



Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.casereports.com

Colovaginal anastomosis: A totally unacceptable surgical error

Milcho Panovski^{a,*}, Ivana Roso Sazdovska^a, Igor Fildisevski^a, Darko Dzambaz^a, Vasilcho Spirov^b^a University Clinic for Digestive Surgery, University Ss. Cyril and Methodius, Skopje, Macedonia^b University Clinic for Radiology, University Ss. Cyril and Methodius, Skopje, Macedonia

ARTICLE INFO

Article history:

Received 15 October 2014

Received in revised form 4 December 2014

Accepted 4 December 2014

Available online 31 December 2014

Keywords:

Colovaginal anastomosis
Double stapling technique
Low anterior resection
Surgical errors

ABSTRACT

INTRODUCTION: The low anterior rectal resection and double stapling technique are well-established surgical procedures with well-known pitfalls, potential complications, and preventive measures. Colovaginal anastomosis is a surgical error which should not occur.**PRESENTATION OF CASE:** A 39-year old woman underwent low anterior resection with double stapling technique, for rectal carcinoma in the City Hospital. On the fifth postoperative day she noticed passage of gas and two days later passage of feces from vagina. The surgeons who performed the operation explained to her that it is a normal condition for such modern procedure that is supervised by international educator engaged by the Government. The patient lived with this condition, passage of gas and feces from the vagina and nothing from anus for three months when her oncologist referred her for a second opinion at the University Clinic for Digestive Surgery. The digital examinations revealed a blind rectal stump, and feces in vagina; thus having the patient's history in mind, we assumed that the patient had a colovaginal anastomosis. Our assumption was confirmed by two succeeding radiological examinations. Initially, water soluble contrast enema was performed to assess the colon, when a clear-cut blind rectal stump was detected. Afterwards, the vaginography revealed a copious flow of contrast material from the vagina toward the sigmoid colon. After a few days, a restorative surgery was done.**DISCUSSION:** Most of the early postoperative complications are a result of surgical errors.**CONCLUSION:** We believe that there is no excuse for such a surgical error and postoperative follow-up.© 2014 The Authors. Published by Elsevier Ltd. on behalf of Surgical Associates Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

The concept of double-stapled anastomosis was introduced by Nance in 1979 [1] and the technique popularized by Knight and Griffen (double stapling technique – DST) [2]. DST has had a significant impact on colorectal surgery, extending the level of circular stapled anastomosis into the level of lower third of the rectum. Coloanal or low colorectal anastomosis using the DST has become a common in the low and ultra-low anterior resection for rectal cancer [4,5]. The major effect of this technique has been to stimulate the stapling manufacturers to modify both linear stapler (LS) and circular stapler (CS) design to make the DST operation safer and more efficient. Due to those modifications, surgeons can apply DST in most of the cases in open and laparoscopic rectal resections [5,6]. Today, the low anterior rectal resection and double stapling technique are well-established surgical procedures with

well-known pitfalls, potential complications, and preventive measures. The basic principles of these procedures are explained even in the textbook of general surgery [7]. Despite that, both early and late postoperative complications can still occur. Most of the early postoperative complications are a result of surgical errors [8]. One such error is colovaginal anastomosis and until today two cases during the primary procedures [9,10] and three cases in the restorative procedure after Hartmann operation [11,12,13] have been reported.

We are presenting a case of colovaginal anastomosis during the primary intervention, low anterior resection with DST for rectal carcinoma. On the basis of our experience and data from the literature, we will give a critical review and try to explain why such errors still happen.

2. Presentation of case

A 39-year old woman underwent a low anterior resection with a double stapling technique, for rectal carcinoma. The diagnosis and treatment were done in the General City Hospital September the 8th in Skopje. The official dismissal document stated that the patient had an uneventful recovery though the history of this patient indicated the opposite. On the 5th postoperative day, she

Abbreviations: DST, double stapling technique; CS, circular staplers; RVF, recto vaginal fistula.

