Management of esophagorespiratory fistula due to carcinoma esophagus with palliative intubation, gastric decompression and transgastric feeding jejunostomy

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Background: Carcinoma esophagus with esophagorespiratory fistula has a poor prognosis. Water and food intake suffers and pulmonary contamination leads to lung infection. Treatment is essentially palliative. Methods: Thirty-five patients with esophagorespiratory fistula secondary to esophageal carcinoma were treated with palliative esophageal intubation, gastrostomy and transgastric feeding jejunostomy. Results: Esophageal prosthesis could be implanted in 34 patients. One patient died in the postoperative period. Twenty-nine patients were able to swallow saliva without leakage into the lungs. Only four patients were able to take full diet orally for any significant length of time. An 18-G needle inserted in the gastrostomy Malecot's catheter provided outlet for air in the stomach and prevented rise in intragastric pressure and gastroesophageal reflux. Transgastric feeding jejunostomy functioned satisfactory. Twenty patients were followed up; the average survival was 58 days (range 9-337 days). Conclusion: Esophageal intubation, gastrostomy and transgastric feeding jejunostomy provide satisfactory palliation for patients with esophagorespiratory fistula secondary to carcinoma esophagus. [Indian J Gastroenterol 2001;20:56-58]

Key words: Esophagotracheal fistula

Esophagorespiratory fistula (ERF) heralds a rapid downhill course in a patient with esophageal carcinoma.1,2 Saliva, ingested food and regurgitated gastric contents enter the tracheobronchial tree, leading to pulmonary complications; consequent decrease in intake of water and food leads to malnutrition, dehydration and cachexia. Treatment is palliative and aims at prevention of respiratory tract contamination.3

Treatment options available for such patients include supportive therapy, resection, esophageal intubation, esophageal exclusion bypass, direct closure of ERF, radiation therapy, chemotherapy and stenting of esophagus and airways.4-6 Because of advanced disease, resection is only rarely feasible.1,5 Mean survival of patients treated with esophageal exclusion bypass has been reported to be higher than that with supportive treatment and intubation, provided the patient is able to tolerate the procedure.1,6

Esophageal intubation offers an opportunity to occlude the ERF but conventional esophageal prostheses do not usually provide a watertight seal.2 Therefore, in a large number of patients, adequate oral feeding is not possible even after intubation. We combined esophageal intubation with gastric decompression and transgastric feeding jejunostomy, in order to prevent gastroesophageal reflux, and to provide an alternative channel for feeding, respectively.

Methods
Thirty-five consecutive patients (age range 33-69 years; 28 men) with carcinoma esophagus and ERF admitted between 1992 and 1996 were included in the study. The duration of symptoms of ERF ranged from one to 28 days (mean 6). The main presenting symptoms were cough precipitated by swallowing food or liquids, dysphagia, regurgitation, vomiting, chest pain, dyspnea, fever, rapid weight loss and anemia. Two patients had hemoptysis, one had a bout of hematemesis, and 16 were dehydrated at the time of admission. One patient had developed a lung abscess. Radiological evidence of pneumonitis was present in 12 patients.

All patients had advanced disease with poor performance status. Eight patients had received no treatment prior to hospitalization. In 27 patients, the ERF had appeared either during (n=10) or after the completion (n=17) of radiotherapy.

To confirm the diagnosis of ERF, patients were asked to swallow 1% aqueous methylene blue solution and their sputum was observed for bluish discoloration. Barium contrast radiography was carried out in all patients; simultaneous visualization of esophagus and tracheobronchial tree was observed in 32 patients. Bronchoscopy was carried out in 17 patients; patients were asked to swallow methylene blue solution immediately prior to bronchoscopy. Leakage of the dye into the tracheobronchial tree was seen in 15 patients.

Operative technique
Rigid esophagoscopy was performed under general anesthesia and the tumor and ERF were examined. Smell of halothane through the esophagoscope during positive pressure ventilation and, at times, observation of a hissing sound caused by leakage of anesthetic gas through
the esophagoscope helped in detection of ERF.

A guide-wire was passed down the esophagus through the growth; dilators were passed over this. A plastic prosthesis with a 2.5-cm-long funnel and an outer diameter of 12 mm (modified from Mosseau-Barbin tube; Romans, Agra) was mounted over the dilator assembly and pushed in place with the help of the esophagoscope. In patients in whom a guide-wire could not be passed antegradely, retrograde passage of an esophageal bougie through a gastrostomy was attempted; if the bougie went through the growth, it was retrieved through the mouth. A suitable dilator was mounted over the bougie and pulled into the stomach. The rest of the procedure after this was as described above.

A small side-hole was made in a 38-F or 40-F Malecot's catheter, 10 cm from its non-flower end; a 20-F Ryle's tube was inserted through this opening and advanced through the lumen of the catheter till it emerged through the flower end. A 30-35 cm length of the Ryle's tube was pulled out beyond the end of the Malecot's catheter.

Through a left upper paramedian laparotomy incision, the local extension of the primary tumor and presence of secondary deposits and ascites was ascertained. A circular purse-string suture was applied over the body of the stomach enclosing an area of about 2-cm diameter. Another purse-string suture was applied 6 to 7 mm from the first one. Two stay sutures were applied and a stab was made. The opening was dilated. The tip of the Ryle's tube was introduced through the gastrostomy and guided through the pylorus into the proximal jejunum. The flower end of the Malecot's catheter was then introduced into the stomach and the two purse-string sutures were tied over it. The Malecot's catheter-Ryle's tube assembly was passed out through an opening the abdominal wall, about 2 cm below the tip of the ninth costal cartilage, such that the wall of the stomach came to lie against the parietal peritoneum. The abdomen was closed.

