms may completely pass away, except perhaps a slight jaundiced tinge, only to reappear after a varying interval with the same type of attack faithfully reproduced.

Marked loss of flesh is a feature. In the intervals of the severe symptoms the patient may not feel ill, and may manage to do his work. Itching may be very troublesome.

The liver may or may not be to some extent enlarged and tender; in the majority of cases, owing to its contraction, the gall bladder will not be able to be palpated.

In a large proportion of cases there is an associated pancreatitis, demonstrated by the presence of Cammidge's urinary reaction.

If a stone completely blocks the duct there will be no bile in the faeces. As in many cases there is a varying

amount of jaundice without complete obstruction, the bile entering the intestine will be detected. Should a stone in the duct or swelling of the pancreas obstruct the pancreatic duct the stools will be loose and fatty.

In rare cases a septic thrombosis may start in the veins of the wall of the duct, leading to a portal pyaemia with multiple liver abscesses. The severe illness of the patient with, in addition to local signs, evidence of pyaemic infection, will point to this complication and to an unfavourable prognosis.

Having thus reviewed in general the symptoms that may point to a stone in the common duct, it will be noted that they vary. Upon what may this variation depend? Several factors may be considered—the position, the size, the mobility, and the number of the stones, and also the anatomical arrangement of the terminations of the common bile and pancreatic (Wirsung's) ducts. Owing to the reduced calibre of the bile duct as it passes in relation with the head of the pancreas and then through the wall of the duodenum, a stone is more likely to obstruct here; the larger the stone the greater the probability of its remaining stationary: it will be probably attended in the first instance by acute complete obstructive symptoms. A moderate sized single round stone—Fenger's ball-valve stone—will generally be associated with the intermittent febrile attacks, especially if its surface be rough and irritating. Multiple stones are, as a rule, of smaller size, faceted, and thus angular and more smooth and are better tolerated, but they also, "floating" in the bile stream, may be attended by attacks of jaundice.

The following are the modes of termination of the two ducts: (1) The common bile duct dilates beneath the duodenal mucous membrane to form the ampulla of Vater, into which Wirsung's duct also opens; (2) they may open separately into a small pit; (3) they may open separately at the apex of a papilla; and (4) they may unite before piercing the duodenum into a common channel, and statistics show this is the rarest form. When a stone is placed in the transduodenal part it may be almost impossible for the surgeon to say with certainty with which of the four varieties he has to deal, but if the stone is superficial and just under the mucous membrane this favours the presence of a true ampulla. If an ampulla of Vater is present a stone so placed may not prevent the downflow of bile from the common duct, although it will interfere with its exit into the intestine; here the bile may regurgitate into the pancreatic duct and set up an acute inflammation, most likely of the haemorrhagic type; this complication could also occur in variety (4) if a stone blocked the united ducts. In both (2) and (3) this will not occur; there may be pressure on the pancreatic duct from the stone causing retention of secretion and probably pancreatitis, which in its turn further obstructs both ducts.

Having, then, formed the opinion that the obstruction of the bile duct is at its lower end and probably due to stone, before establishing this diagnosis other causes must be considered and dismissed; among these would be a stricture of the duct due to previous ulceration or malignant disease, or pressure from an enlarged head of the pancreas, simple or malignant. If the jaundice is persistent and gets progressively deeper, apart from any other clinical evidence, it would point to an increasing block such as malignant disease of the head of the pancreas, or the contraction of a simple or malignant stricture. If a developed jaundice tends to diminish, or even to almost entirely disappear—which may occur on several occasions—it is with little doubt stone or chronic inflammation of the pancreas. The two will probably co-exist, but when the latter is present one would not expect that variation in the intensity of the jaundice as should be the case with only a stone. With a progressive permanent obstruction, as from the causes in the first group, there will be a gradual distension of the bile passages and gall bladder, unless the latter should have become previously contracted from chronic inflammation. This last fact being such a feature of chronic gall-stone trouble, it follows that with a stone at the lower end of the duct a non-palpable gall bladder is the rule. This conclusion is embodied in what is known as Courvoisier's law, where, if with a chronic jaundice there is made out no enlargement of the gall bladder, stone is the probable cause; whereas if it is dilated, it is due to some other cause, especially malignant disease. This generalization holds good in about 80 per cent. of the cases, exception

being met with where there has not been previous contraction, and where, in addition to the common duct obstruction, there is an associated block of the cystic duct.

