

# AORTO DUODENAL FISTULA WITH LEFT SIDED INFERIOR VENA CAVA—A CASE REPORT

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## SYNOPSIS

**A case of acute duodenal fistula presented with massive G.I.T. haemorrhage. The pathogenesis, clinical features and operable management of this condition is briefly elaborated.**

**The aneurysm was associated with left sided infra-renal I.V.C. The anatomical basis of this congenital anomaly is discussed.**

## INTRODUCTION

Atherosclerotic abdominal aortic aneurysms are uncommon in the South East Asian community and aorto-duodenal fistulae more so. This serious and potentially lethal complication of an aortic aneurysm need not be a "necessarily fatal condition" (Cleland, 1947) if the diagnosis is suspected and operative intervention is early. Of the 56 cases reported between 1951-1972, 20 were operated upon, 10 of which survived more than 3 months. (Evan and Webster 1972). In this report a further case of aorto-duodenal fistula is reported with successful repair. In addition, there was an associated anatomical anomaly of a left sided inferior vena cava.

## CASE REPORT

### *History*

Z.H.B. a 59 year old Malay male was admitted on 9.6.73 complaining of a painless pulsatile swelling in the abdomen for 3 months which was increasing in size. He had been investigated elsewhere and told that he had a "swelling of the blood vessel" but no treatment was offered. In 1941 he had an appendicectomy via a right paramedian incision. He smoked 45 cigarettes a day, was not hypertensive. He was not a diabetic and was never exposed to venereal diseases.

### *On Examination*

He looked well with B.P. 120/80 and P. 80/min. regular. The heart and lungs were normal. In the abdomen there was a smooth 3 × 4 cm. oval swelling well to the right of a paramedian scar at the level of the umbilicus. The swelling seemed to be retroperitoneal and exhibited expansile pulsation. An aortic pulsation was palpable in the epigastrium and the left iliac and both femoral arteries were normally palpable.

### *Investigations*

Hb. 12.6 gm. % WBC:DC., Urea and Electrolytes were all normal; Urine: nad.; Chest X-ray:nad. Abdominal X-ray: a mass was seen on the right side pushing the small intestine to the left.

### *Progress*

In the next 3 days patient had one episode of haematemesis and 3 episodes of melaena which later became almost fresh blood.

### *Operation*

(Figs. 1 and 2) At laparotomy on 14.6.73 the whole gastro-intestinal tract (G.I.T.) contained blood with marked distension of the second and third parts of the duodenum. There was an infra-renal aortic aneurysm placed well to the right side, densely adherent to the third part of the duodenum. The inferior vena cava was placed on the left of the aorta crossing over anteriorly behind ascending part of the fourth part of the duodenum to continue upwards on the right side. The right renal vein crossed posterior of the aorta.

### *Procedure*

The aorta was controlled proximally and the iliac arteries distally. On separating the

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duodenum from the aorta a 1 cm. communicating opening was revealed between the aorta and duodenum. The duodenal opening was repaired, and the aortic aneurysm resected in the usual manner and replaced with a straight crimped dacron graft. The residual aneurysmal wall was sutured over the graft and the post peritoneum was closed separately. (Fig. 3). Abdomen was closed without drainage. His postoperative recovery was uneventful and he has remained well for the last twelve months.

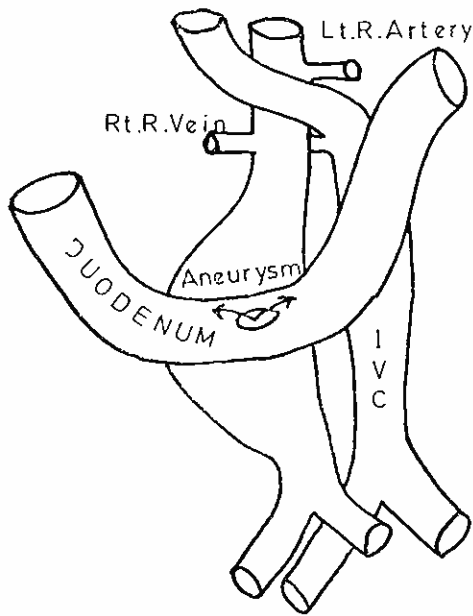


Fig. 1. Operative findings.

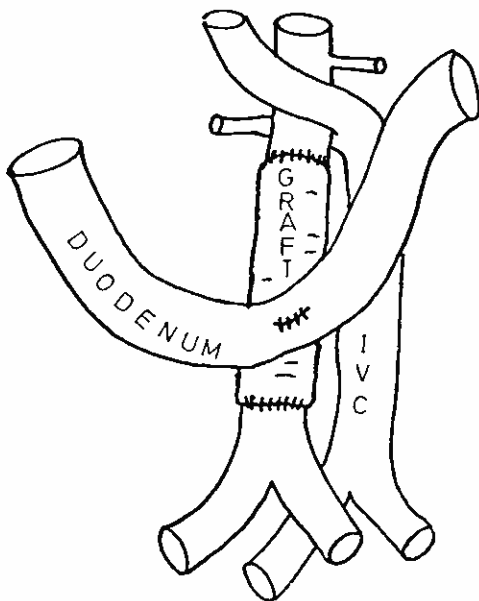


Fig. 2. Operative procedure.

