Editorial

Perineal wound closure after extralevator abdominoperineal resection using biological mesh

Norikatsu Miyoshi[1,2]

[1]Department of Surgery, Osaka International Cancer Institute, Osaka, Japan; [2]Department of Gastroenterological Surgery, Osaka University, Osaka, Japan

Correspondence to: Norikatsu Miyoshi, MD, PhD. Department of Surgery, Osaka International Cancer Institute, 3-1-69, Ohtemae, Chuo-ku, Osaka 541-8567, Japan; Department of Gastroenterological Surgery, Osaka University, 2-2-E2 Yamadaoka, Suita, Osaka 565-0871, Japan. Email: miyosi-no@mc.pref.osaka.jp or nmiyoshi@gesurg.med.osaka-u.ac.jp.

Comment on: Musters GD, Klaver CEL, Bosker RJI, *et al*. Biological Mesh Closure of the Pelvic Floor After Extralevator Abdominoperineal Resection for Rectal Cancer A Multicenter Randomized Controlled Trial (the BIOPEX-study). Ann Surg 2017;265:1074-81.

Received: 14 October 2017; Accepted: 30 October 2017; Published: 17 November 2017.

doi: 10.21037/ales.2017.10.06

View this article at: http://dx.doi.org/10.21037/ales.2017.10.06

In developed countries with increasingly aging populations, cancer is one of the most prominent illnesses in terms of both public welfare and health measures. Colorectal cancer (CRC) is a frequent malignancy and one of the leading causes of cancer-related death (1). In CRC surgery, surgical site infection (SSI) is a common complication, and various procedures have been attempted to decrease its incidence. Especially after abdominoperineal resection (APR), perineal wound complications, such as open perineal wound infections, remain to be severe clinical problems (2,3). We retrospectively studied the details of 83 patients who underwent APR at Osaka International Cancer Institute from 2003 to 2013, and open perineal wound infection occurred in 39 patients (47%). Perineal wound complications including SSIs are associated with a long hospital stay, decreasing the quality of life of the patient. To reduce the incidence, a vertical rectus abdominis myocutaneous flap has been reported to decrease perineal wound complications (3). Although this flap is very useful for the reconstruction of the pelvic defect resulting from APR, it results in significant operative blood loss, increased operative time, and additional surgical complications arising from the use of the normal tissue used for the reconstruction. We reported Vacuum-assisted closure (VAC) for treating open perineal wounds after APR (4). VAC which was first reported in the field of plastic surgery in 1997 (5). Improving surgical technique, the oncological outcome in rectal cancer surgery has been optimized in recent years. Using an extralevator approach as extralevator APR (eAPR), an *en bloc* resection can be performed. The surgical technique includes the resection of the levator muscles by extending the surgically resected margin. Furthermore, the use of radiotherapy also can improve the oncological outcome for the rectal cancer. However, the wider surgical excision and the radiation effect increase the perineal wound complications (6).

In order to avoid the perineal wound complication after eAPR, the perineal closure is performed by using a biological mesh or autologous tissue flap. However, there was no sufficient evidence to do the surgical technique regarding the short- and long-term outcomes of the wound complications, and also quality of life. A multicenter randomized control trial has been reported to determine the effectiveness of pelvic floor reconstruction using the biological mesh closure after eAPR for low rectal cancer (7).

All the patients underwent preoperative radiotherapy followed by surgery. In the investigator-initiated study, the eligible 104 patients were randomized between primary closure of the perineal defect as a standard arm and biological mesh closure as an intervention arm.

The rate of uncomplicated perineal wound healing at 30 days was not significant between primary closure (66%) and biological mesh closure (63%). However, they reported that the freedom of the perineal hernia at 1 year was significantly increased by biological mesh closure (87%), compared to primary closure (73%). In this RCT, the 1-year

perineal hernia rate was 27% which is significantly higher than previous reports (8-12). The low rate of perineal hernia after primary closure in the previous reports comes from the study design without focus on the perineal wound complications, compared to this RCT, as authors indicated. It is expected that the perineal hernia rate in biological mesh closure increase over time because the degradation starts from 6 months. Although the authors evaluated quality of life by questionnaires, there are no significant differences. Regarding oncological follow-up, a local recurrence was observed in three patients after primary closure and one patient after biological mesh closure, without significant differences.

