Management of a Bleeding Ulcer by Post-esophageal Ligation of Varices with Self Expanding metal Stents: Case Report and Literature Review

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Abstract

Early treatment of bleeding varices with direct compression dates from the work by Westphal et al. in 1930. Later in 1950, Sengstaken-Blakemore developed their balloon which Panes and collaborators defined as the first line of therapy for esophageal varices in 1980 while they used the Linton-Nachlass balloon for gastric varices (1, 2).

This study presents the clinical case of a patient with liver cirrhosis due to hepatitis C, (Child B) with esophageal varices which were ligated on two different occasions because of bleeding. On the second occasion a rupture was imminent and ligation occurred two weeks prior to the event. The patient presented a clinical picture compatible with massive upper gastrointestinal bleeding with endoscopic evidence of a bleeding esophageal ulcer that did not improve with terlipressin, sclerotherapy with adrenaline, or balloon dilatation. Consequently, it was to use a partially covered self-expanding metal esophageal stent for salvage therapy since a completely covered stent was not available at that time. Stenting achieved partial control of bleeding. We recommend the use of stenting with a stent specifically designed for this indication (SX-Ella Danis) as salvage therapy for refractory bleeding from esophageal varices. The stent can be used as a bridge to stabilize the patient in order to perform TIPS as the definitive treatment, as in the case of our patient.

Keywords

Esophageal stent, refractory bleeding esophageal varices, ulcer.

INTRODUCTION

The use of direct compression for early management of bleeding varices dates from 1930 when it was reported by Westphal et al. In 1950 the Sengstaken-Blakemore tube for balloon tamponade was developed. Panes and collaborators defined it as the first line of therapy (1, 2). In 1980 the Linton-Nachlas tube for balloon tamponade began to be employed to treat esophageal varices and gastric varices. Success rates with this tube for short term control of bleeding ranged from 50% to 91.5%. There were also many complications such as aspiration pneumonia, giant esophageal ulcers, esophageal tearing and obstruction of the air passages. In addition, half of the patients treated with balloon compression suffered rebleeding when the device was removed (3, 4). The six-week mortality rate for patients who have been treated for bleeding varices ranges from 15% to 20% depending on the severity of concomitant liver disease. Current treatment consists of a combination of active local and systemic vascular medications, endoscopic band ligation and antibiotics (1). Garcia-Pagan et al. have demonstrated that, for patients who are at high risk from the standard procedure, early placement of a TIPS (transjugular intrahepatic portosystemic shunt) within the first 72 hours significantly reduces mortality. Today, balloon tamponade is only indicated for massive uncontrolled bleeding for a maximum of 24 hours as a bridge to definitive therapy (2).

CASE REPORT

The patient was a 53 year old man who had vomited approximately 300 cc of blood followed by lipothymy. He had a history of Child-Pugh class B liver cirrhosis due to hepatitis C and had undergone evaluation for liver transplantation. Two esophageal varices had been ligated to stop bleeding on two separate occasions. On the second occasion, two weeks before the patient was admitted, the ligation had been performed because of impending rupture. The patient also suffered from ocular toxoplasmosis for which he had been being treated with clindamycin, trimethoprim and sulfamethoxazole for 30 days. In addition, two years earlier the patient had been diagnosed with high blood pressure for which he was taking 5 mg/day of enalapril, 20 mg of propranolol every 12 hours, and 20 mg/day of omeprazole.

Upon admission, the patient's hemoglobin level was 10.2 mg/dl. Treatment with terlipressin and ceftriaxone was started immediately. While still in the emergency room, the patient began to vomit a large amount of blood which led to hemodynamic instability due to hypotension and to difficulty breathing. Tracheal intubation was performed, three units of red blood cells were transfused, and norepinephrine was administered for vasopressor support.

Upper endoscopy showed a jet of blood erupting through a tear in the distal third of the esophagus but no evidence of perforation. Instead there was active bleeding, ulceration and an exposed blood vessel. Hemostasis with epinephrine was unsuccessful, so balloon dilation was attempted. At first it controlled the bleeding, but the bleeding soon began again. Salvage therapy through placement of an esophageal stent was initiated. A partially covered self-expanding metal stent was used because a fully covered stent was not available at the time. The stent was able to partially control of bleeding. The patient was stabilized and moved to the intensive care unit. Twenty-four hours after admission, the patient developed a fever and leukocytosis. A thoracic CT scan with contrast showed pneumomediastinum and left pleural effusion.

Surgery was performed because of the strong possibility of esophageal perforation. Acute mediastinitis was drained, an intercostal muscle flap was harvested to close a lesion in the esophagus and a pleural decortication was performed. Antibiotic treatment with linezolid and meropenem was begun. Following surgery there was evidence of the formation of an esophageal fistula, but it subsequently resolved by the third week with medical management (Figure 1). Then, a TIPS was placed into the patient without complications. In the fourth week the esophageal stent was removed under radiographic guidance with the patient under general anesthesia. There was evidence that the stent had become partially embedded in the proximal esophageal wall (Figure 2). The removal of the stent was achieved with slow progressive pulling without complications. A check of the esophagus showed that the perforation had been resolved and that there were no ulcers or esophageal varices (Figures 3, 4, 5). The patient was able to tolerate oral feeding twenty-four hours after surgery 24 hours and was discharged.