It is not my intention to say anything about the numerous cases in which I have removed stones from the common duct by choledochotomy. Of the ten cases in which I have had to open the duodenum, nine proved to have cholelithiasis, and the other was a malignant growth of the papilla.

In the BRITISH MEDICAL JOURNAL, June 28th, 1902, my first two cases are reported in full, but as they illustrate many important features previously stated in this paper I quote some of the important points in their clinical history.

CASE I.

Male, aged 46. In December, 1899, he had his first attack of biliary colic without jaundice; in February, March, and May, 1900, attacks of colic with jaundice which disappeared in the intervals. On May 30th he was explored by the late Mr. Anderson, who found no stone in the gall bladder, which was drained, and the omentum sutured to the left margin of the wound. Other attacks followed, and in August he came under my care. Recognizing that the intermittent jaundice was probably due to a ball valve stone in the duct, I operated, but the dense adhesions and the abnormally placed omentum took so long to separate that the man's condition did not allow of anything further then being attempted; it was definitely ascertained that there were no calculi in the gall bladder, cystic duct, or supraduodenal part of the common duct. The gall bladder was still drained. Three weeks after he had a rigor with marked temperature and sweating, which confirmed my opinion, but after this passed off he was very much better, so he was sent to a convalescent home to recruit. He did not return to the hospital till December, and then he had recently had other rigors and a varying amount of jaundice; the latter was still present, and his temperature was normal. On December 20th I again operated, and fortunately found that the adhesions were now very limited and structures could be distinctly defined. Through the duodenum some thickening was detected at the end of the duct, so the gut was opened by a vertical incision, and a projection was found of the inner wall at the site of the papilla. This was incised, and an almost circular stone like a marble was removed. It was a light, lemon-coloured, cholesterin stone, $\frac{5}{8}$ in. in diameter, nearly smooth, and without any facets; it was the only one present. The man did quite well afterwards, and completely lost his symptoms.

Here the stone was in the ampulla, was single, and in fact the only one in the biliary passages.

CASE II.

Female, aged 43. First attack in January, 1900, of epigastric pain, vomiting, jaundice, pale motions, and dark urine. These symptoms persisted for about four months and then disappeared. In January, 1901, there was a similar attack, with the addition of repeated rigors, lasting several weeks, while the other signs remained. She was sent to me from South Africa by Dr. J. Rouillard at the beginning of October, and she then had jaundice, with an enlarged tender liver and an enlarged gall bladder, and complained of pain in the epigastrium and back. After admission into St. Thomas's Hospital she had for several days a characteristic intermittent fever without rigors. At the operation on October 16th the gall bladder, cystic and common ducts were found distended without any stone. A lump was felt through the duodenum, so it was opened and the papilla defined. Just above this was a projection of the bowel wall, which was incised and a stone extracted. A second stone was then detected, and in removing this it was felt to be definitely drawn through a more constricted part of the duct, which was at the level of the upper end of the first stone, and seemed the undoubted site of junction of the transduodenal and pancreatic portions of the duct. The upper stone was $\frac{3}{4}$ in. long and $\frac{1}{8}$ in. in diameter; the lower stone was 1 in. long and $\frac{3}{4}$ in. in diameter, and their adjacent ends articulated; they had an almost smooth blackened cortex with an interior of orange-stained cholesterin. She made good progress after the operation and all her symptoms subsided.

In this case it seemed that the lower stone occupied the duodenal part of the duct rather than an ampulla, and further it will be noted that the gall bladder was distended and that there were no other stones. The shape of the two stones suggested that they must have become moulded in the duct by secondary deposit.

CASE III.

Male, aged 55. In 1892 a severe attack of colicky pain in the right side and sweating. In 1895 several similar attacks with jaundice and stones passed. In May, 1901, he had several attacks in a fortnight, and then remained well till the middle of July, 1902, when he had an attack, with shivering. He was admitted into St. Thomas's on August 7th, when he then had a normal temperature, no jaundice or ascites, no enlarged liver or gall bladder, but he complained of loss of flesh. On the 12th and 13th he had painful colicky attacks, his temperature on the

