

# LETTER TO EDITOR

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## A Novel Method of Reconstructive Surgery of the Esophagus

### Oryginalny sposób naprawczej operacji wytwórczej przełyku

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Reconstructive surgery of the esophagus from pedicled intestinal segments belongs to the category of extremely difficult modalities. Of the numerous postsurgical complications that may both aggravate the patient's suffering and thwart the surgeon's efforts, the most severe include necrosis of a part of or the whole intestinal graft [1–5]. A novel, bipedicled esophagoplasty from two different segments of the colon is described in a patient in corrective surgery after a reconstructive procedure complicated by necrosis of the proximal segment of the substitute esophagus.

The patient, a 51-year-old woman, was referred to the clinic with a preliminary diagnosis of esophageal carcinoma. The history included predominating dysphagia of half-year duration concerning the intake of both solid and liquid food and weight loss of about 15 kg. Gastroscopic examination with biopsy collection enabled determination of the nature of the anatomical lesion, i.e. squamous cell carcinoma (examination No. 331717/2007, Department of Pathological Anatomy, Silesian Piasts University of Medicine). On endoscopic examination the lesion presented as a bulging of the mucosa with a diameter of about 2 cm on the 26–28<sup>th</sup> centimeter of the esophagus. However, simultaneously performed evaluation of the upper gastrointestinal tract with the use of contrast medium did not reveal any disturbances in the esophageal passage of the contrast medium. Moreover, abdominal ultrasound examination and CT of the chest were negative. The patient was suggested surgical treatment, to which she gave her consent.

The patient was operated on with a classical method on June 18, 2007. Subtotal resection of the esophagus with formation of a cervical salivary

fistula and alimentary gastric fistula by Witzel's method was performed from the right pleural approach. The excised esophagus and lymph nodes were sent for histopathological evaluation, which confirmed the previous diagnosis, i.e. carcinoma planoepitheliale keratodes G1, and provided information on surgery radicalism (R0, i.e. lack of neoplastic cells in the incision line) and the local advancement of the tumor, infiltrating the submucosal layer and reaching the muscle layer without infiltration. Resected lymph nodes were free of neoplastic cells.

After two months, on August 14, 2007, the second stage of surgery was undertaken in order to construct the substitute esophagus. The small intestinal vasculature could not be used to create a pedicled graft. The vasculature of the right half of the colon presented more favorably from the point of view of esophagoplasty. The graft was performed from the right colon in the antiperistaltic direction on a pedicle of ileocolic blood vessels. The reconstructed graft on a vascular pedicle was drawn behind the stomach through a retrosternal tunnel up to the neck. The cecum was anastomosed with the stomach and the upper part of the graft was anastomosed "end-to-side" with the natural esophagus in the neck. The ileum was anastomosed "side-to-side" with the distal segment of the transverse colon.

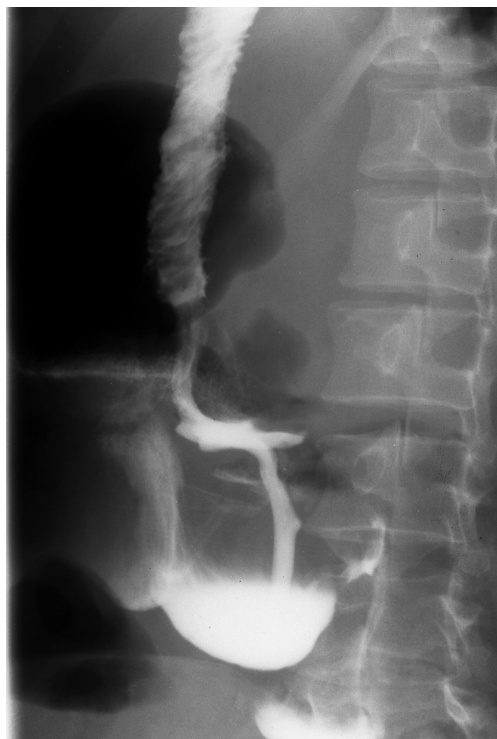
On the 7<sup>th</sup> postoperative day the patient developed clinical symptoms of disturbances in blood supply to the proximal segment of the graft (inflammatory infiltration in the region of the wound in the neck, temperature increase to 38°C, WBC to 20,000, dilated mediastinal X-ray shadow). The patient was reoperated. The necrotic proximal segment of the graft was removed by the

cervical and abdominal approach, leaving further the half of the graft (the cecum and part of the ascending colon), which did not show any signs of blood supply disturbances. The mediastinum was drained with two drains, from the side of the neck and the abdominal cavity. The cervical segment of the natural esophagus was delivered and the salivary fistula was reconstructed. The postoperative course was uneventful.

A subsequent attempt to construct an artificial esophagus was postponed until the general condition of the patient improved. In this period the patient was fed through a gastric fistula. The corrective surgery was performed on November 13, 2007. A beneficial vascular network was found intraoperatively in the left part of the colon which could be used to construct an antiperistaltic interposition on a long vascular pedicle (left colonic vessels), enabling the filling of the missing part between the cervical esophagus and the colon segment left in place after the first reconstructive surgery. In order to move the interposition safely together with a long vascular pedicle by the repeatedly reconstructed retrosternal tunnel, the gastric fistula was cut off and the resultant opening in the stomach was closed. A new relieving and feeding fistula was formed in the distal portion of the esophageal graft remaining after the first reconstructive surgery. The prepared interposition from the left colon and the pedicle were drawn up through the retrosternal tunnel and its proximal part was anastomosed with the cervical esophagus and the distal part was anastomosed with the residual colon which remained after the first reconstructive surgery.

The postoperative course was uneventful. On the 7<sup>th</sup> postoperative day the patient started oral feeding and control X-ray examination with the use of contrast medium demonstrated efficient functioning of the substitute esophagus (Fig. 1). The patient was discharged home after three weeks. Clinical follow-up after three months revealed no problems with feeding with all types of food and successive weight gain.

The construction of a substitute esophagus from two different parts of the colon on separate vascular pedicles is a rare modality. Available literature, apart from Jezioro [6], does not contain data on this modality of esophagoplasty. The presented



**Fig. 1.** Radiograph of the retrosternal esophagus formed out of two different parts of the colon on separate vascular pedicles

**Ryc. 1.** Radiogram zamostkowego przełyku zastępczego wytworzonego z dwóch różnych odcinków jelita grubego na dwóch osobnych szypułkach naczyniowych

surgical modality may find application in two types of cases. It can be used in reconstructive surgery in patients with a type of vasculature of the small and large intestine that does not provide the possibility of obtaining a sufficiently long and well-supplied graft from one segment of the intestine on a single vascular pedicle to substitute for the natural esophagus. To the second group belong patients who, like in the case described above, develop complications in the postoperative course after reconstructive surgery in the form of necrosis of the cephalad segment of the substitute esophagus. The knowledge and ability to construct a bipediced graft from two separate segments of the intestine enabled reconstruction of a normal alimentary canal and avoidance of permanent invalidism in the form of an inability of oral feeding.

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