Figure 1. Esophageal Fistula

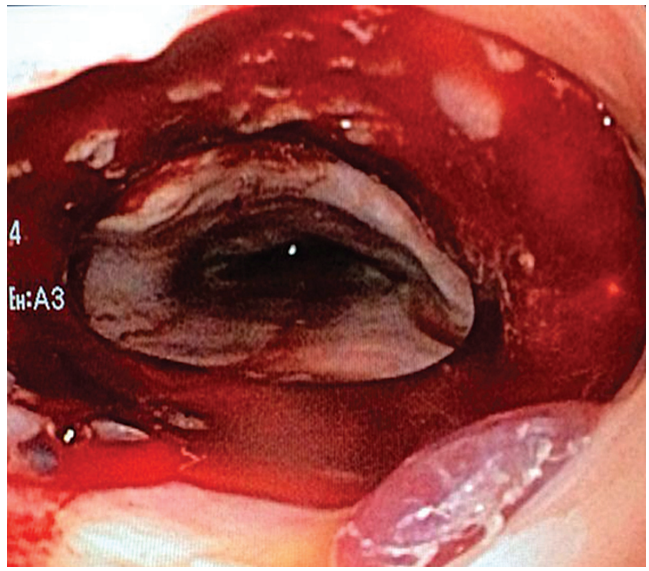

Figure 2. Stent embedded in proximal esophageal wall

DISCUSSION

Approximately 10% to 20% of patients with bleeding esophageal varices do not improve with standard therapy combining medication and endoscopic treatment and must undergo rescue therapies such as balloon tamponade or TIPS (1).

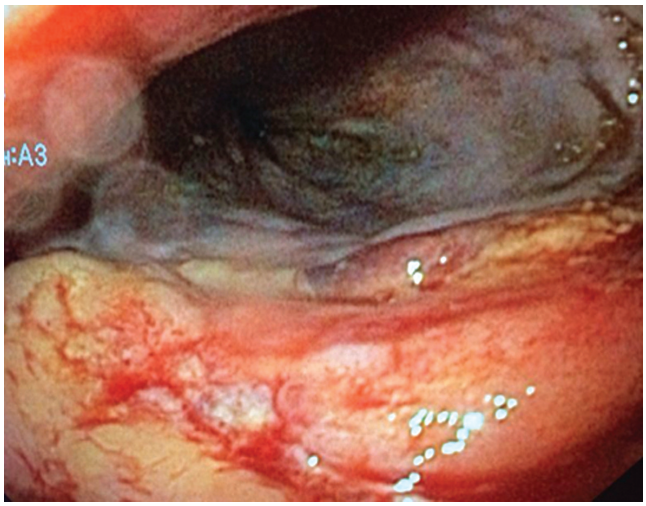

Figure 3. Absence of ulcers or esophageal varices

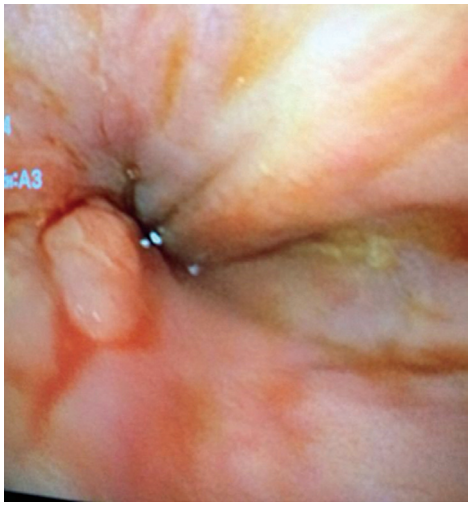

Figure 4. Esophageal perforation resolved

Figure 5. Withdrawal of partially covered self-expanding metal esophageal stent

The Sengstaken-Blakemore tube is a multi-lumen tube with two 250 cc inflatable balloons: one esophageal balloon and one gastric balloon. The device is used in cases of persistent bleeding and has structural variations such as the Minnesota tube which contains a suction port to the esophagus (2, 3). This device is able to bleeding in 80% of the cases, but rebleeding occurs upon removal in 50% of cases (4). The main error that results in failure to control rebleeding has been identified as failure to correctly place the balloon at the gastroesophageal junction. It should be noted that this is a bridge therapy for up to 24 hours the effectiveness of which is operator dependent. From 6% to 20% of the patients who undergo this procedure have fatal complications such as esophageal perforations, and there is a 10% to 20% risk of pulmonary aspiration associated with hepatic encephalopathy (1). In our case, a Sengstaken-Blakemore tube was not available, so the procedure was attempted using the same apparatus used for balloon dilation treatment of achalasia. Although the principle of action is the same, the procedure did not succeed in controlling bleeding.