latter day rising from normal to 101° F., but it dropped again immediately; there was jaundice, with dark urine and epigastric tenderness, but no enlarged liver. On the 15th he passed a stone, buff-coloured and faceted, and the size of a pea. On August 16th I operated on him, and found a small contracted gall bladder, from which three stones were removed. The pancreas was generally very hard, and a hard gland was found in the gastro-hepatic omentum; no other stones could be felt in the ducts. The gall bladder was drained. After a week he had another attack, with jaundice, and I considered then that there was, after all, probably an impacted stone in relation with the thickened head of pancreas. On the 28th I again opened the abdomen and incised the duodenum vertically. There was no thickening about the papilla or above suggesting a stone, so I closed both the duodenal and abdominal wounds. He got a localized infection about his duodenum, with free suppuration, from which he died on September 15th. At the autopsy there was found subphrenic suppuration, with a small fistulous opening in the diaphragm; the common duct was much dilated, and in it were two small stones freely movable; the pancreas was very firm, but its duct was not dilated.

In commenting on this case it would have been better, in face of the symptoms, to have done a choledochotomy at the first operation, as thereby the stones might have been removed, although not felt, and the enlargement of the pancreas would not have induced me to open the duodenum.

CASE IV.

Female, aged 53. For eighteen months she had had violent attacks of abdominal pain starting just above the right hip and then going to the mid abdomen and then back again to the hip and up to the right shoulder. The attacks were periodic, coming on between 10 and 11 a.m., and lasting for about twelve hours, and this occurred every six or seven days. Some of the attacks had been accompanied by shivering and sweating, and slight jaundice. Ten months ago she had an attack in which jaundice was most pronounced, and it lasted eight weeks. Just before coming to the hospital she had had a bad attack, and had lost flesh. On admission on September 29th, 1902, she was very thin, with slight yellowing of skin and conjunctivae. There was some rigidity and tenderness above and to the right of the umbilicus. The liver was a little enlarged, and there was slight bile reaction in the urine and bile in the faeces. The temperature on the night of admission was 101° F., but normal the next morning. On October 2nd she had an attack followed by a slightly jaundiced tinge. I operated on October 8th, and found a contracted gall bladder with a stone in it, which was removed. The stone was the size of a small cherry, composed of cholesterolin with a black cortex. There was a great deal of matting from adhesions about the neck of the gall bladder and gastro-hepatic omentum, and in separating them another stone was felt, which slipped out of the way apparently as I considered down the duct. As it could not be felt, and as there was a suspicious fullness through the duodenal wall, I opened the gut, and without slitting up the papilla I failed to feel anything like a stone, so I closed it again. Further exploration requiring much more separation of adhesions, and the patient's condition not being satisfactory, I had to close the abdomen. She progressed favourably afterwards, except that on the 13th she had another shivering attack with fever, as before. This being repeated a few days later, I decided to try again to find the stone, which I did on the 28th. After separating adhesions I located the escaped stone now in the neck of the gall bladder, and from there removed it. It was barrel-shaped, with the end to the duct smaller than the other. Her progress was most successful afterwards; there were no further attacks, no more temperature, and she gained flesh rapidly, and said she felt quite different.

CASE V.

Female, aged 52. She first had pain in the right side at 26, and then on and off for the next ten years. Two years ago it returned, and continued intermittently afterwards, particularly after exertion. There was a feeling of fullness and distension in the liver region, pain lasting from two to four hours, and on the next day dark urine and some jaundice. She had never since been absolutely free from a jaundiced tinge, with constipation and indigestion; she often vomited in the attacks, and had lost weight. There was no history of any shivering. She was sent up to me at the hospital by Sir Thomas Crosby, on April 19th, 1904, with jaundice and dark urine; there was then no pain, no rigidity or tenderness over the rectus, and no evident enlargement of the liver or gall bladder. The temperature was normal. I operated on her on April 25th, and found the hepatic flexure firmly adherent to the under surface of the liver and gall bladder, and this was with difficulty separated. There was a well-developed Riedel's lobe, and the gall bladder was very contracted; from its neck four calculi were removed. There were two small stones found embedded in the peritoneum on the right side of the great omentum, having at some previous time escaped from the bladder by ulceration. The gall bladder was drained. There were no special symptoms after, except some difficulty in getting the bowels to act. On May 2nd there was still some bile in the urine. On the night of the 15th there was a rise of temperature to 102.4°, which dropped in the morning to normal, without the development of any other marked symptoms except the slight jaundice. As this continued I again explored her on June 6th. No stone being felt in the common duct, I opened the duodenum by a transverse incision. There was a well-marked papilla, and a projection under the mucous

membrane just above it. This was incised and a stone removed from the ampulla. The stone being soft unfortunately broke up in removal; there were some small faceted stones behind it in the duct, which a scoop easily extracted. The main stone was almost circular, and of the size of a small marble. The patient did perfectly well after the operation, with no special symptoms to record and no temperature. She quite lost her jaundice and all traces of bile in the urine.

