

World Journal of *Clinical Cases*

World J Clin Cases 2022 January 21; 10(3): 753-1139



OPINION REVIEW

- 753 Lung injury after cardiopulmonary bypass: Alternative treatment prospects
Zheng XM, Yang Z, Yang GL, Huang Y, Peng JR, Wu MJ

REVIEW

- 762 Acute myocardial injury in patients with COVID-19: Possible mechanisms and clinical implications
Rusu I, Turlacu M, Micheu MM

MINIREVIEWS

- 777 Anemia in cirrhosis: An underestimated entity
Manrai M, Dawra S, Kapoor R, Srivastava S, Singh A

ORIGINAL ARTICLE**Retrospective Cohort Study**

- 790 High tumor mutation burden indicates a poor prognosis in patients with intrahepatic cholangiocarcinoma
Song JP, Liu XZ, Chen Q, Liu YF

Retrospective Study

- 802 Does delaying ureteral stent placement lead to higher rates of preoperative acute pyelonephritis during pregnancy?
He MM, Lin XT, Lei M, Xu XL, He ZH
- 811 Management of retroperitoneal sarcoma involving the iliac artery: Single-center surgical experience
Li WX, Tong HX, Lv CT, Yang H, Zhao G, Lu WQ, Zhang Y
- 820 COVID-19 pandemic changed the management and outcomes of acute appendicitis in northern Beijing: A single-center study
Zhang P, Zhang Q, Zhao HW
- 830 Laparoscopic approach for managing intussusception in children: Analysis of 65 cases
Li SM, Wu XY, Luo CF, Yu LJ
- 840 Clinical features and risk factors of severely and critically ill patients with COVID-19
Chu X, Zhang GF, Zheng YK, Zhong YG, Wen L, Zeng P, Fu CY, Tong XL, Long YF, Li J, Liu YL, Chang ZG, Xi H
- 856 Evaluating tumor-infiltrating lymphocytes in hepatocellular carcinoma using hematoxylin and eosin-stained tumor sections
Du M, Cai YM, Yin YL, Xiao L, Ji Y

Clinical Trials Study

- 870 Role of carbon nanotracers in lymph node dissection of advanced gastric cancer and the selection of preoperative labeling time
Zhao K, Shan BQ, Gao YP, Xu JY

Observational Study

- 882 Craving variations in patients with substance use disorder and gambling during COVID-19 lockdown: The Italian experience
Alessi MC, Martinotti G, De Berardis D, Sociali A, Di Natale C, Sepede G, Cheffo DPR, Monti L, Casella P, Pettorruso M, Sensi S, Di Giannantonio M
- 891 Mesh safety in pelvic surgery: Our experience and outcome of biological mesh used in laparoscopic ventral mesh rectopexy
Tsiaousidou A, MacDonald L, Shalli K
- 899 Dynamic monitoring of carcinoembryonic antigen, CA19-9 and inflammation-based indices in patients with advanced colorectal cancer undergoing chemotherapy
Manojlovic N, Savic G, Nikolic B, Rancic N
- 919 Prevalence of depression and anxiety and associated factors among geriatric orthopedic trauma inpatients: A cross-sectional study
Chen JL, Luo R, Liu M

Randomized Controlled Trial

- 929 Efficacy of acupuncture at ghost points combined with fluoxetine in treating depression: A randomized study
Wang Y, Huang YW, Ablikim D, Lu Q, Zhang AJ, Dong YQ, Zeng FC, Xu JH, Wang W, Hu ZH

SYSTEMATIC REVIEWS

- 939 Atrial fibrillation burden and the risk of stroke: A systematic review and dose-response meta-analysis
Yang SY, Huang M, Wang AL, Ge G, Ma M, Zhi H, Wang LN

META-ANALYSIS

- 954 Effectiveness of Maitland and Mulligan mobilization methods for adults with knee osteoarthritis: A systematic review and meta-analysis
Li LL, Hu XJ, Di YH, Jiao W
- 966 Patients with inflammatory bowel disease and post-inflammatory polyps have an increased risk of colorectal neoplasia: A meta-analysis
Shi JL, Lv YH, Huang J, Huang X, Liu Y

CASE REPORT

- 985 Intravascular fasciitis involving the external jugular vein and subclavian vein: A case report
Meng XH, Liu YC, Xie LS, Huang CP, Xie XP, Fang X

