therefore transferred to a sanatorium. Soon after arrival he developed fits, and because albuminuria persisted he was referred to another hospital, where, the mother alleges, she was told at an out-patient consultation that the boy was suffering from two serious diseases, and she was advised to put him to bed at home and wait for him to die. He returned home to bed, where he remained 12 years, was cared for and educated by his family, and grew from a symptomless boy into an anxious adult. Twelve years later he got up because the family doctor suggested that a change of routine could not result in a worse outcome than was previously forecast. For 10 years he worked as a clerk, without illness, until the age of 34, when fits recurred, and for the investigation of these a new doctor referred him to another hospital, where he appeared in outspoken fear of a further period of prolonged rest. From his description the fits suggested attacks of petit mal, and on clinical examination an apical systolic murmur and pectus excavatum were noted, the latter being very severe. It measured 7.5 cm. in depth and had a capacity of 530 ml. The lungs were normal on clinical and radiological examination and there was no albuminuria.

It was thought that no organic disability existed, but on account of the patient's anxiety and the unusual story he related full investigation was recommended to reassure him about his health. By full cardio-respiratory investigation it was shown that both pulmonary and cardiac function were adequate and normal. Electroencephalography confirmed the occurrence of petit mal, and renal and urine investigations revealed normal kidney function with orthostatic albuminuria. A search for old case reports disclosed that, when tuberculosis was suspected at one hospital, a negative reaction to a tuberculin skin sensitivity test had been found elsewhere.

COMMENT

This case illustrates an unfortunate sequel to an alleged erroneous prognosis, and the usefulness of modern investigations in restoring confidence and eradicating the fear engendered in a symptomless patient 20 years earlier.

I am grateful to Dr. Neville Oswald for permission to report this case.

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The Relief of Recurrent Pancreatitis

Recently a number of papers and letters on this topic have appeared in various British journals. Holt (1954) lists ten different operative procedures applicable to the treatment of recurrent pancreatitis and gives 14 references, but nowhere does he refer to choledochojejunostomy-en-Y or to publications by Bowers and Greenfield on the subject. The operation of choledochoduodenostomy which Holt mentions is attended by grave disadvantages, notably the risk of cholangitis. Cattell and Warren (1953) in their book on surgery of the pancreas deal at length with recurrent pancreatitis, but although they include Bowers's papers among their references they do not mention the operation he advocates.

CHOLEDOCHOJEJUNOSTOMY-EN-Y

The operation of choledochojejunostomy-en-Y consists in division of the lower end of the common bile duct, closure of the distal stump, and anastomosis of the upper end of the duct to the end or side of a long side-limb of jejunum. This procedure is usually not difficult and does not give rise to shock, but it does demand a neat and careful technique. For operative details the reader is referred to papers by Bowers (1951), Bowers and Greenfield (1951), and myself (Barclay, 1950), and also to a more recent publication by Bowers (1954). Personally I do not always use an indwelling

tube, and if I do I remove it early. I prefer two layers of sutures, one largely in surrounding fibrous and fatty tissues.

This operation ensures that all bile is diverted away from the ampullary region. In my experience of five patients, the first of whom was operated upon in 1948, it has given complete relief of pain, the major and disabling symptom in recurrent pancreatitis. It has also completely relieved pain in a patient in whom cholecystjejunostomy without duct division had been performed with only partial relief.

There is evidence from my small series that in some instances pancreatic function continues satisfactorily, although in one case the pancreatic condition undoubtedly progressed, as both mild symptoms of pancreatic insufficiency and diabetes developed in the first two years after operation. Nevertheless, until he was admitted to hospital for stabilization of his diabetes the patient had not been absent from work or realized he was unwell. In no case has there been a repetition of the pain, nor any illness even resembling acute pancreatitis. Some of these patients had had repeated severe attacks of pain before operation.