The points to be noted in this case were the long duration of the symptoms, and, although there was a stone in the ampulla, the only signs suggesting this were the continuance of a slight jaundice with bile in the urine; there were no distinctive rigors or marked rises of temperature.

CASE VI.

Female, aged 25. She was first admitted into St. Thomas's Hospital in August, 1903, and a diagnosis of gall stones was made, but at that time she was pregnant, and no operation was done. She was again admitted under Dr. Acland on February 22nd, 1904, with a history that her confinement had taken place seven weeks before, and that fourteen days afterwards she had lost her appetite, had a dull, aching pain under the right costal margin, and vomited. A fortnight before admission she had paroxysmal pain with sweating, radiating to the right shoulder, and she became jaundiced; there was itching, light-coloured stools, and dark urine. On admission she was lemon-coloured, with some purpuric looking spots about the abdomen, and there was increased resistance in the right hypochondrium. On February 25th pressure in the mid-line in the epigastrium gave a sensation of crepitus. She remained in much the same condition, except for an irregular hectic temperature, until March 11th, when the temperature became normal, and remained so until March 15th, when there was another rise to 102°, and immediate fall to normal. On this day I was asked to see her in consultation, and formed the opinion that she had a stone in the common duct, and advised operation without delay. This was performed on March 17th, when the abdomen was opened by the vertical rectus incision. There were delicate adhesions uniting the hepatic flexure to the fundus of the gall bladder, but no more. The gall bladder was rather small and contracted, and its exploration proved it empty of stones. The foramen of Winslow was free, and the common duct, which felt a little thickened, contained no stone. A bossy lump was made out in connexion with the head of the pancreas, which suggested a calculus, and through the posterior layer of the meso-colon the same lumpiness also was felt in connexion with the pancreas. The duodenum was opened transversely, and a projection found on its inner wall in the papilla, which was incised and a stone extracted; the scoop removed a second stone, but there were no others. The lower stone was practically circular, and measured $\frac{1}{2}$ in. long and had a diameter of $\frac{1}{4}$ in.; it was a very light stone of cholesterolin in radii, and had a small facet on its upper end. The upper one was of the same character, but more barrel-shaped, and it measured $\frac{1}{2}$ in. long and had a diameter of $\frac{1}{4}$ in. The wound was closed as usual, but a plug was left down to the duodenum. In the evening she vomited some blood, and was restless, but had no pain, and she then progressed all right. On March 21st the plug was removed, and it was found that there was a localized suppuration, which was drained. On March 24th she again vomited some blood, and her pulse rose to 124, and her temperature to 103.6°, and she died on that day.

At the necropsy there was found a local purulent peritonitis, with the duodenum sound; the common bile and cystic ducts were rather dilated, and also the bile ducts in the liver; the gall bladder was small, and its walls thickened, but the pancreas was normal.

CASE VII.

Female, aged 31. She had typhoid and pneumonia in 1890. She was troubled with dyspepsia, and her appendix was removed at another hospital in August, 1907, but her symptoms remained the same. Three weeks before her admission into St. Thomas's on May 25th, 1908, she had epigastric pain radiating round the right hypochondrium to the back, and a week later jaundice and increased pain. On admission her jaundice was said not to be so intense as it had been. There was indefinite hardness, tenderness, and resistance below the costal margin. The temperature and pulse were natural. At 7 p.m. on the 28th there was an attack of severe pain and vomiting, and on the 30th several small calculi were found in the faeces. On June 1st there were several severe attacks of pain, with more jaundice and bile in the urine, and during the following week there were several colicky attacks, but less jaundice. On June 9th she was operated on by my late colleague, Mr. Clutton, who removed a small stone from the common duct, and also removed the contracted gall bladder, and left a drain in the common duct. The bile on culture proved to contain *B. coli*.