- 992** Occurrence of human leukocyte antigen B51-related ankylosing spondylitis in a family: Two case reports
Lim MJ, Noh E, Lee RW, Jung KH, Park W
- 1000** Multicentric recurrence of intraductal papillary neoplasm of bile duct after spontaneous detachment of primary tumor: A case report
Fukuya H, Kuwano A, Nagasawa S, Morita Y, Tanaka K, Yada M, Masumoto A, Motomura K
- 1008** Case of primary extracranial meningioma of the maxillary sinus presenting as buccal swelling associated with headache: A case report
Sigdel K, Ding ZF, Xie HX
- 1016** Pulmonary amyloidosis and multiple myeloma mimicking lymphoma in a patient with Sjogren's syndrome: A case report
Kim J, Kim YS, Lee HJ, Park SG
- 1024** Concomitant Othello syndrome and impulse control disorders in a patient with Parkinson's disease: A case report
Xu T, Li ZS, Fang W, Cao LX, Zhao GH
- 1032** Multiple endocrine neoplasia type 1 combined with thyroid neoplasm: A case report and review of literatures
Xu JL, Dong S, Sun LL, Zhu JX, Liu J
- 1041** Full recovery from chronic headache and hypopituitarism caused by lymphocytic hypophysitis: A case report
Yang MG, Cai HQ, Wang SS, Liu L, Wang CM
- 1050** Novel method of primary endoscopic realignment for high-grade posterior urethral injuries: A case report
Ho CJ, Yang MH
- 1056** Congenital muscular dystrophy caused by *beta1,3-N-acetylgalactosaminyltransferase 2* gene mutation: Two case reports
Wu WJ, Sun SZ, Li BG
- 1067** Novel α -galactosidase A gene mutation in a Chinese Fabry disease family: A case report
Fu AY, Jin QZ, Sun YX
- 1077** Cervical spondylotic myelopathy with syringomyelia presenting as hip Charcot neuroarthropathy: A case report and review of literature
Lu Y, Xiang JY, Shi CY, Li JB, Gu HC, Liu C, Ye GY
- 1086** Bullectomy used to treat a patient with pulmonary vesicles related to COVID-19: A case report
Tang HX, Zhang L, Wei YH, Li CS, Hu B, Zhao JP, Mokadam NA, Zhu H, Lin J, Tian SF, Zhou XF
- 1093** Epibulbar osseous choristoma: Two case reports
Wang YC, Wang ZZ, You DB, Wang W
- 1099** Gastric submucosal lesion caused by an embedded fish bone: A case report
Li J, Wang QQ, Xue S, Zhang YY, Xu QY, Zhang XH, Feng L

- 1106** Metastasis to the thyroid gland from primary breast cancer presenting as diffuse goiter: A case report and review of literature
Wen W, Jiang H, Wen HY, Peng YL
- 1116** New method to remove tibial intramedullary nail through original suprapatellar incision: A case report
He M, Li J
- 1122** Recurrence of sigmoid colon cancer-derived anal metastasis: A case report and review of literature
Meng LK, Zhu D, Zhang Y, Fang Y, Liu WZ, Zhang XQ, Zhu Y
- 1131** *Mycoplasma hominis* meningitis after operative neurosurgery: A case report and review of literature
Yang NL, Cai X, Que Q, Zhao H, Zhang KL, Lv S

ABOUT COVER

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Observational Study

Mesh safety in pelvic surgery: Our experience and outcome of biological mesh used in laparoscopic ventral mesh rectopexy

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Abstract

BACKGROUND

Laparoscopic ventral mesh rectopexy (LVMR) continues to be a popular treatment option for rectal prolapse, obstructive defecation/faecal incontinence and rectoceles. In recent years there have been concerns regarding the safety of mesh placements in the pelvis.

AIM

To assess the safety of the mesh and the outcome of the procedure.

METHODS

Eighty-six patients underwent LVMR with Permacol (Biological) mesh from 2012 to 2018 at University Hospital Wishaw. Forty were treated for obstructive defecation secondary to prolapse, rectocele or internal rectal intussusception, 38 for mixed symptoms obstructive defecation and incontinence, 5 for pain and bleeding secondary to full thickness prolapse and 3 with symptoms of incontinence. Questionnaires for the calculation of Wexner scores for constipation and incontinence were completed by the patients who were followed up in the clinic 12 wk after surgery and again in 6-12 mo. The average review of their notes was 18.3 ± 4.2 mo.

