



## VAAFT plus FiLaC™: a combined procedure for complex anal fistula

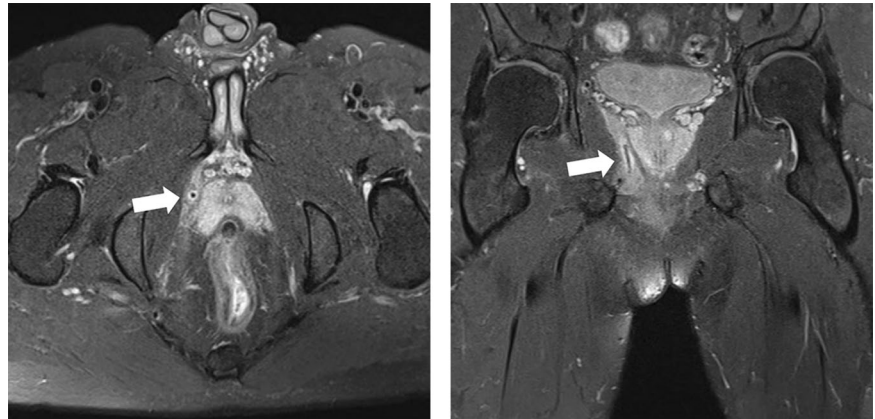
Y.-B. Yao<sup>1</sup> · C.-F. Xiao<sup>1</sup> · Q.-T. Wang<sup>1</sup> · H. Zhou<sup>1</sup> · Q.-J. Dong<sup>1</sup> · Y.-Q. Cao<sup>1</sup> · C. Wang<sup>1</sup> 

Received: 5 December 2020 / Accepted: 5 January 2021 / Published online: 21 January 2021  
© The Author(s) 2021

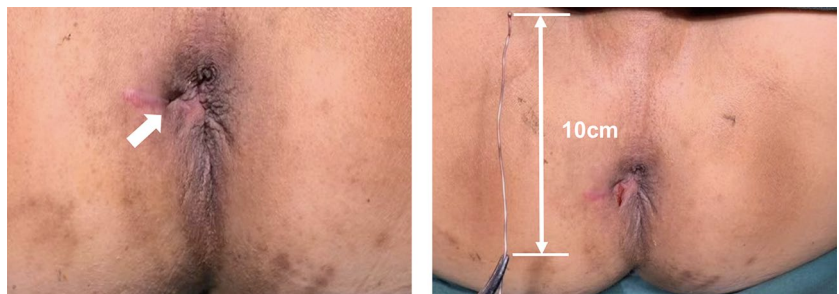
The treatment of complex anal fistula is a challenge, because inappropriate surgery may cause fecal incontinence. Video-assisted anal fistula treatment (VAAFT) and fistula tract laser closure (FiLaC™) are both minimally invasive and sphincter-saving techniques for treating anal fistula. VAAFT

can treat fistula tracts under direct vision and FiLaC™ can achieve circular closure of fistula tracts. VAAFT plus FiLaC™ combines the advantages of two technologies and is a promising procedure for complex anal fistula (Figs. 1, 2, 3, 4, 5, 6).

**Fig. 1** Preoperative perianal magnetic resonance imaging shows the long fistula tract (white arrow) located near the prostate and under the levator ani muscle



**Fig. 2** Identification of the fistula tract during the operation. The patient was placed in a lithotomy position under subarachnoid anesthesia. There was a scar and an external opening at 2 cm from the anal verge (white arrow). Exploration with the probe revealed that the fistula tract was about 10 cm long

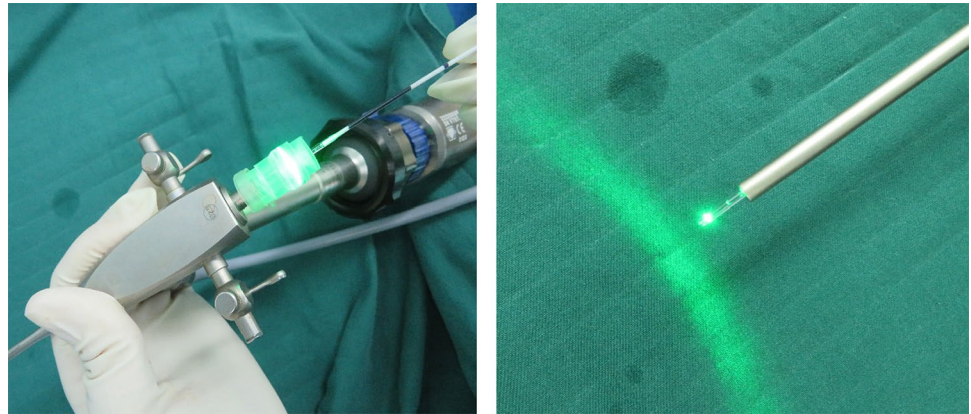


Yi-Bo Yao and Chang-Fang Xiao contributed equally to this work and are co-first authors.