The jaundice almost disappeared, and the faeces contained plenty of bile, when on July 1st she had a severe attack of pain in the epigastrium and back with more bile in the urine but normal temperature. On July 11th and 16th there were again attacks of pain and vomiting as before the operation; there was also increase in pulse and temperature. Owing to my colleague's illness she was now under my care, and considering that she must have a stone at the duodenal end of the duct I explored her again on July 17th. The old rectus incision was opened and lengthened; there were many adhesions under the upper part of the wound, and the omentum, which had become tucked up under the liver and over the duodenum, separated.

The first part of the duodenum was very firmly adherent to the liver in front of the gastro-hepatic omentum, and especially in the groove which had contained the gall bladder. The small liver was at last drawn out, and the gastro-hepatic omentum well defined; there were very few adhesions about the foramen of Winslow, so the finger could be easily passed into the lesser sac, and between the two fingers a stone could be felt at the end of the duct. The duodenum was opened transversely, and a stone was felt in the duodenal wall. The latter was incised, and a small circular stone was lifted out of the ampulla with a scoop. The stone was circular, with a diameter of $\frac{1}{8}$ in. It was light yellow in colour, and of cholesterin, and non-faceted. She made rapid improvement afterwards, lost her jaundice, and had no further attacks.

This case calls for no particular comment, except that it was of a mild type and one very easy to misinterpret.

CASE VIII.

Male, aged 41. He had had good health till eighteen years before, then had an attack of what was diagnosed as gall-stone colic, with vomiting and no jaundice, and no stones were found in the faeces. Since there had been about seven attacks of epigastric pain, relieved by pressure, with shivering and sweating, but these occurred in the early part of the period at intervals of three months to a year. He was otherwise quite well till April, 1910, when he was seized with sudden violent pain in the right hypochondrium shooting down into the hypogastrium. This attack lasted two hours; he had profuse sweating but no vomiting, and he was quite "doubled up," to use his own words. The pain was not specially in the epigastrium. He was better in the evening, but two days later he became jaundiced, with clay-coloured stools, which have kept so since. During the month there have been three such attacks, with shivering, epigastric pain, but no vomiting, and slight jaundice, and in the intervals he has felt quite well. On May 13th he was admitted into St. Thomas's under Dr. Sharkey in the middle of an attack, which lasted from 9.30 a.m. till 4 p.m., with again no vomiting. His face had a slight tinge and tongue furred; the temperature was 101° F., pulse 104, and respirations 24. The abdomen looked a little full, but the respiratory movements were good; there was tenderness, particularly in the right hypochondrium, and some rigidity. No lump could be felt. There was bile in the urine. His appetite was generally poor, and he had lost over 1 st. during the last year. On the evening of May 13th his temperature rose to 104° F., with pulse 104, and it then dropped again to normal; for three nights after it reached 100° F., but was normal in the morning. On the evening of the 17th there was a marked rigor, temperature 104.6° F., and pulse 120, with severe pain. The evening temperatures on May 18th, 19th, and 20th were 100.8°, 103°, and 102.6° F. respectively, but on May 21st, 22nd, and 23rd normal.

This intermittent fever pointed strongly to a stone in the common duct, and I was asked to see him. Operation was decided on, and performed on May 23rd. Numerous adhesions of the stomach, duodenum, hepatic flexure and omentum had occurred to the under surface of the liver. With their separation a thickened contracted gall bladder was exposed, and on incising it no stone was found. There were no stones to be felt in the common duct, but a hard body was made out through the duodenal wall at the site of the papilla. The duodenum was opened transversely, and a stone was felt just above the opening of the duct; an incision was made on to it, and a stone about the size and shape of a small date stone removed, evidently from the ampulla. Exploration with a scoop showed no other stones, nor were there any facets on the stone. The shrunken gall bladder was removed, and its stump had a tube fixed in for drainage. The stone was smooth, $\frac{1}{8}$ in. long and $\frac{1}{8}$ in. diameter. He made good progress afterwards, and lost all his symptoms; he had a little local suppuration in the kidney pouch, probably from infection from the gall bladder, but this soon subsided.

This case was a very typical one, illustrating the intermittent fever and limited jaundice, and also the marked loss of flesh, which at his time of life might have suggested malignant disease.

CASE IX.