The results suggest that biological mesh closure can reduce the perineal hernia after 1 year, although it should be determined whether the incidence of the perineal hernia in biological mesh closure is really prevented or just only delayed, in a number of patients with longer follow-up. Other clinical trials' results such as NEAPE (clinical trial.gov identifier: NCT01347697) in which patients are randomized between a porcine biological mesh and gluteus maximus myocutaneous flap closure after eAPR, are awaited.

Acknowledgments

Funding: None.

Footnote

Provenance and Peer Review: This article was commissioned by the editorial office, *Annals of Laparoscopic and Endoscopic Surgery*. The article did not undergo external peer review.

Conflicts of Interest: The author has completed the ICMJE uniform disclosure form (available at http://dx.doi.org/10.21037/ales.2017.10.06). The author has no conflicts of interest to declare.

Ethical Statement: The author is accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

References

1. Siegel R, Ma J, Zou Z, et al. Cancer statistics, 2014. CA Cancer J Clin 2014;64:9-29.
2. Chessin DB, Hartley J, Cohen AM, et al. Rectus flap reconstruction decreases perineal wound complications after pelvic chemoradiation and surgery: a cohort study. Ann Surg Oncol 2005;12:104-10.
3. Touny A, Othman H, Maamoon S, et al. Perineal reconstruction using pedicled vertical rectus abdominis myocutaneous flap (VRAM). J Surg Oncol 2014;110:752-7.
4. Fujino S, Miyoshi N, Ohue M, et al. Vacuum-assisted closure for open-perineal wound after abdominoperineal resection. Int J Surg Case Rep 2015;11:87-90.
5. Morykwas MJ, Argenta LC, Shelton-Brown EI, et al. Vacuum-assisted closure: a new method for wound control and treatment: animal studies and basic foundation. Ann Plast Surg 1997;38:553-62.
6. Prytz M, Angenete E, Bock D, et al. Extralevator Abdominoperineal Excision for Low Rectal Cancer--Extensive Surgery to Be Used With Discretion Based on 3-Year Local Recurrence Results: A Registry-based, Observational National Cohort Study. Ann Surg 2016;263:516-21.
7. Musters GD, Klaver CEL, Bosker RJI, et al. Biological Mesh Closure of the Pelvic Floor After Extralevator Abdominoperineal Resection for Rectal Cancer A Multicenter Randomized Controlled Trial (the BIOPEX-study). Ann Surg 2017;265:1074-81.
8. De Broux E, Parc Y, Rondelli F, et al. Sutured perineal omentoplasty after abdominoperineal resection for adenocarcinoma of the lower rectum. Dis Colon Rectum 2005;48:476-81; discussion 481-2.
9. Bebenek M. Abdonimosacral amputation of the rectum for low rectal cancers: ten years of experience. Ann Surg Oncol 2009;16:2211-7.
10. Toshiniwal S, Perera M, Lloyd D, et al. A 12-year experience of the Trendelenburg perineal approach for abdominoperineal resection. ANZ J Surg 2013;83:853-8.
11. Musters GD, Sloothaak DA, Roodbeen S, et al. Perineal

wound healing after abdominoperineal resection for rectal cancer: a two-center experience in the era of intensified oncological treatment. Int J Colorectal Dis 2014;29:1151-7.
12. Han JG, Wang ZJ, Qian Q, et al. A prospective multicenter clinical study of extralevator abdominoperineal resection for locally advanced low rectal cancer. Dis Colon Rectum 2014;57:1333-40.

doi: 10.21037/ales.2017.10.06
Cite this article as: Miyoshi N. Perineal wound closure after extralevator abdominoperineal resection using biological mesh. Ann Laparosc Endosc Surg 2017;2:163.

