

## Management of Gastrointestinal Fistulas with N-2-Butyl-Cyanoacrylate

Gastrointestinal fistula is defined as an abnormal communication between the lumen of the gastrointestinal tract and another organ (e.g. bladder, vagina, another portion of the intestine) or the skin. Several conditions may contribute to the persistence of a fistula, so that the need for surgery must be considered. The management of fistulas by injection of tissue adhesive has been proposed (1,2). We treated 10 patients (eight female, two male, mean age 47 years, range 18–77) with gastrointestinal fistulas by repeated submucosal injections (Figures 1 and 2) of 2-butyl-cyanoacrylate (Histoacryl, Braun, Melsungen, Germany) (mean two sessions, range 1–4) using a mean total amount of 3.5 ml of cyanoacrylate (range 1.5–6) until healing was achieved. We recorded no complications caused by the procedure. The characteristics of the patients treated and the results are summarized in Table 1.

In conclusion, this experience suggests that in patients with a fistula due to Crohn's disease or malignancy occlusion with 2-butyl-cyanoacrylate is unable to promote healing, probably because of active inflammation or the evolution of the disease, whereas this treatment may have a role in the management of fistulas following abdominal surgery.

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### References

1. Barthelemy C, Audigier J, Fraisse H. A non-tumoral esophago-bronchial fistula managed by isobutyl-2-cyanoacrylate. *Endoscopy* 1983; 15: 357–8.
2. Devière J, Quarre JP, Love J, Cremer M. Self-expandable stent and injection of tissue adhesive for malignant bronchoesophageal fistula. *Gastrointest Endosc* 1994; 40: 508–10.

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**Figure 1:** Rectovaginal fistula in a patient with Crohn's disease. Rectal side: submucosal injection of n-2-butyl-cyanoacrylate.



**Figure 2:** Rectal side of rectovaginal fistula after the treatment.

**Table 1:** Patients and results.

Patient	Sex	Age	Fistula	Disease	Healing	Relapse	FU (m)	Surgery
FDP	F	18	Rectovaginal	Crohn's	Not evaluable			Yes
LS	F	77	Rectovaginal	Crohn's	No			
CS	F	36	Rectovaginal	Crohn's	Yes	Yes	2	
DZ	F	36	Duodenocolonic	Crohn's	No			
MT	M	33	Sigmoidocutaneous	Crohn's	No			Yes
MT	F	40	Ileal-pouchvaginal	Malignancy	Yes	No	4	
GM	F	61	Rectovaginal	Malignancy	Not evaluable			
PP	F	64	Rectovaginal	Surgery	Not evaluable			Yes
PM	F	41	Rectovaginal	Surgery	Yes	No	44	
WD	M	64	Anastomotic	Surgery	Yes	No	24	