CASE REPORT

Fistulation between a colonic J-Pouch and the upper vagina in an irradiated pelvis: a rare complication following low anterior resection with colonic J-pouch anal anastomosis for rectal cancer

James Tankel, Shlomo Yellineck, Petachia Reissman

Department of General Surgery,
Shaare Zedek Medical Center,
Jerusalem, Israel

Correspondence to
Dr James Tankel,
jamietankel@hotmail.com

Accepted 30 January 2018

SUMMARY

Formation of a colonic J-pouch with anastomosis to the rectal stump is an accepted form of reconstruction after low anterior resection (LAR) for rectal carcinoma. It is thought this can help prevent the onset of LAR syndrome as well as improve the quality of life in the first two years following surgery. Rectovaginal fistulation is a recognised complication of this form of surgery usually occurring because of technical failure leading to inclusion of the vaginal wall into the stapled anastomosis. We present an as of yet unreported case of fistulation between the upper horizontal staple line of a colonic J-pouch—the tip of the 'J'—which was formed extracorporeally with the posterior vaginal fornix. We postulate that pelvic irradiation was partly a causative factor alongside subsequent mechanical irritation. Ultimately, surgical intervention was required, following which the patient made a full recovery. Interposition of omentum may prevent this problem.

BACKGROUND

Formation of a colonic J-pouch with immediate or delayed rectal stump anastomosis is an accepted form of reconstruction following low anterior resection (LAR) and total mesorectal excision (TME) for low rectal carcinoma. The formation of such a pouch, as opposed to performing a straight coloanal anastomosis, can help prevent the onset of LAR syndrome and is associated with improved quality of life during the first 2 years after surgery.^{1 2}

Rectovaginal fistula following both straight and colonic pouch anastomosis occurs in 0.9%–2.9% of females.^{3–5} It is usually a result of technical error when part of the posterior vaginal wall is trapped by the mechanical stapler whilst performing the distal anastomosis.⁶ As a result, the vaginal fistula is often associated with the staple line itself.

We present an as of yet unreported case of fistulation between the upper horizontal staple line of an extracorporeally formed colonic J-pouch—the tip of the 'J'—with the posterior vaginal fornix following LAR with TME with rectal stump stapled anastomosis for adenocarcinoma of the low rectum following radiotherapy. We present this case as a reminder of the importance of maintaining meticulous surgical technique and maintaining a

high index of suspicion of this type of complications especially after pelvic irradiation.

CASE PRESENTATION

A 66-year-old woman with no significant medical history was found to have a mass in her low rectum after undergoing colonoscopy due to occasional episodes of bleeding per rectum. Biopsy of the lesion revealed moderately differentiated adenocarcinoma and subsequent CT and MRI showed a presumed T3 lesion 6 cm above the dentate line with associated lymphadenopathy in the mesorectum. A cross-sectional axial image from the preoperative CT is shown in [figure 1](#).

Following neoadjuvant chemotherapy and radiotherapy, the patient underwent laparoscopic hand-assisted LAR with TME. A colonic J-pouch was constructed using a 75 mm linear stapler to create both the vertical and horizontal staple lines extracorporeally. The pouch to rectal stump was anastomosed using a 29 mm circular stapler in a double-stapled fashion. This anastomosis was approximately 1 cm above the dentate line. Of note, the tissue of the colonic wall was felt to be normal, while the posterior vaginal wall was not assessed. A protective diverting loop ileostomy was also created in the right lower quadrant of the abdomen. The patient enjoyed an uneventful postoperative recovery and was discharged home after 5 days.

Five weeks later, purulent discharge from the vagina was noted. While rectal examination revealed an intact lower circular stapler line, per vaginal examination, a small orifice in the posterior fornix was revealed.

INVESTIGATIONS

Gastrografen enema series was performed demonstrating a fistula between the upper part of the colonic J-pouch—the tip of the 'J'—and the upper vagina. This is shown in [figure 2](#).