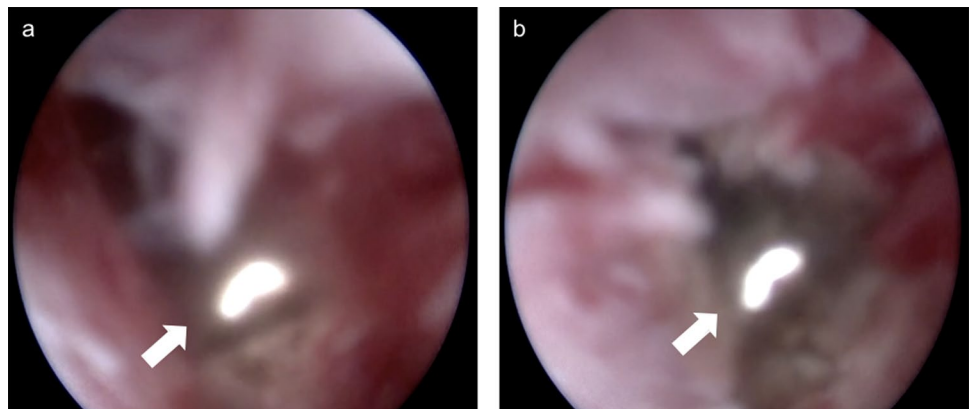
✉ C. Wang  
wangchen\_longhua@163.com

<sup>1</sup> Department of Anorectal Surgery, Longhua Hospital, Shanghai University of Traditional Chinese Medicine, Shanghai 200030, China

**Fig. 3** Placing laser fibre into the fistuloscope. We replaced unipolar the electrode of VAAFT (Karl Storz GmbH, Tuttlingen, Germany), with the radial laser probe of FiLaC™ (Biolitec Biomedical Technology GmbH, Jena, Germany)

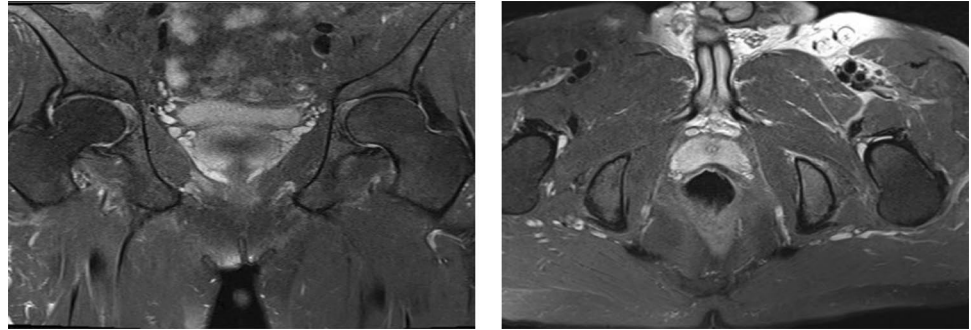


**Fig. 4** Direct vision was provided by the fistuloscope while the radial laser probe (14 W power at wavelength of 1470 nm) was shrinking and sealing the tract (White arrow: radial laser probe). **a** BEFORE laser closure. **b** The fistula tract had obviously shrunk after laser closure



**Fig. 5** Wound healing 2 months after the operation

**Fig. 6** Perianal magnetic resonance imaging (MRI) 4 months after the operation. The long fistula tract was disappeared. The perianal MRI shows excellent healing



**Authors' contribution** YBY and CFX wrote the manuscript and prepared the figures (contributed equally to this work). YBY, YQC and Chen Wang drafted the design of the procedure. YBY and CW conducted the procedure. CFX, QTW, HZ and QJD provided postoperative dressing change and follow-up. All authors read and approved the final manuscript.

**Funding** Funded by Program for Xinglin Scholar at Shanghai University of Traditional Chinese Medicine (No. RC-2017-02-08); Special General Projects of Clinical Research in Health Industry of Shanghai Municipal Health Commission (No. 202040161); Key Subject Construction Project of Shanghai Municipal Health Commission (Traditional Chinese Medicine Anorectal); Shanghai Famous TCM Doctor Yong-Qing Cao's Studio.

### Compliance with ethical standard

**Conflict of interest** All authors have nothing to disclose.

**Consent for publication** All authors agree to publish. Patient signed informed consent and was willing to submit the information.

**Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

**Publisher's Note** Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.