RESULTS

The median Wexner scores for constipation pre-operatively and post-operatively were 14.5 [Interquartile range (IQR): 10.5-18.5] and 3 (IQR: 1-6), respectively, while the median Wexner score for faecal incontinence was 11 (IQR: 7-15) and 2 (IQR: 0-5), respectively ($P < 0.01$). There were 4 (4.6%) recurrences, 2 cases that presented with erosion of a suture through the rectum and one with diskitis. No mesh complications or mortalities were recorded.

CONCLUSION

LVMR using a Permacol mesh is a safe and effective procedure for the treatment

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of obstructive defecation/faecal incontinence, rectal prolapse, rectoceles and internal rectal prolapse/intussusception.

Key Words: Rectopexy; Prolapse surgery; Biological mesh; Pelvic floor disorders; Treatment

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Core Tip: Our study adds more evidence to support that laparoscopic mesh rectopexies using biological mesh is a safe and effective procedure and that it significantly improves bowel symptoms of obstructive defecation and faecal incontinence in patients. In our study, there were no mesh related complications, and the recurrence rates were in line with the ones reported in the literature. Although we acknowledge that the direct follow-up period was short, the absence of re-referral of those previously operated patients over the period of 5 years indirectly suggests the safety of the mesh over longer periods.

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INTRODUCTION

Laparoscopic ventral mesh rectopexy (LVMR) has recently become the preferred treatment for full thickness rectal prolapse, and it has been also widely used in the treatment of rectoceles, enteroceles and rectal intussusception with associated symptoms of obstructive defecation with or without faecal incontinence[1]. The procedure has good short term and long term results with minimum morbidity rates and low recurrence rates[2], particularly when compared to the perineal surgical approach used for treatment of rectal prolapse[2]. In addition, due to reduced postoperative complications, a shorter length of hospital stay is an advantage[1,2].

Over the last few years there have been concerns about the usage of meshes in pelvic surgery, especially since serious complications have been recorded in urogynaecology procedures where trans-vaginal placement of mesh in women was used to treat pelvic organ prolapse. This led many countries to scrutinise the use of mesh. This was particularly the case in the United Kingdom with the Scottish Government being the first to halt the use of trans-vaginal mesh in 2014[3]. However the incidence of mesh-related complications, and particularly mesh erosion, after LVMRs is low, especially when a biological mesh is used[4]. This was shown by Balla *et al*[4] in their review of literature where they demonstrated that the synthetic and the biological mesh-related erosion rates were 1.87% and 0.22%, respectively.

Furthermore, there is evidence that using biological mesh such as Permacol in LVMR results in significant improvement in function and quality of life outcomes, including improvement of urogynaecological symptoms[5]. In addition, latest results were comparable to synthetic mesh in terms of recurrence[5].

The aim of this study was to investigate the outcomes of LVMR using a biologic mesh in a district general hospital in an era where there is concern regarding the placement of pelvic mesh. We assessed the outcome of the procedure in relation to complications, bowel function and recurrences of symptoms following surgery.

MATERIALS AND METHODS

This is a retrospective study of 86 consecutive patients that underwent LVMR from June 2012 to August 2018 in University Hospital of Wishaw. For 40 of them obstructive defecation was the main symptom, for 38 it was both obstructive defecation and faecal incontinence, 5 (5.8%) presented with pain and bleeding related to full thickness rectal

prolapsed and 3 with mainly symptoms of faecal incontinence. All patients had a full history and physical examination, and a lower gastrointestinal endoscopic assessment. All, except those with obvious full thickness rectal prolapse, underwent a defecating proctogram, while 9 of them (10%) had anorectal physiology studies. Seven (0.08%) patients with not so clear symptoms and findings required an examination of the anorectum under general anaesthesia prior to the procedure. A detailed obstetric and pelvic surgery history was taken for women, and following formal development of Pelvic Floor multidisciplinary, all the patients were discussed on a monthly basis at the pelvic floor multidisciplinary team (Table 1).

