

Short note

Randomized trial of fibrin glue to seal mechanical oesophagojejunal anastomosis

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This study assessed the effect of reinforcing fibrin glue on the anastomotic leak rate after mechanical oesophageal anastomosis.

Patients and methods

Over 6 years, 86 patients having total gastrectomy for gastric adenocarcinoma were randomly divided to reinforcement of the anastomosis with fibrin glue (42 patients) or to a control group (44).

For curative resection (26 patients with fibrin glue, 29 without), the excision technique included R₂ gastrectomy. An extended procedure was performed in 53 patients. End-to-side oesophagojejunal stapled anastomosis was performed on all patients using a Roux-en-Y jejunal loop, forming the tobacco pouch of the oesophagus manually. During approximation of the anvil to the staple cartridge, fibrin glue (Tissucol; Immuno AG, Vienna, Austria) was applied to both surfaces¹. No other reinforcing sutures were used.

On day 7 after operation the anastomosis was checked by contrast radiography. Two types of fistula were identified, according to Csendes' classification²: type I – local fistula, with no leak through a fistulous track to the pleural or abdominal cavity, or the appearance of contrast material in any abdominal drain; type II – leakage into the pleural or abdominal cavity, with appearance of the contrast medium in any of the abdominal drains.

The χ^2 test with the Yates' correction and the *t* test were used for statistical analysis.

Results

The clinical details are shown in Table 1. There were no deaths in hospital. There were four fistulas in the control group of patients, three type I and one type II, but none in the group that received fibrin glue. However, a statistically significant difference was not found. None of the patients with a leak had suffered perioperative hypotension, hypoxia or sepsis. In all four patients the preoperative serum albumin level was in excess of 35 g/l. None of the fistulas required repeat surgery; all resolved with the administration of parenteral nutrition.

There were three late anastomotic stenoses, none owing to tumour relapse. Two were found in patients treated with fibrin glue. The stenosis in the control group occurred in a patient with a type II leak. All were satisfactorily treated by endoscopic dilatation.

Table 1 Clinical details

	With fibrin glue (n = 42)	Without fibrin glue (n = 44)
Median (range) age (years)	66 (34–85)	64 (41–83)
Sex ratio (M:F)	33:9	33:11
Concomitant disease*	18	17
TNM stage		
I	6	7
II	7	10
III	16	21
IV	13	6
Additional operative procedure		
Splenectomy	22	26
Tail of pancreas resection	12	12
Liver resection	3	1
Duodenopancreatectomy	2	0
Colonic resection	5	2
Diaphragmatic resection	0	1
Postoperative complications		
Respiratory infection	1	3
Pulmonary embolism	1	1
Subphrenic abscess	1	1
Duodenal disruption	1	1
Subclavian thrombosis	0	2
Pancreatic fistula	0	2
Colonic fistula	0	1
Jejunal volvulus	0	1
Median (range) length of hospital stay (days)	17 (11–34)	23 (10–61)†
Late anastomotic stricture	2	1
Leak		
Type I	0	3
Type II	0	1

*Includes diabetes mellitus, lung disease, coronary artery disease, obesity and high blood pressure. TNM, tumour node metastasis. †*t* = 2.2, 59 d.f., *P* = 0.03

Discussion

Various clinical studies have made positive assessments of fibrin adhesives in achieving a greater degree of sealing in high-risk anastomoses³, although so far a prospective randomized clinical trial has not been performed.

In experimental surgery the results are contradictory: some studies show that fibrin sealing contributes favourably to anastomotic healing⁴, whereas others refute this effect⁵.

In this study hospital stay was longer (*P* = 0.03) in patients in whom biological glue was not used, but this depended largely on factors unconnected with anastomotic dehiscence or leaks.

This study has shown that the application of fibrin glue to oesophagojejunal anastomoses could have a favourable effect in reducing anastomotic dehiscence, although this result was not statistically significant because of the small number of patients studied. The incidence of oesophagojejunal anastomotic leakage is normally less than 5 per cent, so it would have been necessary to study at least five times the number of patients in the present series to

show a positive effect of fibrin glue. These results justify the need to carry out multicentre research on this question.

References

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