

MODIFIED SUGIURA PROCEDURE FOR NONALCOHOLIC BLEEDING ESOPHAGEAL VARICES

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Thirty-one patients with bleeding esophageal varices (Child's class A and B) were treated by a modified Sugiura procedure; 24 were Child's class A and seven were Child's class B. All patients were nonalcoholic, 19 (61%) had liver disease secondary to schistosomiasis. There were no deaths. The morbidity rate was high (65%) but all were managed successfully. Early dysphagia occurred in 11 patients (35%); five progressed to strictures which required repeated dilatations. All patients except one lost to follow-up at six months are alive three to six years after their surgery. There has been no recurrence of bleeding and no encephalopathy.

The main goals for intervention in bleeding esophageal varices are to control the bleeding, prevent recurrence and maintain hepatopedal blood flow to avoid deterioration of liver function and encephalopathy.

Whether in portal decompression or direct approach to the varices, the patient's outcome depends mainly on the stage of his liver disease.

Controversy still exists about the optimal treatment for the bleeding esophageal varices;^{1,2} portal decompression procedures are less favored for nonalcoholic patients due to the postoperative encephalopathy and possible deterioration of liver function. Extensive esophagogastric devascularization with esophageal transection and splenectomy as reported by Sugiura et al. produced excellent results in controlling variceal bleeding with low operative mortality and no increase in encephalopathy.³⁻⁶ Several modifications of the original Sugiura procedure were reported with different results.⁷⁻¹¹

In 1987, we embarked on this study to evaluate the efficacy of a modified Sugiura operation¹²⁻¹⁴ in the treatment of patients with bleeding esophageal varices, Child's class A and class B. Patients in Child's class C were treated with sclerotherapy, esophageal transection and possible referral for liver transplant. This article describes the results with follow-up ranges between three to six years.

Methods

From 1987 to 1990, 31 patients underwent a modified version of the Sugiura procedure for the bleeding esophageal varices.

All bleeding patients were resuscitated and treated medically by restoring blood volume and correcting coagulation abnormalities. Intravenous vasopressin and balloon tamponade were used if required.

Hematological and biochemical blood work was obtained and the patients were graded according to Child's classification. Patients graded Child's class A and class B were included in this study. Child's class C patients or those with previous surgery for their varices were treated with early injection sclerotherapy, esophageal transection if sclerotherapy failed and considered for referral for liver transplant.

Cases were considered emergent if bleeding was not controlled by medical measures, considered urgent if bleeding was controlled and surgery was performed during the same hospital admission (usually within two weeks). Elective patients with a previous history of documented esophageal bleed were admitted for routine surgery.

Technique

We performed a modified version of the Sugiura procedure, which is a left thoracoabdominal incision, devascularization of the proximal stomach and esophagus up to the inferior pulmonary vein, splenectomy and esophageal transection using the EEA stapler. A loose Nissen fundoplication was performed if there was concern about the integrity of the anastomosis, but not routinely. Great care was taken to preserve the longitudinal para-esophageal veins during the devascularization procedure; the left gastric vein was left intact.

The original Sugiura procedure had three parts: splenectomy, extensive esophagogastric devascularization, transection and suturing the esophagus by hand. He performs these steps in two stages through separate left thoracic and abdominal incisions, did a selective vagotomy as a part of the devascularization procedure which then required a pyloroplasty.

The modified version (which we perform) differs from the original procedure in the following manner: it is a one-

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stage procedure, performed through one incision; no selective vagotomy or pyloroplasty was performed and the esophagus was transected using the stapler machine (EEA).

Results

Thirty-one patients were operated on for bleeding esophageal varices — 28 men and three women, with a mean age of 31 years (range 21 to 60). Two patients had emergency surgery as their bleeding could not be controlled by medical measures, 16 had urgent surgery within two weeks after control of their bleeding, while 13 had elective surgery. All had documented bleeding esophageal varices by endoscopy. Four patients presented with bleeding varices for the first time, while six bled twice before, five bled three times, nine bled four times and seven patients bled five times and more.