TREATMENT

Elective surgical repair was undertaken 3 months after the initial operation. Intraoperatively, a fistula was evident between the upper horizontal staple line of the colonic J-pouch and the upper part of the posterior wall of the vagina. The circular colorectal anastomosis was complete, the colon was viable

To cite: Tankel J, Yellineck S, Reissman P. *BMJ Case Rep* Published Online First: [please include Day Month Year]. doi:10.1136/bcr-2017-222251

Figure 1 Preoperative cross-sectional CT image displaying the space occupying lesions of the low rectum.

and there was no evidence of ischaemia or stricture. Both the colorectal anastomosis and the pouch were excised. The defect in the posterior wall of the vagina was treated with primary repair. A straight, hand-sewn anastomosis was then created between the sigmoid colon and the upper anus and an omental flap was placed deep in the pelvis between the colon and vagina. The loop ileostomy was not reversed during this operation.

Figure 2 Gastrografin enema series demonstrating a fistula between the upper part of the colonic J-pouch and the upper vagina. Contrast can be seen filling both the distal colon and vagina.

The postoperative course was uneventful and the patient was discharged home 4 days after surgery.

OUTCOME AND FOLLOW-UP

The patient successfully underwent closure of the loop ileostomy without complications 3 months later after repeat gastrografin enema showed normal passage into the distal colon. This series is shown in [figure 3](#). Despite suffering from between 5-10 liquid bowel movements, the patient remains fully continent.

DISCUSSION

Rectovaginal fistulas may be associated with a variety of pathology including inflammatory bowel disease, obstetric trauma, carcinoma, radiotherapy, diverticular disease and iatrogenic injury.^{5 7} In the latter group, anastomotic leakage, pelvic sepsis and technical error are associated with increased incidence of fistula formation.⁷ Moreover, in one large retrospective analysis, poor preoperative nutrition, preoperative chemotherapy, larger tumour, intraoperative bleeding and lateral lymph node dissection were also found to be independent risk factors for post-LAR vaginal fistula after stapled anastomosis.⁸

Typically, the fistula forms when part of the posterior wall of the vagina is accidentally included in the staple line of the anastomosis.⁶ Hence, with proper surgical technique ensuring complete dissection between the vagina and rectal stump with appropriate visualisation of the structures, the risk of fistula formation can be reduced.

It should be noted, however, that the impact of preoperative radiotherapy on rectovaginal fistula after LAR has already been investigated. Although a Chinese study found no association between fistula and irradiation,⁹ the vascular injury, ischaemia,

Figure 3 Gastrografin enema series showing normal passage of contrast into the distal colon without evidence of fistulation with the vagina.

chronic inflammation and tissue fibrosis after radiotherapy have been documented elsewhere.¹⁰ Therefore, theoretically at least, fistula formation can occur with any part of the bowel included in the radiation field.

We document an as yet unreported case of fistula formation which arose from the upper part of the staple line of the colonic J-pouch. In our case, while we accept that preoperative radiotherapy may increase the likelihood of rectovaginal fistulation due to changes in pelvic tissues, we postulate that as the pouch was formed ex vivo, the fistula was not a result of poor surgical technique. Rather, we feel that pelvic irradiation led to thinning of the posterior vaginal wall which was subsequently in close contact with the upper horizontal staple line of the J-pouch. The mechanical irritation of the staple line then eroded into the vagina causing the formation of a fistula and subsequent purulent vaginal discharge.

Once rectovaginal fistulation is established, management options vary greatly and each patient should be considered for the repair most appropriate to them. Operative intervention with resection of the fistula and interposition of gracilis, rectus, gluteus, puborectalis and bulbocavernosus muscles or omentum have been suggested^{7 11} as non-operative management has been found to be rarely successful. Transvaginal repair has also been described if transabdominal surgery is not desirable.^{3 12}

In our case, as noted above, excision of the pouch and fistula tract with primary repair of the vaginal wall and interposition of an omental flap was felt the best option. Despite evidence suggesting that the creation of a pouch prevents the onset of LAR

syndrome and increases the quality of life for the first 2 years after surgery,¹² after discussion with the patient, it was felt that a straight coloanal anastomosis was the most appropriate method of reconstruction.