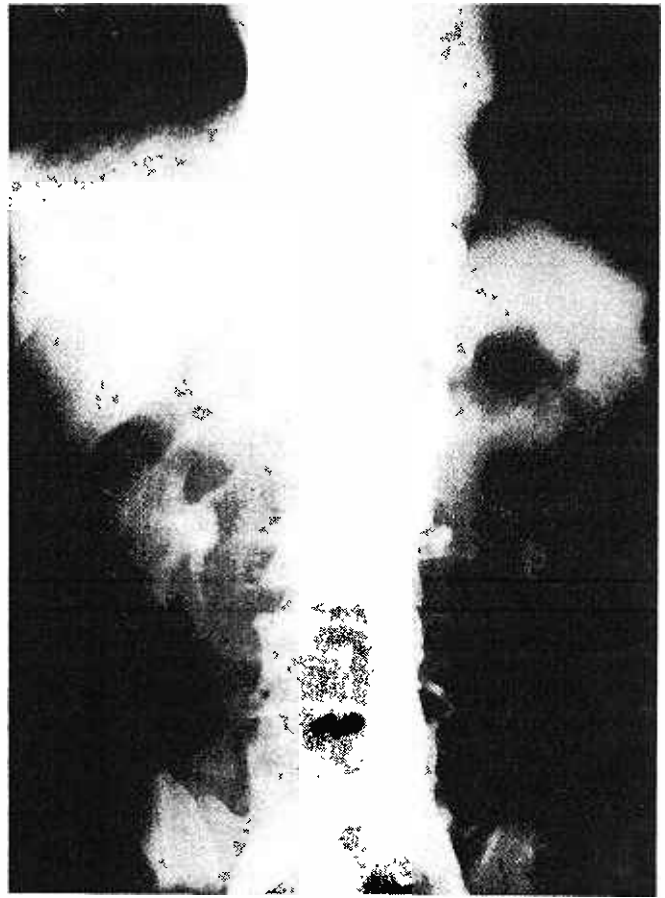


Fig. 3. Postoperative venogram showing left sided I.V.C.

## DISCUSSION

The two aspects of the present case that gave rise to much interest were: first the unusual cause of G.I.T. bleeding from an aorto-duodenal fistula and secondly the peculiar anatomical course of the I.V.C.

### A. Aorto Duodenal fistula

Aortic fistulae into the G.I.T. have been reported at various levels. Fistulation into the duodenum, especially with the third part, is the commonest. In recent years increasing incidence of this complication has been reported after aortic prosthetic replacement. (Sheil *et al*, 1969; Wierman *et al*, 1966).

While the atherosclerotic aneurysm is the commonest cause of fistula formation, other lesions have also been associated with aorto-duodenal fistulation e.g. trauma, dissection, and infection—syphillitic, mycotic (Sheldon *et al*, 1968; Roach 1939).

The periarteritis associated with atherosclerosis causes the bowel to become adherent to the aorta or graft (particularly the proximal suture line). The process is enhanced by infec-

tion, haemorrhage and inadequate graft isolation. Gradual erosion takes place, aggravated by movement due to aortic pulsation and infection from gastrointestinal bacteria and proteolytic enzymes. Ultimate dissolution of the barrier occurs and fistulation is established between the duodenum and the aortic aneurysm or proximal suture line of an aortic graft. Bhagavan and Weinberg (1968) emphasized the role of inflammation in the pathogenesis of this lesion.

Clinically, these cases present as a typical secondary haemorrhage (Evan and Webster 1972). Initial small bleeds are followed by a recovery period and several further episodes of minor haemorrhage occur finally ending in massive haemorrhage. An aorto-duodenal fistula should be considered in all cases of G.I.T. haemorrhage in the presence of an aortic aneurysm or previous aortic surgery (Sheil *et al*, 1969). In the present case, there was no pain but recurrent G.I.T. bleeding dominated the clinical picture. An aortic aneurysm was not suspected because of the atypical anatomical situation of the pulsatile mass palpated clinically.

Once suspected, there is no place for conservative treatment nor is an aortogram necessary. Energetic resuscitation followed by laparotomy is mandatory. Thirty-six of 56 cases died before surgery could be undertaken in the collected series quoted by Evan and Webster (1972). Proximal aortic control is an essential priority before the fistula is tackled. Such conservative methods as transduodenal repair (Bhagavan and Weinberg 1968), separate repair of duodenum and aorta with or without a patch (Sheldon *et al*, 1968) are unlikely to control bleeding successfully. Resection and prosthetic grafting of the infrarenal aorta with closure of the duodenum is the procedure of choice (Evan and Webster 1972). It is not necessary to resect en bloc the affected duodenum with the aneurysm as suggested by Eadie and Pollock (1968). Measures must also be taken to isolate the graft, particularly the proximal suture line, from the duodenum. Retroperitoneal tissue and the posterior peritoneum is closed over the graft. An omental graft may also be interposed. The graft should be of the correct length so that anterior bowing is prevented (Sheil *et al*, 1969).

## B. Left-sided Infrarenal I.V.C.

Because of its complicated mode of development, I.V.C. anomalies are not frequent. A left vena cava is present in about 0.45% (Gladstone 1929) of persons. A double vena cava below the kidney is twice as common (Hollinshed 1958). The infrarenal I.V.C. (post renal) is developed normally from the right post-cardinal vein. In the present case the anatomically placed left-sided I.V.C. caused much clinical confusion. This was due to a persistent left posterior cardinal vein which had to cross over the aorta to drain into the supra-cardinal vein which forms the subhepatic portion of the I.V.C.

## SUMMARY

1. A case of atypical G.I.T. bleeding due to aorto-duodenal fistula following an aortic aneurysm is presented.
2. Aortic aneurysm was placed anatomically in an atypical position due to a congenital (L) sided I.V.C.
3. The aneurysm was resected and grafted and the duodenal fistula repaired.

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