


The international variability of surgery for rectal prolapse

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To cite: Kelley JK, Hagen ER, Gurland B, *et al.* The international variability of surgery for rectal prolapse. *BMJ Surg Interv Health Technologies* 2023;**5**:e000198. doi:10.1136/bmjst-2023-000198

Received 13 April 2023

Accepted 01 September 2023

ABSTRACT

Objective There is a lack of consensus regarding the optimal approach for patients with full-thickness rectal prolapse. The aim of this international survey was to assess the patterns in treatment of rectal prolapse.

Design A 23-question survey was distributed to the Pelvic Floor Consortium of the American Society of Colorectal Surgeons, the Colorectal Surgical Society of Australia and New Zealand, and the Pelvic Floor Society. Questions pertained to surgeon and practice demographics, preoperative evaluation, procedural preferences, and educational needs.

Setting Electronic survey distributed to colorectal surgeons of diverse practice settings

Participants 249 colorectal surgeons responded to the survey, 65% of which were male. There was wide variability in age, years in practice, and practice setting.

Main outcome measures Responses to questions regarding preoperative workup preferences and clinical scenarios.

Results In preoperative evaluation, 19% would perform anorectal physiology testing and 70% would evaluate for concomitant pelvic organ prolapse. In a healthy patient, 90% would perform a minimally invasive abdominal approach, including ventral rectopexy (56%), suture rectopexy (31%), mesh rectopexy (6%) and resection rectopexy (5%). In terms of ventral rectopexy, surgeons in the Americas preferred a synthetic mesh (61.9% vs 38.1%, $p=0.59$) whereas surgeons from Australasia preferred biologic grafts (75% vs 25%, $p<0.01$). In an older patient with comorbidities 81% would perform a perineal approach. Procedure preference (Delorme vs Altmeier) varied according to location (Australasia, 85.9% vs 14.1%; Europe, 75.3% vs 24.7%; Americas, 14.1% vs 85.9%). Most participants were interested in education regarding surgical approaches, however there is wide variability in preferred methods.

Conclusion There is significant variability in the preoperative evaluation and surgery performed for rectal prolapse. Given the lack of consensus, it is not surprising that most surgeons desire further education on the topic.

INTRODUCTION

Although rectal prolapse is relatively uncommon, with an estimated overall prevalence of 0.5% in the general population, it leads to significant detriment to patient quality of life.¹ Over 60 different operations have been described, owing to the lack of a clearly

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ There are over 60 different operations for repair of rectal prolapse with paucity of data to support one operation as clearly superior.

WHAT THIS STUDY ADDS

⇒ This study reveals the widespread variability in how rectal prolapse is repaired by colorectal surgeons around the world, and identifies what rectal prolapse repairs participants desire more education on.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE, OR POLICY

⇒ The results of this study may help colorectal societies tailor education sessions to meet the needs of their members.

superior operation with low recurrence and minimal morbidity. Performing any surgical randomized control trial is a major challenge and this has proved to be particularly difficult for trials comparing different approaches to the surgical treatment of rectal prolapse. Both the PROSPER and Swedish multicenter trials failed to recruit adequate patients and were subsequently underpowered for their primary end points. More recent attempts to commence large-scale trials in the United Kingdom (UK) and Europe have been abandoned.^{2,3} However, these trials clearly demonstrated the recurrence rates were much higher than anticipated. While there is no clear international consensus, many experts agree that procedures done via a perineal approach have higher recurrence rates compared with those done via an abdominal approach.^{4,5}

Given the heterogeneity of operative techniques it is challenging to compare different studies.⁶ Newer techniques continue to emerge without a clear comparison to past results.^{7,8} Survey data from pediatric surgeons and colorectal surgeons in the UK have attempted to clarify which procedures are currently being undertaken in Europe, but no such data exist elsewhere.^{9,10} Guidelines published by national societies, such as the American Society of Colon and Rectal



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Surgeons, are unable to recommend a superior repair.^{11 12} To provide future education and resources to improve the care of rectal prolapse, it is necessary to understand how surgeons are currently caring for patients with rectal prolapse. The aim of this study is to characterize the practice patterns for surgical management of rectal prolapse internationally.

