

# Enteroscopic Balloon Dilation of Multiple Ileal Strictures in Suspected Crohn's Disease



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## Abstract

With the advent of small bowel enteroscopy, the limits to the endoscopic access to the small bowel have been further exceeded, allowing histology sampling and therapeutical maneuvers. This conquest is of crucial meaning in small bowel inflammatory diseases. In this setting, enteroscopy may lead to a definite diagnosis, overcoming the limits of the anatomic disease location and of other (radiological and endoscopic imaging) techniques. Furthermore, enteroscopy permits strictures visualization and dilation, reducing or postponing the need for surgery. In this article the authors demonstrate the technique of hydrostatic balloon dilation of small bowel strictures suggestive of Crohn's disease in a patient suffering from persistent obscure gastrointestinal bleeding. This article is part of an expert video encyclopedia.

## Keywords

Balloon dilation; Enteroscopy; Obscure gastrointestinal bleeding; Small bowel strictures; Small bowel ulcers; Video.

## Video Related to this Article

Video available to view or download at doi:10.1016/S2212-0971(13)70097-9

## Technique

Retrograde spiral enteroscopy.

## Materials

1. Endoscope:
  - SIF-Q180; Olympus Optical Co. Ltd, Tokyo, Japan.
2. Accessories:
  - Discovery Small Bowel (DSB) Overtube; Spirus Medical Inc., Stoughton, MA, USA.
  - CRE Wireguided Balloon Dilatation Catheter 12/13.5/15 mm, 240 cm; Boston Scientific, Cork, Ireland.
  - STIFF Radifocus Guide Wire M, 0.035" (0.089 mm) 400 cm; Terumo Europe N.V., Belgium.
  - Endo Jaw disposable biopsy forcep, FB-210U, 230 cm; Olympus.

## Background and Endoscopic Procedure

A 67-year-old female with a prior diagnosis of left subclavian steal syndrome and a recent ischemic cerebrovascular accident was referred to the authors' unit for further investigation pertaining to a persistent microcytic iron-deficiency anemia with positive fecal occult blood test, after she underwent negative serological investigation (except for slight increase in

erythrocyte sedimentation rate and C-reactive protein) and extensive upper and lower gastrointestinal diagnostic work-up comprehensive of esophagogastroduodenoscopy, colonoscopy, barium enema, and abdominal and small bowel ultrasonography. Prior clinical history did not reveal obstructive symptoms, neither did the patient declare other symptoms such as abdominal pain nor diarrhea/mucous diarrhea. The patient underwent small bowel investigation with videocapsule endoscopy (VCE) showing an ileal ulcerated stricture with capsule entrapment. A computed tomography-enterography depicted an ileal wall thickening with three ileal strictures suggestive of Crohn's disease and confirmed the capsule retention above the proximal stricture. After a cycle of oral corticosteroid therapy (prednisone) and admission for obstructive symptoms with prompt spontaneous regression within 2 days, the videocapsule was naturally excreted 2 months after the procedure. Patient was scheduled for retrograde enteroscopy with biopsies and strictures dilation. Spiral enteroscopy with the Discovery Small Bowel overtube was successfully performed under general anesthesia with endotracheal intubation. The procedure was performed by an expert endoscopist in the field of enteroscopy and revealed to be fairly easy to perform. Intubation of the ileocecal valve was easily achieved in 1 min at the second attempt. The first relative stricture, encountered 30 cm above the ileocecal valve, showed an inflammatory pattern without ulcers and was successfully dilated with a wireguided balloon dilator up to 12 mm. The second proximal inflammatory stenosis with ulcerated signs appeared to be longer and tighter and required a guidewire-assisted dilation up to 12 mm. Target biopsies were performed. The procedure was performed under fluoroscopy control, reducing the risk of perforation, with both pre- and postprocedure fluoroscopic assessment without evidence of perforation signs.

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Small bowel investigation in the diagnosis and management of suspected or known Crohn's disease has long been constrained by the relative length and inaccessibility of the small bowel. Development of strictures in Crohn's disease, mainly in the small intestine, is frequent and often requires a surgical invasive approach. Patients suffering from strictures might benefit from the new endoscopic horizons offered by enteroscopy. Enteroscopy permits dilation through the working channel in a minimally invasive approach of critical symptomatic strictures that would otherwise need to be surgically addressed especially when not responding to medical immunosuppressive therapy. Endoscopic dilation offers the possibility of reducing or postponing the need for surgery. Fluoroscopy control is mandatory to minimize the risk of perforation. However, radiological and endoscopic appearance (length, morphology, and inflammation degree) of the stricture needs always to be carefully assessed to achieve safe dilation. Successful endoscopic hydrostatic dilation with double-balloon enteroscopy has been reported in the literature with technical successful rates as high as 80%. Response to dilation depends on activity, length, and angulation of the stricture, but long-term results need to be further assessed in larger cohort studies.

### Key Learning Points/Tips and Tricks

- Small bowel no longer has to be considered an inaccessible anatomic site, in particular regarding inflammatory bowel disease.
- Successful balloon-assisted small bowel endoscopic stricturoplasty is feasible and safe.
- Passage toward a dilated stricture permits access to consecutive strictures and their treatment.
- Endoscopic small bowel stricture dilation enables target biopsy sampling and theoretically permits deferral of the need for surgery.
- Endoscopic advanced therapeutic expertise is mandatory.

### Complications and Risk Factors

Risk of complications, such as bleeding and perforation, has always to be kept in mind, in particular, according to the length, morphology, and degree of inflammation.

### Alternatives

Surgical stricturoplasty.  
Small bowel resection.

### Scripted Voiceover

Time (min:sec)	Voiceover text
00:01	This is a 67-year-old caucasian female patient with suspected Crohn's disease scheduled for

retrograde enteroscopy with strictures dilation and biopsies. After an uneventful colonoscopy, the ileocaecal valve is easily intubated. The first stricture is detected about 30 cm above the ileocaecal valve

00:18	This stricture shows an inflammatory pattern without ulcers and appears to be short, consistent with CT-enterography. Hydrostatic dilation under fluoroscopy with a CRE 12/13.5/15 mm balloon dilator is, with no effort, performed and the stricture is dilated up to 15 mm with no complications.
00:55	The dilation leaves a patent dilated stenosis and allows the enteroscope to pass through it giving access to the following stricture.
01:10	The second stricture is reached approximately 10 cm above the previous one. In accordance with the entero-CT scan this stricture seems to be longer and tighter, and shows an ulcerated pattern.
01:24	A long hydrophilic Terumo guide wire is inserted deeply beyond the stricture. Fluoroscopic control is mandatory.
01:44	A cautious, guide-wire assisted, balloon dilation up to 12 mm is successfully achieved. The morphology of the stricture entails slow and careful dilation.
02:12	Multiple passages of the filled balloon, through the long stricture are performed.
03:03	The morphology of the stricture is evaluated through the filled balloon. Endoscopic imaging confirms the presence of deep mucosal ulcerations.
03:27	Multiple target biopsies are performed at the end of the procedure.
	Finally, fluoroscopic assessment, at the end of the procedure, proves the absence of bowel leaks.

### Further Reading

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