Although surgery is performed less and less frequently in these cases due to advances in endoscopic techniques, TIPS and liver transplantation, it is still only effective treatment for some patients. There are two types of surgical procedures: those with shunts and those without shunts. Procedures which do not use shunts include including esophageal transections and esophagogastric devascularizations. Among the procedures which use shunts we have targeted the distal splenorenal shunt procedure (DSRS) (also known as the Warren shunt), portacaval shunting between the portal vein and the inferior vena cava, and partial portacaval shunting between the portal vein and smaller vessels (2, 5). Splenorenal shunting is effective for controlling bleeding and provides more protection against rebleeding than does gastroesophageal devascularization. The modified Sugiura procedure combines devascularization of the gastroesophageal junction, esophageal transection, stapling, and splenectomy. This can be used as rescue in hospitals that are inexperienced in portacaval shunting (6, 7). Despite the surgical effectiveness of these procedures, mortality rates range from 45% to 75% (2).

The TIPS, introduced in 1990 as an alternative to surgical procedures, has replaced surgery in most highly complex medical centers. The procedure consists of placing a covered SEMS to connect the supra hepatic veins with the portal vein. The size of the SEMS used ranges from eight to twelve mm in diameter (2). It is indicated for patients who have uncontrolled or recurrent bleeding varices despite pharmacological and endoscopic treatment. The procedure is effective in 95% of the cases with a risk of rebleeding of only 18%. Nevertheless, hepatic encephalopathy occurs in 30% to 35% of the patients who undergo this procedure (8). Four weeks after the esophageal stent was placed in our patient, we decided to place a TIPS to decrease the risk of rebleeding when the stent was removed and to definitively resolve the issue of bleeding varices. Among the other

possibilities for definitive management of bleeding varices are laparoscopic disconnection of the Azygos system, band ligation and liver transplantation.

Because of the limitations of these rescue therapies, Hubmann and colleagues introduced a new therapy for management of bleeding esophageal varices in 2003. It is based on the results of the use of SEMS for treating stenosing esophageal cancers (1, 9). A completely covered self-expanding metallic stent has been developed as an alternative to balloon tamponade for treating acute refractory bleeding varices. Four studies have been conducted to date. The largest study of the use of this technique as rescue therapy included 34 patients. Its results were favorable with a 77% to 100% success rate in terms of immediate control of bleeding and a low rate of complications (9, 10). In special cases, the Linton-Nachlass balloon tamponade tube still plays an important role (11).

The completely covered SX ELLA stent Danis is recommended because it can be placed without the need for endoscopy or radiological guidance. According to Wright et al. it has atraumatic edges, radiopaque markers, and retrieval loops. With these features, these stents provide the possibility of saving lives even before a patient is admitted to the hospital. Nevertheless, it is a hospital's obligation to perform an upper endoscopy since the use of the stent does not control gastric varices. When they are present, the use of the SX ELLA stent Danis should be combined with use of the Linton-Nachlass tube (12). The stent is advanced into the stomach, the gastric balloon is inflated and then retracted until resistance is felt. This indicates that the balloon is in the gastroesophageal junction. At this point the stent can be placed. It can be kept in the esophagus for an average time of two weeks to reduce the possibility of migration and injury to the esophageal wall due to ischemia (1, 2, 9). This device also allows the gastrointestinal tract to maintain permeability and decreases the possibility of aspiration pneumonia (3). In our case, a conventional partially covered esophageal stent was used because a completely covered stent was not available. As a rescue measure it was kept in the esophagus for more than two weeks due to the perforation of the esophagus.

According to the Baveno V consensus, successful management of acute bleeding must be evaluated within 5 days of the event (1). On this basis, hepatic venous blood pressure of over 20 mmHg, a Child Pugh C classification, and active bleeding at the moment an endoscopy is performed were established as treatment failure criteria (2, 3). Although the risk of mortality six weeks after stenting is significantly higher (between 30% and 50%) than the six week mortality rates for combined standard therapy, this is due to the fact that patients who require stents have more severe liver disease and comorbidities (13). In the case of our patient, despite the high mortality rates associated with bleeding esophageal varices and its treatment, the patient survived, recovered satisfactorily, and was discharged from the hospital.

Stent placement specifically for controlling bleeding varices requires training and experience to avoid complications such as aspiration. The physician performing the procedure must make sure that the balloon is properly positioned at the gastroesophageal junction (2, 3). The migration of a stent into the stomach without causing any associated complication has also been described. In one patient, extrinsic compression of the left bronchus improved with the removal of the stent (9, 10). In our case, there were no complications associated with stent placement or removal.

It is important to note that in our case there was no secondary bleeding from esophageal varices, but there was bleeding secondary to an ulcer in tissue underlying an esophageal varices which had been ligated three weeks earlier. We found no other such case that had been treated with a SEMS in the literature, but these cases have much higher rates of mortality than those reported for uncontrolled bleeding varices treated with the usual therapy.

CONCLUSIONS

We recommend stenting as salvage therapy for refractory bleeding from esophageal varices. The stent specifically designed for this indication SX ELLA stent Danis can be used a bridge to stabilize the patient prior to definitive treatment such as TIPS, as was the case in our patient. Nevertheless, since, as already mentioned, mortality rates remain high due to the severity of comorbidities, randomized trials are needed to confirm the safety and efficacy of this approach.

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