The operation at least leaves the pancreas to go its own way, and there is no evidence that this is dangerous. If the organ does eventually atrophy, the longer the patient has the benefit of internal and external pancreatic secretions the better. The obvious risks—stricture of the choledochojejunal anastomosis and cholangitis—have not apparently troubled the patients treated by Bowers and Greenfield. Extensive experience with choledochojejunostomy for bile-duct lesions and carcinoma of the ampulla gives little reason to fear duct stricture. In one of my patients in whom jaundice developed five years after operation I removed multiple stones from the common duct and repaired a moderate degree of stenosis of the anastomosis. In this case gross biliary infection had existed before the duct was transplanted.

The risk of stricture in the hands of a careful surgeon should not be great enough to deter him from using this operation. The danger of cholangitis is a myth, as was shown by Peterson and Cole (1948) and by Cole, Reynolds, and Ireneus (1948), so long as the jejunal limb is made at least 18 inches (45.7 cm.) long. Theoretically, peptic ulcer might be a late complication. If this does occur, partial gastrectomy should give satisfactory results.

Here, then, is an operation which removes no functioning organ, gives prompt and adequate relief of symptoms, is neither unduly difficult nor dangerous, and so far (six years) seems not to give rise to late problems. Its use does not preclude later pancreatectomy, but simplifies it. Choledochojejunostomy-en-Y seems therefore to be the logical operative treatment for patients suffering from recurrent pancreatitis. It is of course reasonable, where there is gross calculous, gall-bladder, or common-duct disease, to perform cholecystectomy and duct drainage as a first step. If, however, attacks continue, I believe that transplanting the bile duct into the jejunum is infinitely the best procedure available. All five of my patients are now well. The only complication which arose has already been referred to.

A case successfully treated by transplanting the duct after cholecystectomy had failed to relieve the patient's symptoms is described below.

A SUCCESSFUL CASE

A man of 56 was admitted to hospital on September 19, 1946, with a history since 1916 of attacks of upper abdominal pain going through to the back, becoming progressively more frequent, more severe, and of longer duration. The usual onset was soon after eating. There was a marked feeling of distension with the pain; relief by vomiting was temporary and constipation was usual. About eight hours before his admission he had sudden very severe pain with nausea. He had elsewhere undergone cholecystectomy, performed by a very capable surgeon, some eight months previously, the gall-bladder containing stones. The attacks were not relieved at all by this operation. He had never been jaundiced. For three weeks before admission he had suffered bouts of pain almost every day, and the previous

evening had taken a dose of sodium sulphate for constipation, which he associated with the pains. On admission the patient was severely shocked and in great pain. The diagnosis was acute pancreatitis, perforation to be excluded.

At operation there was a large quantity of beef-juice fluid in the abdomen; the pancreas was swollen and firm, with much oedema of the loose tissues over it. A drain was placed in the lesser sac and the abdomen closed. Convalescence was stormy, chiefly owing to the development of ileus and acute renal failure. On the seventh day the patient seemed dangerously ill with oliguria, drowsiness, hiccup, poor general condition, and a total non-protein nitrogen level of 150 mg. per 100 ml. blood. However, on the tenth day the urinary output increased and he improved. He was discharged on October 28, 1946.

He was readmitted on September 17, 1948, just two years later. He had been having attacks of severe pain about once a month, with more frequent minor episodes. Diet and laxatives gave no relief. He could not take any fatty foods. Saline aperients produced pain, so for the past nine months he had been using an enema. On this second occasion the attack was clinically not quite so severe, though the picture was that of a major illness. He was treated conservatively with penicillin and sulphonamide drugs. Urinary diastase was at the very high level of 1,024 units (normal 8-32 units). This reading was checked and confirmed. He improved rapidly, and on his discharge the diastase level was 32 units.

On October 25, 1948, he was readmitted for operation. A plain radiograph showed the absence of calculi. At operation the hepatic pedicle was dissected and the common bile duct freed. The duct was a little dilated and the lower end was patent. There were many adhesions following the previous operations, and the pancreas was hard and thickened. The bile duct was divided low down and the lower end ligated and buried behind the duodenum; the upper end was anastomosed to the side of the jejunal limb. A Wangenstein enterostomy was made in the limb and a catheter passed up through the anastomosis into the bile duct, the end of the catheter being brought out through a stab wound in the flank. The catheter was accidentally removed 48 hours after operation, but there was no leakage of bile. Recovery was uneventful and he was discharged on November 13, 1948, since when he has had no pain whatever and has gained much weight. For the first time in thirty years he can eat what he likes, including cream and butter. He has no constipation. The improvement in his physique and outlook is remarkable, and he is embarrassingly grateful.