The Malecot's catheter was connected to a drainage bag and drained for 24 hours. After this it was clamped and an 18-G needle was introduced in its lumen between the point of entry of the Ryle's tube and the clamp. Jejunostomy feeding was started after 24 hours through the Ryle's tube. The needle was checked periodically for patency. Oral feeds were allowed after 24 hours. First, the patient was asked to swallow some methylene blue solution. If there was no cough and the dye did not appear in the sputum, oral feeds were allowed. Antibiotics were used for lung infection both before and after surgery.

Results

In one patient, both antegrade and retrograde placement of the guide-wire failed, and the esophageal prosthesis could not be implanted. This patient was excluded from the study. Antegrade guide-wire placement and esophageal prosthesis implantation was successful in 30 of 34 patients; in the remaining four patients, retrograde esophageal bougie through a gastrostomy had to be done.

There was no operative death. One patient with a lung abscess died on the fifth postoperative day. Thirty-three patients recovered. The lung infection responded to prosthesis placement, gastric decompression, antibiotic therapy and respiratory physiotherapy.

Only four patients were able to take full diet orally after the procedure. After 4 days, one of them started having cough on swallowing liquids, so his diet was restricted to semisolids and solids, but this too had to be stopped after 11 days because of spillage into the tracheobronchial tree. One patient continued to take food orally till he was lost to follow up 7 weeks after the procedure. Two patients continued taking oral diet till their death 146 and 184 days after the procedure. The oral feeds were supplemented by jejunal tube feeding, and total jejunal tube feeding was resorted to in patients who were not able to take orally. Twenty-nine patients had cough on swallowing food and liquids but not on swallowing saliva. Two of these started having bouts of cough on swallowing saliva 40 and 65 days after surgery. They were advised to spit out saliva and not to swallow it.

Thirty-three patients became ambulatory and were discharged from the hospital in satisfactory condition. Postoperative radiotherapy or chemotherapy was not given to any patient. Migration of the prosthesis was not encountered. Six patients were lost to follow up after their discharge from the hospital. Seven patients were lost to follow up at further intervals. Twenty patients survived from 9 days to 337 days, with an average of 58 days. The quality of life was satisfactory.

Two patients died of sudden severe hemorrhage probably due to aortic erosion 9 and 36 days after discharge from the hospital. One patient became depressed and three weeks after surgery pulled out the jejunostomy tube. Feeding was restored through the gastrostomy tube but he vomited, aspirated and died on the fourth day of hospitalization.

Two patients had an episode of gastroenteritis during follow up. Gastric drainage was restarted by connecting the gastrostomy tube to a drainage bag. This kept the stomach empty and prevented regurgitation of the gastric contents into the esophagus. Drug treatment was started and after control of symptoms, the gastrostomy tube was clamped again. In one patient the needle in the gastrostomy catheter got blocked. The patient had a bout of regurgitation, aspirated and developed acute dyspnea. The needle was replaced. There were no other
episodes of gastroesophageal reflux with aspiration.

**Discussion**

In patients with carcinoma esophagus and ERF, palliative intubation by conventional esophageal tubes blocks the fistula to a variable extent; however, it is usually not possible to achieve watertight sealing of the fistula. Better results have been reported with modified esophageal prostheses. In the current study, only four of 35 patients were able to swallow solids and liquids without any spillage into the tracheobronchial tree in the postoperative period. Except in two patients, swallowing of saliva did not pose any problem in most.

Although nasogastric feeding tubes and gastrostomy provide alternative routes for delivering nourishment, they do not eliminate reflux of gastric contents and aspiration. In order to prevent gastroesophageal reflux and entry of gastric contents through the ERF into the lungs, we provided a gastrostomy with a Malecot's catheter. In the first 24 hours postoperatively, continuous drainage of the gastric contents was provided. After the return of bowel activity, the Malecot's catheter was clamped and an 18-G needle was introduced in the lumen of the catheter. This provided an outlet for air in the stomach and kept the intragastric pressure equal to the atmospheric pressure. Because of jejunostomy feeding, the stomach contained only gastric juice; thus a rise in intragastric pressure and gastroesophageal reflux were prevented. The proof of efficacy of this system was provided in two patients who developed problems in the postoperative period. One patient pulled out the jejunostomy tube. Feeding was started through the gastrostomy tube. He regurgitated, aspirated and died after four days. In another patient the needle got blocked. This patient also had regurgitation and aspiration and presented with an attack of dyspnea. The needle was replaced and the acute episode was managed; following this, there was no recurrence of regurgitation. The drawback of the needle was that sometimes a few drops of gastric juice leaked out through it.

Transgastric feeding jejunostomy was easy to perform and saved operating time. It also avoided opening two sites for the entry of the gastrostomy and jejunostomy tubes separately. The only disadvantage, which we encountered in one patient, was the inability to reintroduce a Ryle's tube, if it is inadvertently pulled out.

Use of covered or uncovered metallic stent is associated with high success rate in relieving dysphagia, prevention of pulmonary contamination, and low overall complication rate. However, covered stents have a higher migration rate and uncovered stents are vulnerable to tumor ingrowth. Their high cost is another limiting factor.

The esophageal prosthesis we used was implanted under general anesthesia with the help of a rigid esophagoscope. This esophagoscope straightens the esophagus proximal to the growth and its wide lumen provides resistance-free passage and permits manipulation of the guide wire. Passage of dilators was also facilitated in the same manner. The rigid esophagoscope provided a better feel of the passage of the prosthesis through the growth.

In conclusion, the procedure we used is a cost-effective method for providing satisfactory palliation in patients with esophageal carcinoma with ERF.

**References**


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