

## Single-thread multishooter ligator system shooting at the 7 o'clock position: an ideal band ligator

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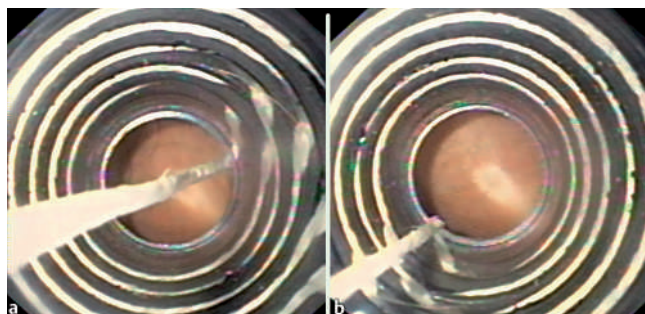
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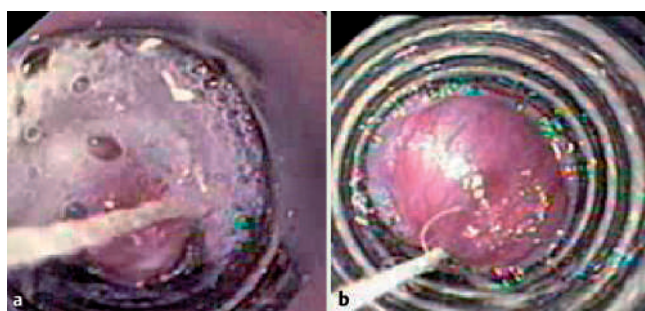
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**Figure 1** In vitro endoscopic views of two ligators, with the single-thread multishooter shooting at any position (a) and at the 7-o'clock position (b).



**Figure 2** In vivo endoscopic views, with the single-thread multishooter ligator shooting with the thread at any position (a) and with the thread at the 7-o'clock position (b).

There are several ligators available for endoscopic variceal ligation. The Stiegmann–Goff ligator works by pulling a string to deploy the band [1], but requires an overtube for multiple ligations. Saeed's multishooter has the advantage of single insertion, pulling a single band at a time and is able to shoot six bands [2]. Most multishooters use a double thread, however, which hampers the endoscopic view. Our single-thread system has the disadvantage of having the thread in the endoscopic view in 50% of ligation procedures [3]. We investigated the use of a single-thread ligator shooting at the 7-o'clock position and compared its efficacy with a single thread ligator shooting at any position.

Forty patients with esophageal variceal bleeding (22 with cirrhosis, 10 with non-cirrhotic portal fibrosis, and eight with extrahepatic portal vein obstruction) were randomized for treatment by ligation, either using a single-thread multishooter ligator shooting at the 7-o'clock position (group A) or using a single-thread multishooter ligator shooting at any position (group B). Informed consent was obtained. The results were assessed for feasibility, ease of deployment, and the quality of the endoscopic view.

Both ligators could be used successfully for ligation. In group A, however, the ligation seemed easier and there was no obstruction to the endoscopic view. In group B the view was partially obstructed because the thread crossed the endoscopic view in half of the procedures. (• **Figures 1, 2**).

The ideal ligator should have a multishooter system, should be effortless to use, and should allow an excellent endoscopic view. This new ligator shoots six bands with the thread at the 7-o'clock position. The pull is transmitted directly, so a minimum of pressure is required. The thread remains at the 7-o'clock position during the entire procedure, and the endoscopic view is free from crossing threads. These threads have a tendency to attract accumulation of secretions and blood, which further hampers the view, and it was not possible to remove these properly with suction (• **Figure 2 a**), a further disadvantage of performing the ligations at any position.

The single-thread multishooter ligator shooting at the 7-o'clock position allows a better view and easier deployment than a single-thread multishooter ligator shooting at any position.

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