* Corresponding author at: Pitu Guli 16, 1000 Skopje, R. of Macedonia.

Tel.: +389 70206742; fax: +389 23238834.

E-mail address: milco@drpanovski.com.mk (M. Panovski).

<http://dx.doi.org/10.1016/j.ijscr.2014.12.033>

2210-2612/© 2014 The Authors. Published by Elsevier Ltd. on behalf of Surgical Associates Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).



Fig. 1. Film from water-soluble contrast enema showing rectal stump.

noticed passage of gas and two days later passage of feces from the vagina and complained to the surgeons. The surgeons that had performed the operation explained to her that it is a normal condition for such a modern procedure conducted under the supervision of an educator from the USA. The patient lived with this condition, passage of gas and feces from the vagina and nothing from the anus, for three months. On the regular check-up in the Surgical Outpatient Department in the same hospital, the surgeons persuaded her that it was a normal condition, so eventually she accepted this unacceptable condition. The patient was sent to the University Clinic for Radiotherapy and Oncology for adjuvant therapy for Stage III B rectal carcinoma. Since the patient was prepared for radiotherapy, a computerized tomography (CT) scan on the abdomen and pelvis was done. Except for an enlarged Fallopian tube and ovary on the left side, the radiologist did not provide any additional comments. Due to the discrepancy between the official document and history of the patient, the oncologist sent the patient for a magnetic resonance imaging (MRI). For the first time the radiologist suspected a recto–vaginal fistula but without a distinct communication between the vagina and rectum! Consequently, the oncologist sent the patient to the University Clinic for Digestive Surgery for a second surgical opinion. On the digital examinations we found a blind rectal stump, and we also found feces in the vagina. Considering the data of the patient's history, we assumed that she had a colovaginal anastomosis. Our assumption was confirmed by two succeeding radiological examinations. Initially, water soluble contrast enema was performed to assess the colon, when a clear-cut blind rectal stump was detected (Fig. 1). Afterwards, the vaginography revealed copious flow of contrast material from the vagina toward the sigmoid colon (Fig. 2). With this diagnosis, the patient was granted permission by the healthcare insurance fund for further treatment in our department. Prior to laparotomy, we performed endoscopy under a general anesthesia which confirmed the presence of a colovaginal anastomosis on the posterior wall of the vagina just below the cervix uteri (Fig. 3). Afterwards, we proceeded with restorative surgery. We found adhesions in the low abdomen and pelvis but we succeeded to do proper adhesiolysis, dissection,