Female, aged 40. She was quite well until April, 1910, when one night she had an attack of epigastric pain with vomiting and shivering; this attack passed off without any jaundice. She kept well till last December, when she had another attack with pain under the shoulders and jaundice. After this the jaundice persisted, but varied a little with repeated attacks of pain, vomiting, and shivering; the stools were said to have shown very little evidence of bile. She was sent up to me by Dr. Tonking, of Camborne, Cornwall, on February 8th, and then was well nourished, had no pain, was jaundiced, with bile in the urine, and with temperature 98° F. and pulse 84. There was nothing abnormal to be made out on abdominal palpation, and no tenderness. On February 10th she passed a few stones the size of a pea in the faeces, but she had no colicky attack. On February 11th there was less jaundice and she felt much better, as she had had no attack of pain for a week, and on that night four more stones were found in the faeces. On February 16th she had less jaundice and no further pain, but she had a positive Cammidge urinary reaction.

As I came to the opinion that she must most probably have other stones in the gall bladder, and also in the common duct, I decided to explore, which I did on February 20th. The

liver was so small and the gall bladder so deep down that I had to make an incision below the ribs running out from my previous rectus one, and even then the gall bladder and liver could not be brought out of the wound. The gall bladder was very contracted and packed full of small stones, which were cleared out; no stones could be felt in the common duct, but through the duodenal wall at the site of the papilla there was a hard fixed lump. The duodenum was opened transversely and at the inner side of the duct's opening was a hard lump, which, on being cut into, proved to be a tough whitish growth, looking very like carcinoma. I did not remove a piece, as I did not wish for a larger raw surface for infection, and I felt certain it was malignant. Palpation showed the head of the pancreas very hard and thickened, and the lump in the duodenal wall was apparently continuous with it. The gall bladder was drained. She progressed exceedingly well after the operation, and lost all her jaundice before she left for home on March 18th, and has remained so up to the present date.

The clinical history in this case very much resembled that of a stone in the common duct, although none were present at the operation. The jaundice, if obstructive, was caused by the lump in the duodenal wall or the swollen head of the pancreas; its speedy disappearance after the operation pointed to a pancreatitis, the presence of which was supported by Cammidge's reaction. The mass in the bowel wall was probably an accessory piece of pancreas.

The last case in my series is one of carcinoma of the duodenal end of the bile duct, which showed some important clinical features and points of contrast with the previous cases.

CASE X.

Male, aged 65. History of malignant disease in brother and sister. Previously to December, 1906, he had always enjoyed excellent health; then, while at his work of a carpenter, he suddenly felt ill and had severe shivering and sweating; he had to stay in bed for five months with jaundice without pain and marked itching, and although he got quite well, this last symptom had remained. Six months before admission in February, 1909, he began to have discomfort in the epigastrium, and in December, 1908, there was pain without jaundice. On February 6th jaundice developed, but it faded again in twenty-four hours, and on the 8th there was a severe rigor with pain; there was no vomiting, but the motions were loose, white, and greasy-looking. He also complained that recently he had been very flatulent, and had had odd attacks of shivering. On admission (February 10th) there was a light-coloured jaundice, with the liver definitely felt below the ribs and a little tender, and some enlargement of the gall bladder; the urine had bile in it and was non-albuminous. Temperature, 98.6° F. After a few days of a varying jaundice with epigastric pain, on the 16th there was a rise of temperature to 100.8° F. Cammidge's reaction C was positive and the faeces were dry and hard, not greasy. On March 7th very marked enlargement of the gall bladder was detected.

On March 14th there was a severe rigor, with temperature 102° F. and more jaundice. My colleague, Dr. Turney, asked me to see the patient, and it was thought desirable to explore, which was done on March 16th. On opening the abdomen a very large gall bladder presented, and the liver came well below the costal margin; on tapping the gall bladder the fluid in it was thin and almost colourless, with some turbid mucus in it. There were no peritoneal adhesions. No stones could be felt in the bile passages, but through the duodenum a lump could be felt on its inner wall, elastic with a rounded margin; it was considered to be growth. No enlarged glands could be felt. The duodenum was opened transversely and there was found a carcinoma of the papilla, for which nothing could be done radically; the duodenum and gall bladder were anastomosed and the omentum tucked in round the union. He died after a rigor on March 19th.

At the autopsy the result of the anastomosis was found to be good. There was a ring of carcinoma surrounding the opening of the bile duct. The lungs were extremely congested and oedematous.