The functional outcomes for these patients were calculated using the Wexner scoring system for constipation and incontinence before and after surgery. All patients had a follow-up appointment in the clinic 3 mo after surgery and further follow-up 6-12 mo later. We also reviewed the notes on average 18.3 ± 4.2 mo after the procedure. Clinical outcomes of surgery and any complications resulting from surgery were recorded in the Pelvic Floor Society hosted national database.

Surgical technique

At University Hospital Wishaw all LVMR procedures from June 2012 to August 2018 were performed by the same colorectal surgeon. After creating pneumoperitoneum and inserting the working ports (12 mm port on the right iliac fossa, 5 mm supra umbilical port and a 5 mm port in the right abdomen, the pelvic peritoneum at sacral promontory was opened using hook diathermy and continued distally and anteriorly down to the level of the levator muscles, while preserving the lateral ligaments and the hypogastric and sacral nerves. The biological porcine skin mesh that was used for all cases (permacol 4×18 cm long and 1 mm thick) was sutured as distally as possible onto the anterior rectal wall using interrupted seromuscular nonabsorbable sutures (2-0 Ethibond, Ethicon Endosurgery, Raritan, NJ, United States) and the upper part of the mesh was fixated to the sacral promontory using 4-5 spiral attachments (Pro-Tack™ Fixation Device, Medtronic, Dublin, Ireland). Also, the gap between vagina and mesh was closed in women using 2.0 PDS (Figure 1).

The peritoneum was closed over the mesh with a continuous suture (V-lock 180, 15 cm). Perioperative care was conducted per the enhanced recovery after surgery protocol. A urinary catheter was inserted after the patient was anaesthetised and was removed on the first post-operative day.

Statistical analysis

Pre-operative and post-operative Wexner score values for constipation and incontinence were inserted in tables. The median and interquartile range (IQR) values were calculated, and comparison and analysis between pre-operative and post-operative values were performed using the Wilcoxon signed rank test. Complication and recurrence rates were evaluated and analysed using the Kaplan-Meier method. A *P* value < 0.05 was considered as significant. Libreoffice Calc 6.2.8 was used for the calculations (The Document Foundation).

RESULTS

A total of 86 patients underwent LVMR from June 2012 to August 2018. Eighty-two (95%) were female and 4 (5%) were male with a median age of 57 years (IQR: 47-70). The median hospital stay was 1 d (IQR: 1-2). The first follow-up of the patients was at 3 mo, and the second one was 6-12 mo after surgery.

The pre-operative Wexner scores were calculated during the first visit to the clinic, usually 6-9 mo prior to surgery, while the post operative Wexner scores for constipation and incontinence were calculated on forms filled in during the consecutive follow-up appointment with the patient and in some cases over a telephone conversation with the patient by one of the surgical team members. Out of the 86 patients, pre-operative data were obtained for 86 patients, while post-operative Wexner score was obtained for 80 patients, since 6 of them did not return the forms. For these 80 patients the median post-operative Wexner score for constipation was 3 (IQR: 1-6), which was significantly improved compared to the median pre-operative score for constipation which was 14.5 (IQR: 10.5-18.5) ($P < 0.01$). Again, comparing the median pre-operative Wexner score for incontinence, which was 11 (IQR: 7-15), to the median post-operative score for faecal incontinence, which was 2 (IQR: 0-5), there was also a significant improvement demonstrated ($P < 0.01$) (Table 2).

Table 1 Patient characteristics

Patient characteristics	
Number of patients	86
Mean age in years	57 yr (IQR: 47-70)
Sex	
Female	82
Male	4
Indication for surgery	
Rectal prolapse	33 (4 male)
Obstructive Defecation/Faecal Incontinence	53
Previous surgery for prolapse	14
Previous hysterectomy	
Yes	24
No	58
Male	4

Table 2 Mean pre-operative and post-operative Wexner scores

Mean Wexner scores	Pre-operative	Post-operative	P value
Constipation	14.5 (IQR: 10.5-18.5)	3 (IQR: 1-6)	< 0.01
Incontinence	11 (IQR: 7-15)	2 (IQR: 0-5)	< 0.01

IQR: Interquartile range.

