CASE REPORT

MEMBRANOUS OBSTRUCTION OF INFERIOR VENA CAVA

S. MURALIDHARAN, V. JAYANTI AND ASHOK CHACKO

Departments of Cardiovascular & Thoracic Surgery and Gastroenterology, Christian Medical College Hospital, Vellore

(RECEIVED: JANUARY 10, 1983)

A case of membranous obstruction of inferior vena cava managed surgically by local resection of membrane with widening of the inferior vena cava with autologous pericardium is reported.

Obstruction in the inferior vena cava are of varied aetiology. It may be thrombotic, stenotic, membranous or a combination of any of these. Surgery has a definitive role in the management of these cases. Most of the cases reported so far have been managed surgically either by a transatrial approach or the obstruction is bypassed. We are reporting a case of membranous obstruction of the inferior vena cava managed surgically by local resection of the membrane with pericardial widening of the inferior vena cava. This procedure, we believe, has not been carried out before in India.

CASE REPORT

A 35-year-old male patient presented with prominent veins over the abdomen, varicose veins in both lower limbs and pedal oedema of a year's duration.

On examination. There was mild pallor, bilateral pedal oedema, varicose veins over the small saphenous system with a chronic venous ulcer over the right leg with aneurysmal dilatation of the right femoral vein. Hepato jugular reflux was negative. There were prominent veins over the anterior, posterior and lateral aspects of the abdominal wall with flow of blood from below upwards. Liver was 2 cm below costal margin, there was no free fluid. Bilateral hydrocele was present.

Investigations. Haemogram and liver function tests were normal. HBS Ag was negative. Gastroscopy revealed grade II varices. X-ray chest was normal. Transfemoral percutaneous inferior vena cavogram was done. Pressure of 25 mm Hg was recorded. The right hepatic vein was patent. There was a smooth complete obstruction of the inferior vena cava close to its opening into right atrium (Fig. 1).

Correspondence: Dr. S. Muralidharan, Dept. of Cardiovascular & Thoracic Surgery, Christian Medical College & Hospital, Vellore 632004.
Diagnosis of obstruction of IVC of membranous variety was considered. The surgical approach was by a right lateral thoracotomy through the 7th intercostal space. The IVC was dissected. Digital exploration through the atrium revealed the fact that the site of obstruction was far below what was delineated by the angiogram. The IVC was exposed in the posterior aspect of the liver. Control was secured of the left and right hepatic veins. The IVC was opened between clamps. A complete thick membranous diaphragm about 1 cm in diameter and 2 mm in thickness was seen just above the right hepatic vein (Fig. 1). This was excised and the inferior vena cava was closed with an autogenous patch of pericardium measuring 5 cm x 2.5 cm to avoid constriction at the site. The liver surface was smooth, a biopsy was however not taken. The excised diaphragm was saucer-shaped with a central depression of 3 mm (Fig. 2). Histopathological examination revealed a dense fibrous connective tissue with focal calcification.

His post operative period was uneventful. The engorged veins disappeared and his venous ulcer healed. Post operatively the IVC drained freely into right atrium (Fig. 3). The pressure recorded was 5 mm Hg. There was no reflux into the hepatic veins nor was there a pressure gradient across the hepatic veins.

**DISCUSSION**

Membranous obstruction of IVC have been reported from various centres in India; the largest series was from Chandigarh(1-3). The clinical manifestations in our case were of late onset and this was possibly as a result of slow closure of the membrane. This is further evidenced by the presence of a dimple on the diaphragm. The calcification suggests long standing disease.

Most of the cases in various series were managed surgically(4,5). The objective of surgery in these cases is primarily relief of venous stasis. The procedures available include transatrial membranotomy(6), using a variety of methods for dilatation, the simplest being the finger fracture in an incomplete membrane. Membranes of moderate thickness need to be opened either with bougies or Tubbs dilator(2,7). These techniques are acceptable where the obstruction is incomplete and the membrane is situated in the supra hepatic portion of the IVC. The relief is temporary and long term results are not favourable.

Cavoatrial bypass has been suggested by the Japanese workers, in a long segment obstruction of IVC. The technique involves the use of a long synthetic graft in the venous system. Fabric grafts have a tendency to thrombose when placed in the venous system, and hence its role in management is questionable(8). A graft placed posterior to the liver is likely to be compressed and hence the suggestion to use stented PTFE grafts in the large venous channels(9).

In the presence of thick membrane, as in our case, virtually all closed methods are
FIG. 1 Inferior vena cavogram showing the smooth obstruction of IVC with a patent right hepatic vein.

FIG. 2 Post operative inferior vena cavogram showing the dye entering the right antrum.

FIG. 3 The resected membrane.
bound to be unsuccessful. The only method of relief of the obstruction is by excision of the membrane. The membrane was situated in the infra diaphragmatic portion of the IVC, just above the right hepatic vein. The left hepatic vein opened above into the IVC. Control of these structures was easily secured. With complete resection of the membrane the obstruction was relieved. To avoid the possible narrowing of the IVC post-operatively the opening was widened using a autologous pericardial graft. Occlusion of the IVC was for a period of 20 minutes. The venous drainage of the liver is not likely to be jeopardised when one of the hepatic vein is still patent. Similar procedure in which a pericardial graft was used to widen the suprahepatic portion of the IVC with partial occlusion of the left hepatic vein has been reported by other workers(10,11).

We elected to use a pericardial patch to widen the IVC in preference to synthetic graft material being aware of the many pitfalls with the use of grafts. The procedure, we believe, has not been reported from India before.

ACKNOWLEDGEMENT

The authors wish to thank Mr. V. Kamalanathan for his secretarial assistance.

REFERENCES