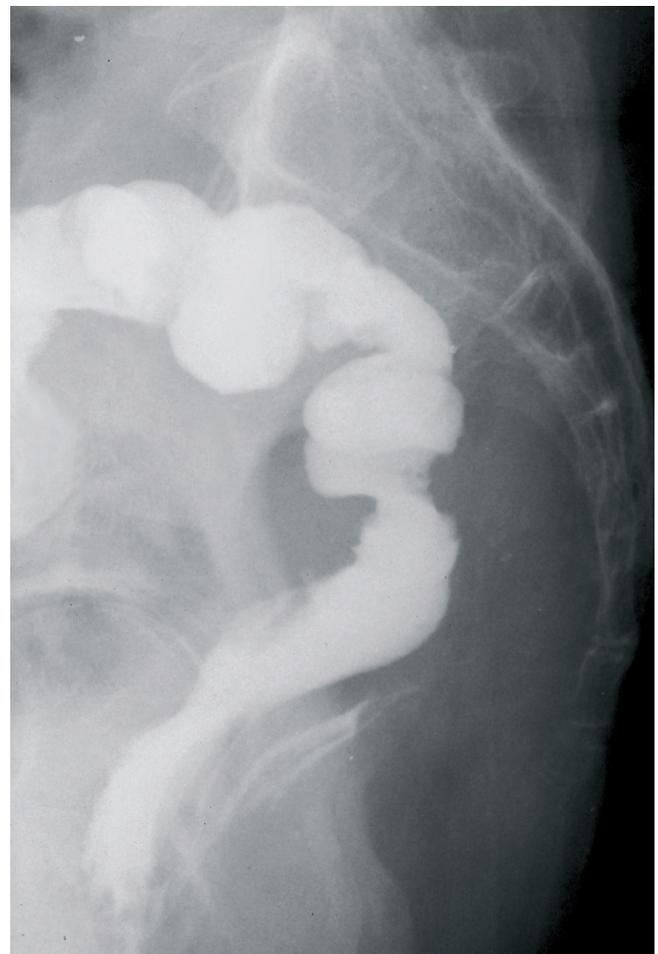


Fig. 2. Vaginogram revealing communication of the vagina with the sigmoid colon.

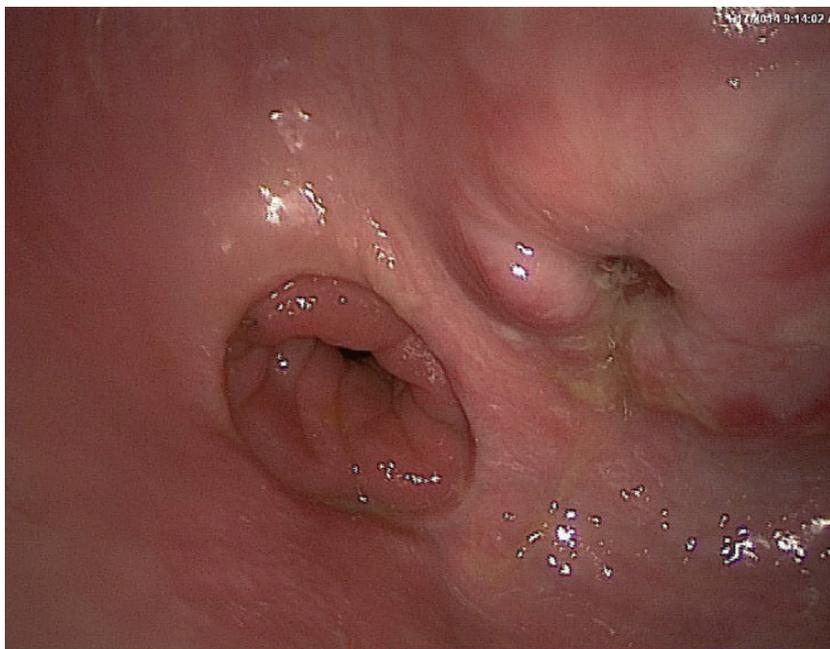


Fig. 3. Unique photography of colovaginal anastomosis. An additional movie file shows this in more detail [see Supplementary file].

and to disconnect the colon from the vagina. We successfully separated the posterior wall of the vagina from the anterior side of the rectal remnant and right lateral side of the mesorectum from the sacral fascia. The adhesion on the left side was so dense that it was risky to separate the whole mesorectum. The dissection and separation of the rectal remnant was done with the assistance of the rigid rectoscope inserted through the anus. Then, we made a primary suture of the vaginal defect with a 2–0 mid-term absorbable synthetic monofilament suture made of glyconate (Monosyn, B. Braun, Aesculap, Melsungen, Germany). End-to-end recto-colon anastomosis was done with CS 31 mm (EEA™ AutoSuture 31–4.8 mm, DST Series™ Technology, COVIDIEN, Mansfield, MA, USA). We checked the integrity of the excision rings (“donuts”) and they were in proper fashion. The integrity of the anastomosis was tested with an aero–water test which proved that the anastomosis was good and proper. Then we inserted the omentum between the posterior wall of the vagina and rectum and performed a protective bipolar ileostomy. The post-operative recovery was uneventful and the patient left hospital on the 7th postoperative day.