**Figure 1 Intraoperative image of the fixated mesh.**

All the procedures were completed laparoscopically, and there was no surgery related mortality recorded. No mesh related infection or erosion was recorded, although there was 1 case of diskitis that had to be treated with antibiotics after seen in the clinic for a follow-up. One of the patients developed an incarcerated femoral hernia post-surgery, which was seen intraoperatively but not repaired since the patient was not consented for that procedure, and it was repaired on day 2. Out of the 86 patients, 3 (3.4%) had issues with chronic pelvic pain after the procedure. Two of the patients complained of a foreign body sensation/irritation in rectum and were found to have a suture protruding through the rectum that was removed in clinic, which was followed by immediate relief of their symptoms. Out of the 86 patients, 4 (4.6%) of them came back with a recurrence of symptoms, 3 (2.3%) of which had a posterior

prolapse recurrence and 2 of which eventually underwent a modified Delorme's procedure.

Overall recurrence at 12 mo was estimated with the Kaplan-Meier method as 1.4% (95%CI: 0.3%#4.0%), 7% (95%CI: 6.1%#15.5%) at 2 years and 11% (95%CI: 6.7%#16.8%) at 3 years (Figure 2).

DISCUSSION

Laparoscopic ventral mesh rectopexy is becoming one of the leading treatment options for the elective repair of rectal prolapse around the world[6,7]. Perineal procedures are still performed especially for elderly patients and those with associated significant comorbidity who are not candidates for transabdominal laparoscopic procedures[8,9]. However, there are recent studies that demonstrate that LVMRs would be safe for selected elderly patients as well[10]. In our series, there were 5 elderly patients over 80 that had a successful procedure with a good outcome.

When LVMRs are compared to resectional and posterior rectopexies, the functional results are better, especially since there is no interference with the sacral nerves and therefore fewer issues with slow transit constipation[11]. Other surgical procedures such as stapled transanal rectal resection can be used for rectal intussusception and obstructive defecation secondary to rectoceles as an alternative surgical approach to laparoscopic ventral mesh rectopexy[12]. However, this procedure has been associated with higher morbidity rates including pain, haemorrhage and sepsis[13].

Over the past years there has been a major concern over the use of mesh in pelvic surgery, but in our series of patients so far there were no mesh related complications, such as mesh erosion or infection. This is likely due to the consistent use of biological mesh in all of our cases, and our findings therefore come in agreement with previous studies' findings that the mesh related complications are far less when using a biologic mesh instead of a synthetic one[4]. Although our directly obtained data of follow-up were for 1 year after surgery, the fact that there was only one colorectal surgeon that provides such surgery in Lanarkshire combined with the absence of re-referrals of previously operated patients for symptoms related to mesh complication, indirectly suggests that there was no mesh complication over a period of 5 years. Balla *et al*[4] have shown after reviewing the literature that using a biological mesh is a safer option than using a synthetic one, especially since the synthetic and the biological mesh-related erosion rates were 1.87% and 0.22%, respectively.

Although there was an initial concern that using biological mesh might be associated with higher recurrence rate, it has been demonstrated that there was no difference in recurrence when using a biological mesh compared to a synthetic one [11]. It has also been suggested that biological mesh should be preferred in patients with a high risk of fistula formation, such as those with diverticular disease, Crohn's disease, previous pelvic irradiation and steroid use[12]. Additionally, in another study, Mercer-Jones *et al*[13] suggested it could be prudent to use a biological mesh in young adolescents or women of child-bearing age regardless of the higher cost.

Complications were observed in the current study. Lumbosacral discitis near the site of mesh fixation to the sacral promontory was observed in 1 patient. This is a rare but serious complication with patients typically presenting 1-3 mo after the initial operation with severe lower back pain, fever and malaise[14]. In this case, magnetic resonance imaging confirmed the diagnosis, and broad spectrum antibiotics were given as they are the treatment of choice[14,15]. Although an uncommon complication, it should always be considered for patients that present with lower back pain after an LVMR[14,15]. Two patients presented with rectal symptoms of discharge and discomfort and were found to have ethibond suture erosion into their rectum. This is likely related to the suturing technique or the material itself, although there is no report of this complication in the literature so far[16]. In both patients, symptoms improved dramatically after transanal removal of sutures at outpatient/endoscopy room.

In our study, we had 4 patients that had a recurrence of their symptoms (4.6%). A systematic review of the literature by Samaranyake *et al*[17] has demonstrated that across various studies with median follow-up ranging from 3 to 106 mo the recurrence rates varied from 0%-15.4%. Our Kaplan Meier analysis revealed a 2 year recurrence rate of 7%, which can be compared to other studies like McLean *et al*[5] who demonstrated a recurrence rate of 9.74% (95%CI: 6.1%#15.5%) at 2 years.

