

# An easy-to-source, inexpensive, self-retaining anorectal retractor

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**Objective** The aim of this study was to build a self-retaining anorectal retractor using easy-to-source components, to use in regular clinical practice. This retractor is used primarily in transanal endorectal pull-through.

**Materials and methods** The components used to build this retractor were as follows: a set of elastic rubber straps, a set of stainless steel fish hooks, and a frame made of acrylic (plexiglass). Every fish hook was fixed to one end of each rubber strap and used to anchor the anal mucosa. The other end of each rubber strap was stretched over the acrylic frame to achieve the desired degree of retraction.

**Results** The retractor is effective, providing adequate exposure of the surgical field throughout the pull-through procedure. It is light, yet robust, and reusable.

**Conclusion** This self-retaining anorectal retractor proved to be a simple-to-build, inexpensive, and effective surgical tool in transanal endorectal pull-through procedure. *Ann Pediatr Surg* 12:126–127 © 2016 Annals of Pediatric Surgery.

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## Introduction

Retractors are some of the oldest surgical instruments. They have uses in all branches of surgery and have various designs. Broadly speaking, they can be blunt or sharp and handheld or self-retaining [1]. The need to achieve adequate exposure and a clear operative field is essential during surgery. In transanal endorectal pull-through procedure, one preliminary step is to retract anal mucosa, everting the anus, to expose the rectum. Retraction at the level of anal mucosa can be achieved using a variety of methods. Many authors apply six to eight perianal traction sutures. Others use commercially available self-retaining anorectal retractors. The latter inspired us to build a handmade retractor with similar functionality, using inexpensive and easy-to-source components even in the resource-scarce areas.

## Materials and methods

This retractor is made up of three components: (a) elastic rubber straps; (b) stainless steel hooks; and (c) acrylic board. The elastic rubber straps used here were about 10 cm long and 2 mm thick each. Hooks were of fishing-hook type that are essentially sharp-tipped when bought. The hooks were machined to get a blunter tip if needed. Each hook was fixed to one end of a rubber strap (Fig. 1). The acrylic (plexiglass) board, measuring 3–4 mm in thickness, was cut and machined to a rectangular frame with peripherally cut slits along the outer border. The slits should be made to admit rubber straps with some resistance, so as to possess a self-retaining capability (Fig. 2).

After positioning the patient on the operating table, the retractor can be applied after anal dilatation. An assistant holds the acrylic frame vertically with the anus at its center. The surgeon inserts the first two hooks at the 3 and 9 O'clock positions hooked to anal mucosa proximal to the dentate line, exerting the desired tension for retraction. The other free end of each rubber strap passes

Fig. 1



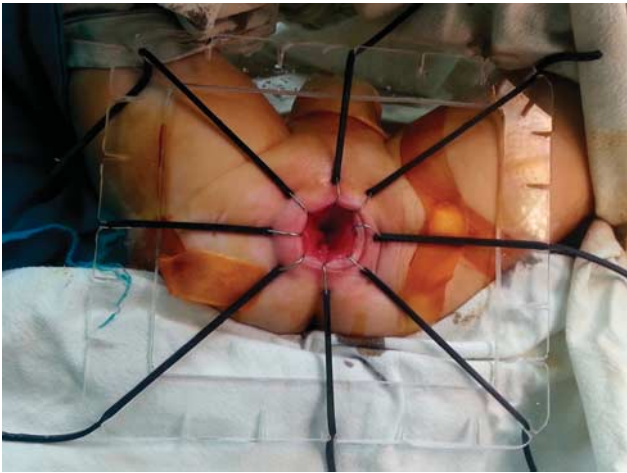
Elastic rubber strap with hook.