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A Bony Tumour of the Breast

Reports of tumours of the breast containing bone or cartilage are few. Cooper (1829) described one removed from a woman of 32. Bowlby (1882) saw a "sarcoma" with small foci of cartilage; Durham (1884) and Battle (1886) saw similar tumours classed as sarcomata. Bruce Clarke's (1890) tumour was so calcified that it had to be cut with a saw. Metastases are not mentioned in these reports. Morton (1904) saw a sarcoma with zones of cartilage which developed metastases in the skin, in skeletal muscle, and in a finger. Deaver and McFarland (1918) collected a series of 24 cases, found them so varied that it was difficult to describe them collectively, and suggested that the bone and cartilage resulted from metaplasia of connective tissue. Unfortunately McIver (1923) then reported a teratoma containing an alveolar process with teeth. Dyke (1926) saw a cystic mass containing bone, spindle cells, and multinucleated giant cells,

but did not commit himself regarding its nature. Mallory (1933) saw a case very similar to that seen by Dyke, and Rottino and Howley (1945) reported a bone-forming giant-cell tumour in which lung metastases caused death. In our case bone is the predominant feature.

CASE HISTORY

A married woman aged 67 who was under treatment for hypertension was found to have a lump in the left breast. She had been aware of it for some months. It was painless and not tender, and the skin showed retraction. A diagnosis of carcinoma was made, and it was decided to carry out a simple mastectomy and irradiate. The breast was removed in November, 1952, and 15 months later there had been no recurrence of growth.

Pathology.—A bulky breast containing, 5 cm. from the nipple, a globular bony tumour 3.5 cm. in diameter, separated from the skin by a thin fibrous layer and from the deep muscles by 3 cm. of breast fat. The skin was dimpled over the tumour and the rest of the breast appeared normal. The tumour was cut in half with a saw. A central cavity 1.5 by 1 cm. contained blood-flecked white gelatinous material and some straw-coloured fluid. The cut surface resembled the cut shaft of a long bone. Histological sections showed inactive fibrous tissue and scanty red cells lodged in a meshwork of bone. No marrow, no giant cells, and no cells suggestive of epithelium were found. The tumour was surrounded by laminated fibrous tissue, the irregularity of which suggested that it was derived from the surrounding breast. Section of the jelly in the central cavity showed whorls of oedematous fibrous tissue with zones of haemorrhage.

COMMENT

In the reported cases bone is described in nodules, in plates, and sometimes as an osteoid matrix. Rottino and Howley mention a case in which bone was found only in the metastases. Central cavities have been seen by Lange (1881) and by Mallory, who thought it was due to a central necrosis. Cooper notes pain intensified at the menstrual periods, but does not record a cavity. Dyke mentions three possible origins for these tumours: deposits from a tumour elsewhere, metaplasia following chronic irritation, and origin from totipotential cells. Rottino and Howley found that in 10 of the reported cases a fibroadenoma was in juxtaposition with a giant-cell tumour.

In our case the absence of epithelium makes it difficult to suppose that bone formation has occurred by metaplasia in a fibroadenoma or in a carcinoma. No giant cells are present to suggest that it is one of the potentially malignant "myeloid tumours," and there is no evidence of a primary tumour elsewhere. Nor is there anything to suggest that it is a teratoma such as that reported by McIver.

If the remote possibility of the traumatic transference of osteogenic tissue from the chest wall is ruled out, the final conclusion is that a bony mass has resulted from the metaplasia of pre-existing fibrous tissue—and there is no evidence regarding the condition of that fibrous tissue when bone formation began. It may have been that normally present, or that in an inflammatory site or in a neoplasm crushed out of existence by the bony proliferation. No precise classification is possible.

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