It is evident that our study demonstrates a significant improvement of patients' symptoms of obstructive defecation. The median post-operative Wexner score for

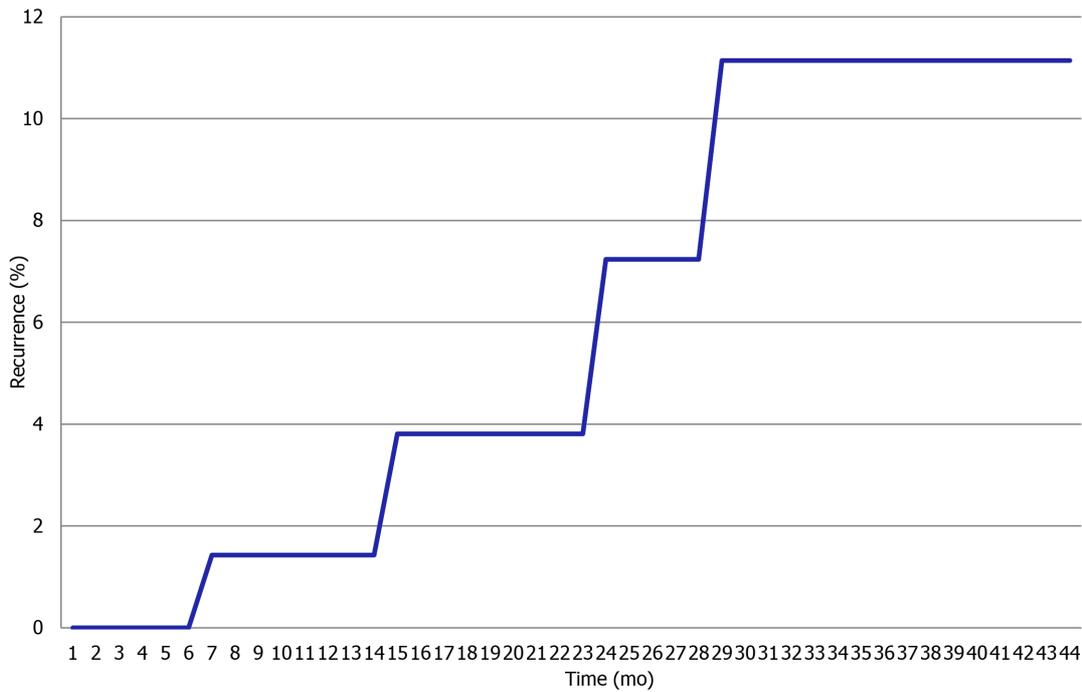


Figure 2 Recurrence rate in relation to time.

constipation was 3 (IQR: 1-6) compared to the median pre-operative score which was 14.5 (IQR: 10.5-18.5), demonstrating a significant improvement ($P < 0.01$). These results are comparable to the results of Franceschilli *et al*[18] who demonstrated that the mean Wexner score for constipation improved from 18.4 ± 11.6 to 5.4 ± 4.1 ($P = 0.04$). Comparing the average pre-operative Wexner score for incontinence (11, IQR: 7-15) to the median post-operative score for incontinence (2, IQR: 0-5), there was also a significant improvement demonstrated ($P < 0.01$).

There was an overall improvement of the daily life activity for the majority of patients, which correlates with the results of other studies[4,17,18]. McLean *et al*[5] demonstrated patient satisfaction levels of 93% at 5 years, Consten *et al*[19] showed that both rates of faecal incontinence and obstructed defecation decreased significantly after LVR compared to the preoperative incidence.

CONCLUSION

In conclusion, our study adds more evidence to support that LVMR using biological mesh is a safe and effective procedure for the treatment of rectal prolapse and that it significantly improves bowel symptoms of obstructive defecation and faecal incontinence in patients with not only full thickness prolapse but also internal rectal prolapse and rectoceles[6,7,17,19]. In our study there were no mesh related complications, and this result correlates with the low biological mesh complication rate reported in other studies[4,13]. Our recurrence rates are in line with the ones reported in the literature[16], and although we acknowledge that the direct follow-up period was short, the absence of re-referral of those previously operated patients over the period of 5 years would indirectly suggest the safety of the mesh over longer periods. However, our continued effort is to follow this group of patients more directly and continue to assess formally their quality of life in the near future.