METHODS

In 2021, a voluntary 23-question survey was electronically sent to members of the Pelvic Floor Consortium of the American Society of Colorectal Surgeons (ASCRS), the Colorectal Surgical Society of Australia and New Zealand (CSSANZ), and The Pelvic Floor Society (TPFS) of the Association of Coloproctology of Great Britain and Ireland (ACPGBI). The questions served to better understand surgeon preference about preoperative workup and operative technique when presented with a variety of scenarios regarding patients with full thickness rectal prolapse (FTRP), as well as continuing education regarding the topic. Demographics were collected on all participating surgeons, including age, sex, years in practice, practice setting (private, academic, government, or other). Participants were allowed to select several responses to each question/clinical situation. We did not limit the number of responses that the participant could provide to each question. The survey was available for several months' duration, during which recipients of the survey could complete it anonymously. Categorical data were expressed as a count (per cent) and analyzed with χ^2 test or Fisher's exact test. Fisher's exact test was used if more than 20% of the expected cell counts was less than five. A Bonferroni correction was applied for all tests where multiple comparisons were evaluated.

RESULTS

Demographics

A total of 249 colorectal surgeons participated: 30% from Australasia, 35% from the Americas, and 35% from Europe and surrounding countries (table 1). Most of the participants were male (n=162, 65%). There was wide variability in age with 11% of participants being older than 60 years, 46% being between 46 years and 60 years, and 42% being between 30 years and 45 years. Likewise, there was variability in years in practice with 31% recording over 20 years in practice, 16% with 16–20 years in practice, 15% with 11–15 years in practice, 16% with 6–10 years in practice, and the remainder with less than 5 years in practice. Most participants were affiliated with an academic center (54%, n=134), followed by government affiliation (31%, n=77), private practice (26%, n=65), and multispecialty group (13%, n=33). The median estimated annual caseload was 10 cases per year. On subgroup analysis, the median estimated annual caseload for surgeons in Europe and surrounding countries, the Americas, and Australasia was 12, 10, and 6, respectively.

Preoperative evaluation

When evaluating a patient with reducible FTRP, most participants responded that they would evaluate for concomitant pelvic organ prolapse (vaginal or urinary), whereas 27% responded that they evaluate only if symptoms warrant evaluation. On subgroup analysis there are significant differences between regions that evaluate only if symptoms warrant evaluation, particularly between America and Australasia (20% vs 40%, respectively, $p=0.02$). Of those who do evaluate, 58% do so via physical exam and 45% use defecography. Defecography was more commonly used in Europe than in Australasia (52% vs 30%, respectively, $p=0.02$). When asked about adjunctive anorectal physiology testing (anorectal manometry, electromyography, or pudendal nerve terminal motor latency) to evaluate patients with reducible FTRP, 19% responded that they would routinely, whereas 43% responded that they would only if symptoms warranted. The remaining 38% do not perform anorectal physiology testing.

Operative technique

When presented with a case of a woman in her 60s with a reducible FTRP, history of abdominal hysterectomy, and no significant constipation or incontinence, most participants (57%) said they would perform a ventral rectopexy, whereas 31% would perform a posterior suture rectopexy, 6% a posterior mesh rectopexy, 5% a resection rectopexy, and 10% a perineal approach (table 2). When performing subgroup analysis based on geographic region, posterior suture rectopexy (44%) was the most preferred surgery for addressing this scenario among colorectal surgeons in the Americas. This was a statistically significant difference when compared with the percentage of participants in Australasia who preferred posterior suture rectopexy (44% vs 18%, respectively, $p<0.01$). The second most common surgery preferred by participants in the Americas for this scenario was ventral rectopexy, whereas it was the most preferred surgery by participants in Australasia and Europe and surrounding countries (40% vs 68% vs 63%, respectively, $p<0.01$). On pairwise analysis, a statistically higher percentage of colorectal surgeons in both Australasia and Europe and surrounding countries preferred ventral rectopexy relative to those in the Americas ($p<0.01$ and $p=0.01$, respectively). If the scenario changed instead to a younger woman in her 40s with a reducible 4 cm FTRP, no history of hysterectomy, but with well-controlled constipation (two times per day osmotic laxative), 50% of participants would perform a ventral rectopexy. The percentage of those preferring resection rectopexy increased to 26% of participants, while those selecting a posterior suture rectopexy decreased to 20%. Subgroup analysis by geographic regions revealed a statistically significant difference for ventral rectopexy and resection rectopexy, however on pairwise analysis there were no significant differences for resection rectopexy by region. For ventral rectopexy, a higher percentage of colorectal surgeons in Australasia preferred it relative to