In conclusion, although this case represents a rare presentation of an uncommon complication, it highlights the importance of ensuring good surgical technique and visualising key structures to reduce the risk of subsequent fistula formation. We suggest creating an ex vivo pouch if this is difficult and consider interposition of omentum to protect the posterior vaginal wall from the shearing forces of the staple line if the pelvis has been irradiated.

Contributors All authors were involved in writing and editing the paper. The authors JT and SY wrote and edited the paper as well as revised the resubmissions. RP was the lead surgeon in the surgeries the patient underwent and is the senior editor of the manuscript.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

© BMJ Publishing Group Ltd (unless otherwise stated in the text of the article) 2018. All rights reserved. No commercial use is permitted unless otherwise expressly granted.

REFERENCES

- Koh PK, Tang CL, Eu KW, *et al.* A systematic review of the function and complications of colonic pouches. *Int J Colorectal Dis* 2007;22:543–8.
- Ziv Y, Zbar A, Bar-Shavit Y, *et al.* Low anterior resection syndrome (LARS): cause and effect and reconstructive considerations. *Tech Coloproctol* 2013;17:151–62.
- Nakagoe T, Sawai T, Tuji T, *et al.* Successful transvaginal repair of a rectovaginal fistula developing after double-stapled anastomosis in low anterior resection: report of four cases. *Surg Today* 1999;29:443–5.
- Rex JC, Khubchandani IT. Rectovaginal fistula: complication of low anterior resection. *Dis Colon Rectum* 1992;35:354–6.
- Baran JJ, Goldstein SD, Resnik AM. The double-staple technique in colorectal anastomoses: a critical review. *Am Surg* 1992;58:270–2.
- Sugarbaker PH. Rectovaginal fistula following low circular stapled anastomosis in women with rectal cancer. *J Surg Oncol* 1996;61:155–8.
- Kawamoto A, Inoue Y, Okigami M, *et al.* Puborectal sling interposition combined with seton drainage for pouch-vaginal fistula after rectal cancer surgery with colonic J pouch-anal reconstruction: report of a case. *Int Surg* 2014;99:710–3.
- Watanabe J, Ota M, Kawaguchi D, *et al.* Incidence and risk factors for rectovaginal fistula after low anterior resection for rectal cancer. *Int J Colorectal Dis* 2015;30:1659–66.
- Zheng H, Guo T, Wu Y, *et al.* Rectovaginal fistula after low anterior resection in Chinese patients with colorectal cancer. *Oncotarget* 2017;8:73123–32.
- Champagne BJ, McGee MF. Rectovaginal fistula. *Surg Clin North Am* 2010;90:69–82.
- Rivadeneira DE, Ruffo B, Amrani S, *et al.* Rectovaginal fistulas: current surgical management. *Clin Colon Rectal Surg* 2007;20:096–101.
- Bauer JJ, Sher ME, Jaffin H, *et al.* Transvaginal approach for repair of rectovaginal fistulae complicating Crohn's disease. *Ann Surg* 1991;213:151–8.

Learning points

- Although a rare presentation of an uncommon complication, this case underlines the importance of good surgical technique and consideration of an extracorporeal pouch formation if key structures cannot be visualised.
- Interposition of the omentum between the pouch and the vagina should be considered especially in the irradiated pelvis.
- A high index of suspicion must be maintained in order to allow early intervention and patient counselling.
- A multidisciplinary team approach including gynaecologists and radiologists is the cornerstone of effective management of these patients.

Copyright 2018 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- Submit as many cases as you like
- Enjoy fast sympathetic peer review and rapid publication of accepted articles
- Access all the published articles
- Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow