constant clinical characteristic of obliteratorive otosclerosis is the early age of onset of the hearing loss, in most cases occurring before adulthood. \(^{16}\) The 2 other cases in this series, with the onset of hearing loss occurring in childhood, had type 3 and type 4 stapedial otosclerosis.

A total failure to improve hearing by stapedectomy in 2 out of the 10 cases compares unfavourably with the successful figures for stapedectomies in general. This is hardly surprising and should not discourage attempts to rehabilitate the profoundly deaf patient with suspected advanced or far-advanced otosclerosis. The success rate is not discouraging to those whose deafness may be converted into useful hearing, with or without the additional help of hearing-aids. All patients must be forewarned that surgery may be unsuccessful and, as the residue of hearing that they still have may be destroyed by an unforeseen complication, it is always politic, as in all stapedectomies, to operate where possible upon the worse ear.

The question arises as to whether a second stapedectomy should be performed upon the opposite side. There seems little or no justification for this in the event of a successful stapedectomy, either in the advanced case or in otosclerosis of lesser severity. If the operation in far-advanced otosclerosis has failed it is unlikely to succeed on the opposite ear and to attempt further surgery is taking an unnecessary risk. As with most surgical adventures the first attempt offers the best and probably only opportunity for success.

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**Septate Gallbladder Associated with Duodenal Bands in Children**

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**SUMMARY**

Two children who suffered from bizarre intractable abdominal pain were found to have septate gallbladders and duodenal bands. Following cholecystectomy there has been complete relief of all symptoms.


A septate gallbladder has always been accepted as a benign anomaly of the biliary tract. Only when associated calculi have been demonstrated on cholecystography has surgery been advised.

Clinicians are reluctant to accept a septate gallbladder, without calculi, as a cause of bizarre abdominal pain in children. Although gallbladder pathology is rare in children\(^{14}\) it does occur, and investigation of the biliary tract should never be omitted.

Two children recently presented to us complaining of abdominal pain. Investigation in each case showed a septate gallbladder and bands across the second part of the duodenum. Both were eventually subjected to cholecystectomy, with complete remission of symptoms.

**CASE REPORTS**

**Case 1**

The patient was first seen in 1965 at 10 years of age, complaining of recurrent pain in the right hypochondrium. The pain was bizarre, unrelated to food, but aggravated by exercise and relieved slightly by rest. There was no nausea, vomiting or diarrhoea. The appetite was normal. On examination the only positive finding was tenderness...
on deep palpation in the right hypochondrium. Full investigations were carried out. A full blood-count, liver function tests, serum amylase and urine analysis were all normal. A barium meal showed the presence of non-obstructing bands across the duodenum (Fig. 1). An intra-venous pyelogram demonstrated a left hydroureter. A voiding cysto-urethrogram showed bilateral vesico-ureteric reflux up to the pelvic brim.

The gallbladder measured 10 cm. It had a boot-shaped appearance with the fundus curved in relation to the body of the gallbladder (Fig. 3). On the concave aspect of the curve there was a band extending from the fundus to the body. On opening the gallbladder, a distinct membrane separated the fundus from the body, producing a locule

A pyeloplasty was attempted, but was unsuccessful. Thereafter a left nephro-ureterectomy was performed and at operation the duodenal bands were divided. The gallbladder appeared large, but on palpation was felt to be normal. Nevertheless the pain continued unchanged, together with tenderness on deep palpation in the right hypochondrium. The intervals between attacks became shorter. An oral cholecystogram indicated a septate, well functioning gallbladder (Fig. 2).

Four years later in September 1969, when the patient was 14 years of age, and the pain had become intractable, a cholecystectomy was performed. After a rapid convalescence the child returned to school and sports activities. He has since been completely well with no recurrence of pain.
2 cm in diameter. The opening between this locule and the gallbladder could not be seen macroscopically (Fig. 4). Microscopically the gallbladder wall was normal, with no evidence of adenomyomatosis.

Fig. 4. The septum completely separates the two loculi of the gallbladder.

Case 2

In July 1970 a 15-year-old boy was admitted to our surgical wards. He complained of recurrent, bizarre abdominal pain in the right hypochondrium since the age of 10 years. His complaints and physical examination were identical in every respect to those of case 1. Full blood-tests, liver function tests, serum amylase and urine examinations were all normal. An intravenous pyelogram was normal. The upper gastro-intestinal examination showed non-obstructing bands across the second part of the duodenum. This was confirmed with hypertonic duodenography. On the strength of this and the remarkable similarity of symptomatology with case 1, an oral cholecystogram was performed. A septate gallbladder, almost identical to the gallbladder seen previously, was found.

In September 1970 a cholecystectomy was performed. There was a rapid convalescence and since that time the child has been completely pain-free.

This gallbladder measured 5 cm. There was a narrowing present at the junction of the fundus and middle third of the gallbladder, and the fundus itself was turned inwards. On dissection, the opening of the gallbladder body into the fundus was found to be very small, measuring 3 mm in diameter, and there was a broad septum at this point. Microscopically, there was an infiltrate of lymphocytes and polymorphonuclear leucocytes into the wall of the gallbladder in the area of the septum. There was no evidence of adenomyomatosis.

RADIOLOGICAL FINDINGS

Oral cholecystography in both these patients demonstrated well opacified, bilocular gallbladders. The loculi were both situated at the fundal end of the gallbladder. These loculi were separated from the body of the gallbladder by a septum. These septa, before contraction of the gallbladder following a fatty meal, measured 4 mm. Both gallbladders and loculi contracted well. At no stage were Rokitansky-Aschoff sinuses demonstrated.

The radiological appearances were bizarre and the possibility that these children were suffering from adenomyomatosis was postulated, although this has never before been reported in childhood. The X-ray findings were not compatible with a phrygian cap.

Case 1 had 3 oral cholecystographic examinations and an intravenous cholangiogram in the 5 years of illness. The radiological findings at all times were identical, and there was never any radiological evidence of progression of disease.

DISCUSSION

The occurrence of transverse septate gallbladders is rare. On reviewing the English literature only 4 cases could be found. In all except one case the patients were adults, and most presented with calculi in the distal locule. It is of interest to note that all the patients had had a lengthy history of abdominal pain.

The gallbladder originates from a small hepatic diverticulum which develops in the apex of the duodenal loop and grows into the septum transversum. This bud develops a large cranial portion which becomes the intrahepatic biliary tract, and a small caudal portion which becomes the gallbladder and cystic ducts. These solid stalks canalize to form the structures of the biliary tract. Incomplete canalization is suggested as the cause of transverse, multiple and longitudinal septa in the gallbladder. The occurrence of longitudinal septa in the gallbladder, and of the duplication of the gallbladder, appears to be a commoner finding than the transverse septum. Only one report of a multisepatate gallbladder in a child has been documented.

The occurrence of associated duodenal bands in the 2 patients presented, is an interesting association which has not been reported previously. The possibility of a new syndrome must be postulated.

It is possible that patients with a transverse septum dividing the gallbladder into loculi, without adequate communication between the loculi, eventually develop calculi in the distal locule due to stasis, incomplete drainage and possible infection. The mechanism of pain in children, however, may well be distension of the distal loculi.

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