In the treatment of these calculus cases it will be noticed that in many of them the removal of the stone via the duodenum was only effected at a second operation. This is almost inevitable unless, when stones have been removed from the gall bladder and none can be felt elsewhere, an exploratory choledochotomy is done at the same time. Even then, if the stone is fixed at the lower end of the duct, although it might be detected with a sound, its removal cannot be effected without opening the duodenum. It would be certainly better to do the choledochotomy in any case in which the symptoms suggested a stone in the common duct, and thus avoid the second exploration; if it is not done the consideration of this possibility, symptoms warranting it, should prove a serious deterrent to removing the gall bladder unless it is evident that the cystic duct is absolutely impervious.

It will be noticed that in all the cases since the beginning of 1904 I have made use of a transverse incision in opening

the duodenum, as advocated by Zeller.¹ This gives a better view into the bowel; its wall can be more securely closed, and as an additional protection the peritoneum passing between the walls of the duodenum and the transverse colon, which is often loose and redundant, can be drawn up over the wound.

REFERENCE.

¹ Zeller, *Berl. klin. Woch.*, September, 1902.

ON TWO CASES OF REMOVAL OF PART OF THE PERICARDIUM, AND ITS REPAIR BY MEANS OF THE PECTORAL MUSCLE.

BY

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THE two cases I am about to relate present points of interest both from a surgical and a physiological point of view.

In looking through the most recent textbooks I can find no reference to cases in which a considerable portion of the pericardium has been removed, nor does the question appear even to have arisen as to how repair of the pericardial sac may be effected in case of the gap being so large that the edges of the incision into it cannot be brought together.

In my first case the operation for removal of a tumour of the fifth rib was begun with the knowledge that it might be necessary to open the pericardial sac, but without any intention of having to take away a considerable portion of it.

In the second case the operation was deliberately undertaken with the expectation of having to remove part of the pericardium, which my previous experience had shown might be safely done.

CASE I.—*Columnar-celled Carcinoma Involving the Pericardium.*

Mrs. T., aged 72, was sent to me by her medical adviser on March 21st, 1905, when she gave the history that she had been well up to September of the previous year, at which time she noticed a pain round the left side of the chest and a swelling was then discovered a little below and just external to the nipple. The pain steadily increased, and when she was sent to me her sufferings were severe. In October and November, 1904, she was treated for stomach trouble and also for sciatica, but no definite disease could be found on physical examination of the abdomen or on rectal and vaginal examination. When I saw her the swelling was smooth and firm. It appeared to be fixed to the fifth and sixth ribs and to project between them and was situated a little below the left nipple.

A diagnosis of sarcoma was made, which diagnosis agreed with that of her own medical man and a consultant whom she had previously seen. As the patient was suffering severely, and as no other disease could be found in the abdomen or elsewhere to suggest that this was secondary growth, the question of operation was put to the patient, who, after consulting with her medical adviser and her friends, decided to have it done.

Operation.

On March 22nd, 1905, I freely exposed the tumour by a U-shaped flap extending well over the sternum and with the base external. The tumour appeared to be a large sarcoma, growing from the sixth rib and projecting both externally and internally between that and the fifth rib. I therefore divided the sixth rib an inch external to the tumour, and then carefully separated the pleura from it. On separating the growth towards the sternum the pericardium was found to be adherent, in fact, the growth had already perforated it. The separation of the growth, including the pericardium, was continued onward until the sternum was reached, and the corresponding portion of pericardium was removed, leaving only healthy tissues. On separation of the tumour, by dividing the costal cartilage close to the sternum, a large gap in the front wall of the pericardium was left, fully exposing the heart, which was seen beating, the apex rotating to the right with each beat. From the size of the gap it at once became evident that it would be impossible to close it by bringing together the edges, and the question arose as to how the operation must be completed. I decided to cover in the gap by separating from the chest wall the pectoral muscle and sliding it over, taking care to ligature every bleeding point and to leave the wound perfectly dry. After bringing over the muscle and stitching it in position so as to leave the heart in a closed cavity, the flap of skin with the subcutaneous tissue was brought back into position and fixed there by silk-worm-gut sutures and Michel's clips. The patient gave no anxiety during the whole course of the operation, except at the moment of opening the pericardium, when the anaesthetist, Dr. Maynard Horne, told me that the pulse suddenly flagged for a short time. On putting the patient back to bed the

pillows were raised so as to allow of her being in a semi-recumbent position. Recovery was uninterrupted, and the wound healed by first intention.