Of the 18 nonelective patients, four had vasopressin injections, six had balloon tamponade and one had a single session of injection sclerotherapy. Twenty-four patients were graded as Child's class A and seven were graded as Child's class B; four patients had mild ascites. Twenty patients had liver biopsies during their surgery, 13 showed schistosomal fibrosis, four had postnecrotic cirrhosis and three had chronic hepatitis. Eleven patients did not have liver biopsies during surgery; of those, six had a past history of schistosomiasis which was treated medically and five had HbBS Ag tested positive.

The average operative time was five hours (range 3.0 to 10.5 hours). The mean blood transfusion was three units (range 0 to 15 units). There were no deaths and all were discharged in good condition.

The most frequent complication was dysphagia; eleven patients had early dysphagia, six improved with no intervention, the rest (five patients) progressed to develop strictures which required dilatation (three patients were dilated twice, the other two required four and five dilatations). Dilatations were performed using balloon and mercury dilators and were well-tolerated by the patients. Dilatation relieved the symptoms completely in all cases.

Two patients had wound infection, one had postoperative bleeding which required re-exploration and control of bleeding from the splenic hilum. There was only one leakage from a gastrotomy site documented by gastrograafin swallow; this was treated successfully by conservative measures including TPN. Five patients had chest infection which was treated by the appropriate IV antibiotic (Table 1).

All patients were followed up regularly with endoscopies. One patient was lost to follow-up six months after his surgery; all others are alive with no recurrence of bleeding from their esophageal varices three to six years after their surgery. There were no cases of encephalopathy.

Postoperative endoscopies showed complete disappearance of varices in all but two; in both patients, residual varices were injected until they were completely eradicated.

Discussion

Massive hemorrhage from esophageal varices is a life-threatening sequela of chronic hepatic disease; the majority of cases of bleeding esophageal varices in Saudi Arabia are secondary to *Schistosoma mansoni* or posthepatic cirrhosis.

The surgical treatment of portal hypertension and bleeding esophageal varices is controversial and several procedures have been described to treat this condition. Portal decompression is very effective in controlling and preventing variceal hemorrhage but is associated with encephalopathy and occasionally with deterioration of liver function.^{15,16} Although distal splenorenal shunts reduce the incidence of encephalopathy, neither patient survival nor recurrent hemorrhage is any different from that obtained with standard portosystemic shunting.¹⁷⁻²¹

Sugiura et al. described a two-stage operation of extensive devascularization of the esophagus and proximal stomach, esophageal transection, splenectomy, vagotomy and pyloroplasty. They reported a very low mortality rate, low incidence of recurrent bleeding, a seven-year survival of 82% and no encephalopathy.³⁻⁵ Although excellent results with the Sugiura procedure or its modifications were reported from Japan and other countries, North American results were less favorable.⁶⁻¹⁰ The cumulative survival rates of patients after nonshunting operation differed significantly according to the nature of the original diseases and the severity of liver damage.

The modified version of the procedure (which we perform) is a one-stage operation done through an extended left thoracoabdominal incision which offers excellent exposure to the lower esophagus, upper stomach and spleen where splenectomy and extensive devascularization of the lower esophagus and upper stomach can be done with ease. With this excellent exposure, meticulous technique and experience in performing the procedure, blood loss can be minimized (the last five cases we performed did not require blood transfusion intraoperatively or postoperatively). As

TABLE 1. Postoperative complications in patients according to the urgency of their surgery.

	Emergency	Urgent	Elective	Total (%)
Dysphagia required dilatation	1	7	3	11 (35)
Wound infection	0	0	2	2 (6.5)
Leakage (gastrotomy)	0	1	0	1 (3.2)
Postop bleeding	0	1	0	1 (3.2)
Chest infection	0	2	3	5 (16)
Total	1	11	8	20 (65)

no truncal or selective vagotomy is performed in the modified procedure, there is no need to perform pyloroplasty, which excludes the potential problems of one more suture line and the long-term sequelae of the pyloroplasty itself.

Our results show that a modified Sugiura procedure in Child's class A and class B nonalcoholic patients can offer good results with no operative mortality and excellent control of bleeding with no recurrence. Although morbidity level was high, almost all were nonlife-threatening and could be managed successfully.

We do believe that the modified Sugiura procedure is a safe and very effective operation for the treatment of nonalcoholic esophageal varices in Child's A and B patients.

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