3. Discussion

According to Knight and Griffen [2,3] DST is defined as “The double stapling technique for rectal reconstruction after resection involves closing the lower rectal segment with a linear stapler and performing the anastomosis using a circular stapler across the linear staple row”. It should be done under a visual control with the protection of interposition of the surrounding tissues into the stapler line. These principles are the same for a female patient with a history of hysterectomy. Even when establishing intestinal continuity after a Hartmann procedure, the surgeon must dissect out the rectal stump in the deep pelvis. In some cases, the peritoneum covering the stump must be dissected out to make the stump end thinner for stapling anastomosis. When undertaking a lower colorectal anastomosis in female patients, it is mandatory to sufficiently separate the rectal stump from the vaginal wall in order to ensure that the posterior wall of the vagina is away from the staple line before firing the circular stapler, to avoid complications [2,3,8,14]. In our case and five other cases the surgeons did not follow those rules.

The most common early postoperative complication after DST is anastomotic leakage [1,3]. To reduce those complications after firing the CS, it is mandatory to check the integrity of the excision rings (“donuts”) and the integrity of the anastomosis [1–3,14]. Had it been done properly in all six cases with colovaginal anastomosis, the doctors would have noticed the differences between the mucosa of the proximal and distal rings. If they had tested for the integrity of the anastomosis, with liquid or aero–water tests, they would have had a better chance to notice their error. It is less likely to miss the anus twice in a short period of time.

Recto–vaginal fistula (RVF) during DST is an uncommon but possible early postoperative stapling related complication, with a reported incidence after a low anterior resection of 0.9–2.9% [4,8]. RVF is considered a surgical error [8]. The main symptoms are passage of gas and feces from the vagina. Those symptoms reported by the majority of patients are unbearable from social, emotional, and sexual morbidity aspects, and may sometimes be disabling. The major difference between our case and the other five cases is that the surgeons, who performed the operation persuaded the patient with such symptoms that it was a normal condition.

We would like to highlight that staplers are not a magician’s wand. They are only useful tools in the hands of educated and skilled surgeons, which can facilitate operative procedures.

Critical reviews of the history of our patient show the surgeons unacceptable lack of knowledge for performing anterior rectal resection with DST and follow-up of those patients. First of all, their error is primarily personal but at the same time, a result of the health reforms. Due to these reforms, a new pay-per-performance (P4P) system was introduced in all public hospitals, based on mandatory reporting of each intervention/procedure performed by individual physicians [15]. Consequently, only the doctors from the community hospital, secondary level health services, can decide where the patients will be treated. The presence of an international educator in a given hospital, engaged by the Government, encourages the surgeons to perform operations they have never performed before.

4. Conclusion

Colovaginal anastomosis is a surgical error that should not happen. It could be avoided by a proper intraoperative technique. The

main reason why it's still occurring is an unacceptable lack of knowledge of some surgeons. There are no excuses for such surgical errors. In our case, additional unacceptable errors were made during the postoperative follow-up.

Conflicts of interest

The authors declare that they have no competing interests.

Funding

None.

Ethical approval

Medical Faculty Skopje-Ethical Committee does not give specific number of judgement for case reports, only for prospective and randomized clinical trials.

Consent

Written informed consent was obtained from the patient for the publication of this casereport and any accompanying images and movies.

Author contribution

MP – composed this case report and gave approval of the final version to be published. IRS – acquired, analyzed and interpreted data. IF – acquired, analyzed and interpreted data. DDz – acquired, analyzed and interpreted data. VS – carried out X-ray contrast enema investigation and diagnosis, participated in the sequence alignment and drafting of the manuscript. All authors read and approved the final manuscript.

Guarantor

Milcho J. Panovski, Pitu Guli 16, 1000 Skopje, R. of Macedonia. Tel.: +389 70206742, e-mail: milco@drpanovski.com.mk.