ARTICLE HIGHLIGHTS

Research background

Laparoscopic ventral mesh rectopexy (LVMR) has over the past years become the preferred treatment for full thickness rectal prolapse, rectoceles, enteroceles and

symptomatic rectal intussusception in many colorectal surgical centres around the world.

Research motivation

Over the last few years there have been concerns about the usage of meshes in pelvic surgery, especially since serious complications have been recorded in urogynaecology procedures.

Research objectives

To show that the incidence of mesh-related complications, and particularly mesh erosion, after LVMRs is low, especially when a biological mesh is used. We also wanted to investigate whether there is a significant improvement in function and quality of life outcomes.

Research methods

Questionnaires for the calculation of Wexner scores for constipation and incontinence were completed by 86 patients who underwent LVMR with Permacol (Biological) mesh from 2012 to 2018 at University Hospital Wishaw. The patients were followed up in the clinic 12 mo after surgery. Statistical analysis of the result included the calculation of median and interquartile range (IQR) values and comparison and analysis between pre-operative and post-operative values. Complication and recurrence rates were evaluated and analysed using the Kaplan-Meier method.

Research results

The median Wexner scores for constipation pre-operatively and post-operatively were 14.5 (IQR 10.5-18.5) and 3 (IQR: 1-6), respectively, while the median Wexner score for faecal incontinence was 11 (IQR: 7-15) and 2 (IQR: 0-5), respectively ($P < 0.01$). There were 4 (4.6%) recurrences, 2 cases with erosion of a suture through the rectum and 1 patient that returned with diskitis. There were no mesh complications or mortalities.

Research conclusions

In our results, it is demonstrated that LVMR using a biological mesh is both safe and effective for the treatment of rectal prolapse and that it fundamentally improves bowel symptoms of obstructive defecation and faecal incontinence in patients with internal rectal prolapse and symptomatic rectoceles.

Research perspectives

Since we acknowledge that the direct follow-up period was short, we will continue our efforts to follow up our patients and formally assess their quality of life again in the near future.

REFERENCES

- 1 **Faucheron JL**, Trilling B, Girard E, Sage PY, Barbois S, Reche F. Anterior rectopexy for full-thickness rectal prolapse: technical and functional results. *World J Gastroenterol* 2015; **21**: 5049-5055 [PMID: 25945021 DOI: 10.3748/wjg.v21.i16.5049]
- 2 **Mäkelä-Kaikkonen J**, Rautio T, Kairaluoma M, Carpelan-Holmström M, Kössi J, Rautio A, Ohtonen P, Mäkelä J. Does Ventral Rectopexy Improve Pelvic Floor Function in the Long Term? *Dis Colon Rectum* 2018; **61**: 230-238 [PMID: 29337779 DOI: 10.1097/DCR.0000000000000974]
- 3 **Halt in use of transvaginal mesh.** [cited 20 February 2021]. Available from: <https://www.gov.scot/news/halt-in-use-of-transvaginal-mesh/>
- 4 **Balla A**, Quaresima S, Smolarek S, Shalaby M, Missori G, Sileri P. Synthetic Versus Biological Mesh-Related Erosion After Laparoscopic Ventral Mesh Rectopexy: A Systematic Review. *Ann Coloproctol* 2017; **33**: 46-51 [DOI: 10.1007/s10151-017-1729-2]
- 5 **McLean R**, Kipling M, Musgrave E, Mercer-Jones M. Short- and long-term clinical and patient-reported outcomes following laparoscopic ventral mesh rectopexy using biological mesh for pelvic organ prolapse: a prospective cohort study of 224 consecutive patients. *Colorectal Dis* 2018; **20**: 424-436 [PMID: 29265594 DOI: 10.1111/codi.13996]
- 6 **Bachoo P**, Brazzelli M, Grant A. Surgery for complete rectal prolapse in adults. *Cochrane Database Syst Rev* 2000; CD001758 [PMID: 10796817 DOI: 10.1002/14651858.cd001758]
- 7 **Tou S**, Brown SR, Nelson RL. Surgery for complete (full-thickness) rectal prolapse in adults. *Cochrane Database Syst Rev* 2015; CD001758 [PMID: 26599079 DOI: 10.1002/14651858.cd001758.pub3]
- 8 **Ahmad NZ**, Stefan S, Adukia V, Naqvi SAH, Khan J. Laparoscopic Ventral Mesh Rectopexy:

