BYPASS SURGERY USING SPIRAL VEIN GRAFT FOR SUPERIOR VENA CAVAL OBSTRUCTION CAUSED BY CALCIUM THERAPY THROUGH CENTRAL LINE

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ABSTRACT

Superior Vena Caval Syndrome (SVCS) is a complex produced by the superior vena caval obstruction (SVCO) due to infective and malignant pathologies. We report a case of a 28 years old girl suffering from celiac disease who presented with severe SVCO caused by prolonged calcium therapy through the central line.

Key words: SVC syndrome, Calcium therapy, celiac disease, Spiral vein graft.

INTRODUCTION

William hunter in 1757 reported the first case of SVCS in medical literature [1]. In the early and mid 90's infectious diseases like tuberculosis and syphilis, fibrosing mediastinitis and aortic aneurysms were the most common cause of SVCS. With the advent of newer treatment modalities for infectious diseases, the leading cause of SVCS are now malignant disorders.[2] The number of cases of SVCO is rising due to frequent use of central venous lines and pace-maker wires. SVCS due to prolonged calcium therapy through the central line has not been reported in literature to date.

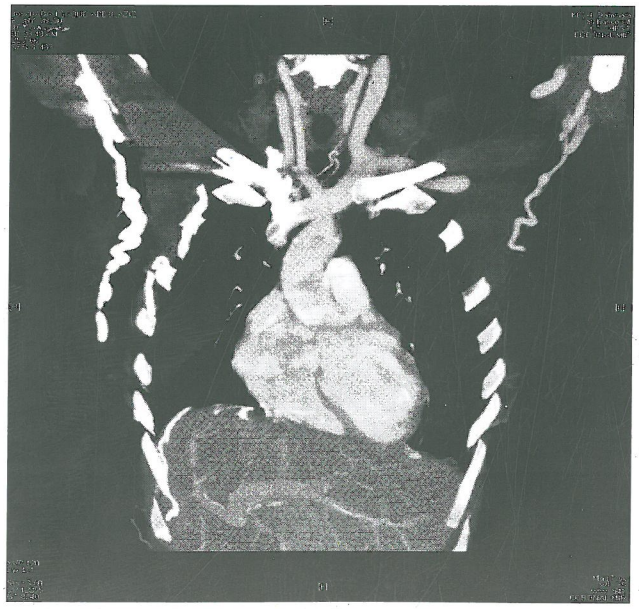

Fig. 1

CASE REPORT

A 28 years old girl suffering from celiac disease with persistent hypocalcaemia not responsive to oral calcium therapy, frequently received calcium gluconate through the central venous catheter for four weeks. Following that, she developed facial swelling, headache, dry cough and orthopnoea. She also complained of dizzy spells. Examination revealed distended neck and upper trunk veins. CT angiogram showed complete obstruction of SVC and formation of upper trunk venous collaterals. (fig 1).

Interventional management (dilatation and stenting) failed, as the interventionalists were unable to pass the guide wire through the obstructed superior vena cava (SVC). The patient was finally referred to us for surgical management.

Median sternotomy revealed fibrosed and thickened superior vena cava. Long saphen-

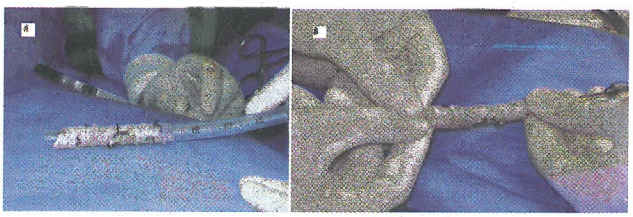

Fig.2a Fig.2b

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ous vein was harvested and opened longitudinally, all valves were removed and spiral graft was constructed over 32 Fr chest drain using 7-0 Prolene (figs 2a & b).

The vein graft was anastamosed proximally to the Innominate vein and distally to the right atrial appendage. On removing the clamps the graft filled up nicely (fig 3). Intraoperative Doppler studies confirmed excellent blood flow in the graft.

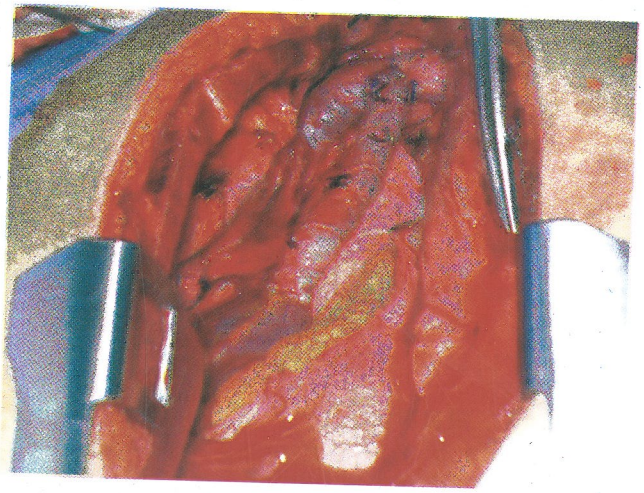

Fig.3

The sternum was closed in layers as standard. The patient was extubated on table and her post operative recovery was uneventful. Clinical improvement was dramatic and she was discharged home on oral anticoagulants (Warfarin).

DISCUSSION

The management of superior vena caval syndrome is based on the etiology and severity of patient's symptoms. Most malignant pathologies such as Bronchogenic Carcinoma, non Hodgkin's Lymphoma, Thyroid Carcinoma and metastatic mediastinal tumors respond well to radiotherapy and chemotherapy.[3,4] Interventional management (endo-vascular stenting) for short lesions along with chemo-radiotherapy has been described.[5] Surgical intervention is mostly reserved for patients with benign etiology and in very limited patients with malignancy. Before surgical intervention preoperative diagnosis of complete SVC obstruction with CT venography is mandatory. Dotty et al have classified the SVCO into four types (Stanford Dotty Classification):

- Type I < 90% SVC stenosis and patent azygos vein.
- Type II 90-100 % of SVC stenosis and patent azygos.
- Type III 90-100% stenosis of SVC with reverse circulation in patent azygos vein.
- Type IV total occlusion of SVC and its supplying veins.[6]

Surgery is mostly recommended in type III and type IV and selected cases of type II, when symptoms are severe. The largest series of SVCO bypass using spiral vein graft has been reported by Donald Dotty with a 5 year patency rate of 90%.[7,8]

CONCLUSION

The treatment modalities depend upon the etiology of SVCO. Majority of malignant cases are treated with radiotherapy and chemotherapy. For short lesions endovascular treatment i.e. stent implantation is successful in 90-100% of cases. In some cases of thrombosis of SVC thrombolysis and subsequent SVC dilation and stent insertion have been advocated with a bleeding risk of 10 – 15%. In case of failure of interventional and conservative management, particularly in benign cases, surgery is the only alternative. Surgery for the SVCO using a spiral vein graft is a good option and long term good results have been reported in literature [7,8]. In our case the intravenous calcium therapy through a central line led to the complete obstruction of SVC which was probably due to the sclerosant action of calcium and prolonged central line use.

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