Acknowledgement

Iva Mickovska revised the English language of the manuscript, according to the policy of the publisher.

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at <http://dx.doi.org/10.1016/j.ijscr.2014.12.033>.

References

- [1] F.C. Nance, New techniques of gastrointestinal anastomoses with the EEA stapler, *Ann. Surg.* 31 (1980) 20–26.
- [2] C.D. Knight, F.D. Griffen, An improved technique for low anterior resection of the rectum using the EEA stapler, *Surgery* 88 (1980) 710–714.
- [3] F.D. Griffen, C.D. Knight Sr., C.D. Knight Jr., Results of the double stapling procedure in pelvic surgery, *World J. Surg.* 16 (5) (1992) 866–871.
- [4] J.J. Baran, S.D. Goldstein, A.M. Resnik, The double-staple technique in colorectal anastomoses: a critical review, *Am. Surg.* 58 (1992) 270–272.
- [5] E. Bärlehner, T. Benhidjeb, S. Anders, B. Schicke, Laparoscopic resection for rectal cancer: outcomes in 194 patients and review of the literature, *Surg. Endosc.* 19 (6) (2005) 757–766.
- [6] J. Leroy, F. Jamali, L. Forbes, M. Smith, F. Rubino, D. Mutter, J. Marescaux, Laparoscopic total mesorectal excision (TME) for rectal cancer surgery: long-term outcomes, *Surg. Endosc.* 18 (2) (2004) 281–289.
- [7] D.A. Rothenberger, R. Riccardi, Procedures for rectal carcinoma, in: W.W. Souba, M.P. Fink, G.J. Jurkovich, L.P. Kaiser, W.H. Pearce, J.H. Pemberton, N.J. Soper (Eds.), *ACS Surgery: Principles & Practice*, 6th ed., WebMD Professional Publishing, New York, 2007, pp. 933–948.
- [8] P.H. Sugarbaker, Rectovaginal fistula following low circular stapled anastomosis in women with rectal cancer, *J. Surg. Oncol.* 61 (1996) 155–158.
- [9] V. Bard, Z. Cohen, T. Ross, An unusual intraoperative complication of stapled colorectal anastomosis: report of a case and review of the literature, *Can. J. Surg.* 36 (2) (1993) 165–168.
- [10] R.E. Cuenca, A. Valle, T. Weber, M. Rodriguez-Bigas, N.J. Petrelli, Colovaginal anastomosis: a unique complication of end-to-end anastomosis stapler use in low anterior resection, *Am. Surg.* 64 (11) (1998) 1023–1026.
- [11] N. Kaymakcioglu, G. Yagci, M.F. Can, A. Unlu, N. Bulakbasi, S. Cetiner, T. Tufan, An unusual complication of the use of stapler after Hartmann's procedure, *West Afr. J. Med.* 25 (4) (2006) 289–291.
- [12] Y. Zhongshu, L. Guoqing, Colovaginal anastomosis: an unusual complication of stapler use in restorative procedure after Hartmann operation, *World J. Surg. Oncol.* 3 (2005) 74.
- [13] J. Welanyk, T. Wysocki, W. Nowobilski, M. Dobosz, Rectovaginal fistula after gastrointestinal tract continuity restoration using a stapler – case report, *Pol Przegl Chir* 83 (12) (2011) 677–680.
- [14] The Association of Coloproctology of Great Britain and Ireland at The Royal College of Surgeons of England, *Guidelines for the Management of Colorectal Cancer*, third ed., 2007.
- [15] V. Lazarevik, B. Kasapinov, Pay-per-performance in the former Yugoslav Republic of Macedonia: between a good title and a bad reform, *Eurohealth* 19 (1) (2013) 29–32.

Open Access

This article is published Open Access at sciendo.com. It is distributed under the [IJSCR Supplemental terms and conditions](#), which permits unrestricted non commercial use, distribution, and reproduction in any medium, provided the original authors and source are credited.