- Functional Outcomes after Surgery. *Surg J (N Y)* 2018; **4**: e205-e211 [PMID: [30377654](#) DOI: [10.1055/s-0038-1675358](#)]
- 9 **Madiba TE**, Baig MK, Wexner SD. Surgical management of rectal prolapse. *Arch Surg* 2005; **140**: 63-73 [DOI: [10.1007/978-3-319-65966-4_8](#)]
 - 10 **Gultekin FA**, Wong MT, Podevin J, Barussaud ML, Boutami M, Lehur PA, Meurette G. Safety of laparoscopic ventral rectopexy in the elderly: results from a nationwide database. *Dis Colon Rectum* 2015; **58**: 339-343 [DOI: [10.7438/1584-9341-12-1-3](#)]
 - 11 **Cadeddu F**, Sileri P, Grande M, De Luca E, Franceschilli L, Milito G. Focus on abdominal rectopexy for full-thickness rectal prolapse: meta-analysis of literature. *Tech Coloproctol* 2012; **16**: 37-53 [PMID: [22170252](#) DOI: [10.1007/s10151-011-0798-x](#)]
 - 12 **Jones OM**, Cunningham C, Lindsey I. The assessment and management of rectal prolapse, rectal intussusception, rectocele, and enterocele in adults. *BMJ* 2011; **342**: c7099 [PMID: [21285185](#) DOI: [10.1136/bmj.c7099](#)]
 - 13 **Mercer-Jones MA**, Brown SR, Knowles CH, Williams AB. Position statement by the Pelvic Floor Society on behalf of the Association of Coloproctology of Great Britain and Ireland on the use of mesh in ventral mesh rectopexy. *Colorectal Dis* 2020; **22**: 1429-1435 [PMID: [28926174](#) DOI: [10.1111/codi.13893](#)]
 - 14 **Propst K**, Tunitsky-Bitton E, Schimpf MO, Ridgeway B. Pyogenic spondylodiscitis associated with sacral colpopexy and rectopexy: report of two cases and evaluation of the literature. *Int Urogynecol J* 2014; **25**: 21-31 [PMID: [23775373](#)]
 - 15 **Vujovic Z**, Cuarana E, Campbell KL, Valentine N, Koch S, Ziyaie D. Lumbosacral discitis following laparoscopic ventral mesh rectopexy: a rare but potentially serious complication. *Tech Coloproctol* 2015; **19**: 263-265 [PMID: [25720459](#)]
 - 16 **Hori T**, Yasukawa D, Machimoto T, Kadokawa Y, Hata T, Ito T, Kato S, Aisu Y, Kimura Y, Takamatsu Y, Kitano T, Yoshimura T. Surgical options for full-thickness rectal prolapse: current status and institutional choice. *Annals of Gastroenterology* 2018; **31**: 188-197 [DOI: [10.20524/aog.2017.0220](#)]
 - 17 **Samaranayake CB**, Luo C, Plank AW, Merrie AE, Plank LD, Bissett IP. Systematic review on ventral rectopexy for rectal prolapse and intussusception. *Colorectal Dis* 2010; **12**: 504-512 [PMID: [19438880](#) DOI: [10.1111/j.1463-1318.2009.01934.x](#)]
 - 18 **Franceschilli L**, Varvaras D, Capuano I, Ciangola CI, Giorgi F, Boehm G, Gaspari AL, Sileri P. Laparoscopic ventral rectopexy using biologic mesh for the treatment of obstructed defaecation syndrome and/or faecal incontinence in patients with internal rectal prolapse: a critical appraisal of the first 100 cases. *Tech Coloproctol* 2015; **19**: 209-219 [PMID: [25577276](#) DOI: [10.1007/s10151-014-1255-4](#)]
 - 19 **Consten EC**, van Iersel JJ, Verheijen PM, Broeders IA, Wolthuis AM, D'Hoore A. Long-term Outcome After Laparoscopic Ventral Mesh Rectopexy: An Observational Study of 919 Consecutive Patients. *Ann Surg* 2015; **262**: 742-7; discussion 747 [PMID: [26583661](#) DOI: [10.1097/SLA.0000000000001401](#)]



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