The growth removed presented the naked eye appearance of sarcoma, but on microscopic examination it proved to be a columnar-celled carcinoma undergoing colloid degeneration.

A further examination of the abdomen and also a vaginal and rectal examination failed to discover any primary growth, though doubtless there must have been one.

I saw the patient again on May 5th when she returned from the seaside. She was then complaining of pain down the left thigh and of vague spinal pains, but there was still no evidence of local growth to be made out, and there was no recurrence of the chest trouble. She appeared otherwise to be fairly well, and was able to call and see me. Though I did not see her again, I heard that she lived for some months and ultimately died from metastases in the bones. As there was no post-mortem examination it was impossible to state the site of the primary growth.

CASE II.—*Chondro-Sarcoma Involving the Pericardium.*

The second case was that of a lady, aged 33, who was brought to see me by a surgeon who had himself removed, fifteen and again eight months previously, what was supposed at first to be an enchondroma of the sternum and left fifth costal cartilage; the tumour had returned rapidly after each operation. It had been noticed a year before the first removal, or a little over two years before I saw the patient, and the course of the disease throughout had been painless. An examination of the growth removed showed it to be a chondro-sarcoma.

On examining the patient, who otherwise was in perfect health, a hard, somewhat irregular tumour was found involving the fifth rib and costal cartilage closely adjoining the sternum. It was firmly fixed to the deeper parts, but was free from the skin and cicatrices of the old operations. From the description given of the previous operations it was quite clear that no operation for the removal of the growth could be undertaken without the possibility of its involving interference with the pericardial sac. This was explained to the patient, who knew the nature of the disease, and it was quite clear that as the tumour had recurred twice, no partial operation could do any good. After other opinions had been taken, and the husband and other relations had been made aware of the dangers likely to be incurred, the patient decided to submit to operation, which was performed on June 5th, 1907.

First Operation.

A dome-shaped incision was made and a flap reflected from the front of the sternum and left ribs, leaving the tumour projecting in the centre. This was laid bare quite down to the sternum and the ribs. The fifth and sixth ribs were divided by bone forceps, and by means of a Hey's saw the sternum was deeply grooved half an inch from the margin of the tumour. The ribs, with the tumour attached, were then gently raised and the finger and a raspator were passed behind it, separating the pericardium as far as possible. When the tumour was reached the pericardium could no longer be separated from it, as it was firmly fixed to and incorporated with the growth. It could not, therefore, be removed without taking away a portion of the anterior wall of the pericardium, which was deliberately done. Bone forceps were employed to divide the remaining portion of the sternum along the groove originally made by the saw. When the pericardium was opened the pulse failed somewhat and the patient became rather livid, but as soon as the growth had been completely taken away the pulse again became regular, though the heart was fully exposed to view. The torn edges of the pericardium were cut away and the margins approximated as far as possible by iodized catgut, but it was impossible to make the edges meet, the gap being in one place fully an inch across. The pectoral muscle was then freed from the chest wall for some distance and the muscular flap was brought over the gap and fixed there so as to completely shut in the pericardial sac, after which the superficial skin flap was placed in position and fixed by silk-worm-gut sutures and Michel's clips. The patient, on being put back to bed in the semirecumbent position, suffered for the first forty-eight hours from slight dyspnoea, but had very little pain. The pulse remained good and the temperature was normal throughout, the wound healing by first intention. Her general health remained good. An examination of the tumour showed it to be a sarcoma blended with cartilaginous elements, the tumour having a capsule and being apparently of a low form of malignancy.

Second Operation.

I did not see her again until a year later, when I had a note to say that there was a suspicious lump on the costal cartilage below the point of the previous removal. Her general health was still good, and there was no evidence of enlargement of glands.

At first I was disinclined to operate again, knowing the extensive character of the former operation; but her own medical man, supported by a well-known physician, thought that an operation ought to be undertaken, especially as the patient and her friends wished it.

On April 28th, 1908, I again operated, removing a portion of the seventh and eighth costal cartilages, and also the lower end of the body of the sternum, all of which seemed to be involved. On this occasion it was not necessary to open the pericardium, which was, however, fully exposed and appeared to be normal.

The tumour removed on this occasion proved to be composed principally of fibrous tissue without any cellular infiltration or