Intraoperative Assessment of Perfusion in Gastric Grafts for Reconstruction After Esophagectomy: Predicting Anastomotic Complications

AUTHORS

J. Zehetner,

S.R. DeMeester,

J.A. Hagen,

S. Ayazi,

J.L.Costales,
F. Augustin,
G. H.J. Sohn,

J.C. Lipham,

T.R. DeMeester

Background: Anastomotic complications are the leading cause of morbidity after esophagectomy and reconstruction with a gastric pull-up (GPU). These are largely related to impaired perfusion of the gastric tube. The aim of the study was to evaluate the use of laser-assisted fluorescent-dye angiography (LAA) to assess intraoperatively graft perfusion and to correlate perfusion abnormalities with anastomotic complications.

Methods: Data on perfusion using LAA was prospectively collected in 70 patients undergoing esophagectomy with GPU from March 2008 until October 2009. Images with LAA were obtained after creating the gastric tube but prior to performing the anastomosis. Perfusion in the area of the proposed anastomosis was classified as good or compromised.

Results: The median age of the patients was 64.5 years. Indications for surgery were esophageal cancer in 60 patients and end-stage benign disease in 10 patients. The anastomosis was performed at the time of esophagectomy in 69 patients, but was delayed in 1 patient with significantly impaired perfusion on LAA study. Major complications occurred in 13% and there was no mortality. Anastomotic stricture occurred in 24/69 patients (35%) and leaks in 6/69 (9%). The intraoperative assessment of perfusion is shown in the Table. Patients with compromised perfusion were significantly more likely to have a stricture or leak (59% vs. 25%, p=0.0063).

Conclusion: Intraoperative assessment of perfusion of the gastric pull-up with LAA can be used to predict the likelihood of an anastomotic complication. Technical advances with LAA that allow quantification of perfusion at the proposed anastomotic site may lead to reduced morbidity from anastomotic complications with GPU after esophagectomy.

KEY POINTS: Intraoperative Assessment of Perfusion

Anastomotic Healing	Perfusion	
	Good	Compromised
Normal	30 (75%)	12 (41%)
Stricture	9 (23%)	12 (41%)
Leak	1 (2%)	5 (18%)
	40 (100%)	29 (100%)

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