Fig. 2



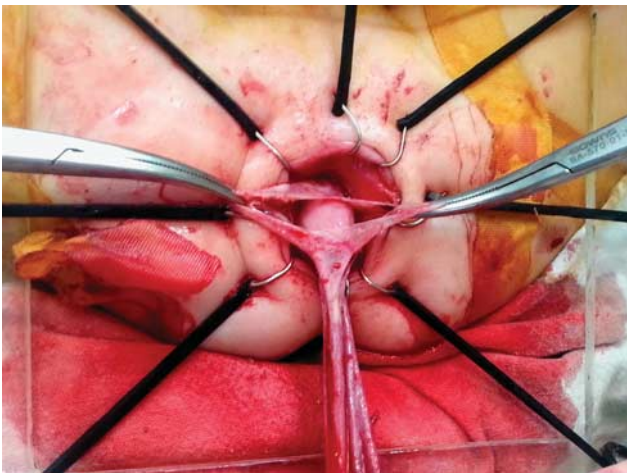
Acrylic frame.

Fig. 3



Retractor in action during transanal endorectal pull-through procedure.

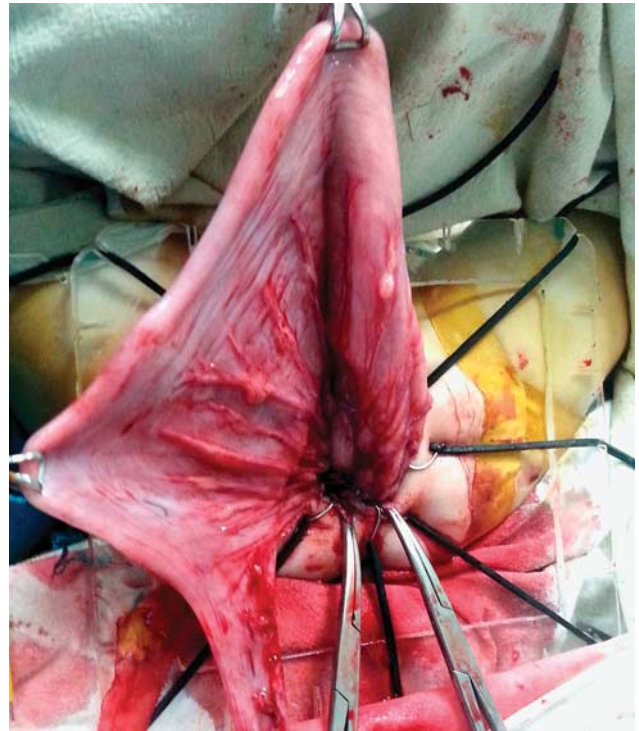
Fig. 4



Retractor in action during transanal endorectal pull-through procedure, closer look.

through the corresponding slit in the frame. Here, the assistant can take his hands off the retractor. The next hook is better inserted at the 6 O'clock position to set the frame to the desired height. Continue inserting hooks until an adequate and symmetrical exposure is achieved (Figs 3–5). At any point, hooks can be readjusted, advanced, recessed, or removed as needed. At the end of the procedure, the rubber straps can be released from the retaining slits so that the frame will be free. Thereafter, the hooks can be removed with the assistance of a needle holder or a tissue forceps. The whole set can be washed and sterilized using chemical disinfectants.

Fig. 5



Retractor in action during transanal endorectal pull-through procedure, delivering the megacolon.

## Discussion

Hooks have been used throughout surgical history, to secure specific tissues or organs with minimal trauma. The hooks are either handheld or secured with clips or sutures [2]. When a hook is secured with an elastic material, it has the ability to maintain near-constant tension. Similar self-retaining retractors are commercially available, with their action and functionality similar to the author's handmade retractor. However, the author's retractor has unique features: it is inexpensive, light yet robust, highly customizable, reusable, and made up of easy-to-source components. All these features make this retractor a good alternative, especially in resource-scarce areas.

## Acknowledgements

### Conflicts of interest

There are no conflicts of interest.

## References

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- 2 Yasargil MG, Vise WM, Bader DC. Technical adjuncts in neurosurgery. *Surg Neurol* 1977; **8**:331–336.