Table 1 Demographics

Characteristic	Overall (n=249)	Americas (n=87)	Australia and New Zealand (n=76)	Europe and surrounding countries (n=86)	P value
Age, years					
<30	1 (0.4)	0 (0)	0 (0)	1 (1.15)	0.34
30–45	105 (42.2)	40 (46)	29 (38.2)	36 (41.85)	
46–60	115 (46.2)	34 (39.1)	38 (50)	43 (50)	
>60	28 (11.2)	13 (14.9)	9 (11.8)	6 (7)	
Sex	n=248	n=86			
Female	86 (34.7)	45 (52.3)	11 (14.5)	30 (34.9)	<0.01
Male	162 (65.3)	41 (47.7)	65 (85.5)	56 (65.1)	
Years in practice					
1–5	54 (21.7)	20 (23)	22 (28.9)	12 (13.9)	0.10
6–10	39 (15.7)	16 (18.4)	7 (9.2)	16 (18.6)	
11–15	38 (15.3)	13 (14.9)	11 (14.5)	14 (16.3)	
16–20	40 (16)	8 (9.2)	12 (15.8)	20 (23.3)	
>20	78 (31.3)	30 (34.5)	24 (31.6)	24 (27.9)	
What is your practice setting?*					
Private (solo or small group)	65 (26.1)	16 (18.4)	39 (51.3)	10 (11.6)	<0.01
Multispecialty group	33 (13.3)	23 (26.4)	4 (5.2)	6 (7)	<0.01
Academic/University affiliated	134 (53.8)	55 (63.2)	31 (40.8)	48 (55.8)	0.01
Government affiliated hospital	77 (30.9)	4 (4.6)	37 (48.7)	36 (41.9)	<0.01
Other	2 (0.8)	1 (1.1)	1 (1.3)	0 (0)	–
Number of rectal prolapse surgeries per year					
<10	107 (43.5)	35 (40.2)	46 (60.5)	29 (33.7)	<0.01
10–20	119 (48.4)	42 (48.3)	28 (36.8)	49 (57)	
21–40	16 (6.5)	7 (8)	1 (1.3)	8 (9.3)	
41–60	2 (0.8)	1 (1.2)	1 (1.3)	0 (0)	
>60	2 (0.8)	2 (2.3)	0 (0)	0 (0)	

*Multiple responses per participant allowed, therefore percentages reflect the proportion of participants who chose that response and may total over 100.

those in the Americas ($p<0.01$). Colorectal surgeons in Europe also preferred it more than colorectal surgeons in America ($p=0.01$).

In an older, independent, and active woman in her 80s with reducible FTRP, previous abdominal hysterectomy,

mild constipation on fiber, and weak anal resting tone, 43% of participants would elect to perform a ventral rectopexy, 38% a perineal approach, and 21% a posterior suture rectopexy. On further analysis by geographic region, ventral rectopexy is not the preferred approach

Table 2 Survey responses to: Preferred procedure for a woman in her 60s with a reducible 4 cm FTRP, previous abdominal hysterectomy, no significant constipation or fecal incontinence (select all that apply)

Response*	Overall (n=247)	Americas (n=86)	Australia and New Zealand (n=75)	Europe and surrounding countries (n=86)	P value
Posterior suture rectopexy	78 (31.6)	38 (44.2)	14 (18.4)	26 (30.2)	<0.01
Posterior mesh rectopexy	16 (6.4)	5 (5.8)	3 (4)	8 (9.3)	0.4
Resection rectopexy	12 (4.8)	8 (9.3)	3 (4)	1 (1.2)	0.06
Ventral rectopexy	140 (56.7)	35 (40.7)	51 (68)	54 (62.8)	<0.01
Perineal approach	26 (10.5)	6 (7)	10 (13.3)	10 (11.6)	0.39

*Multiple responses per participant allowed, therefore percentages reflect the proportion of participants who chose that response and may total over 100.
FTRP, full thickness rectal prolapse.

by participants in the Americas and Europe and surrounding countries like it is in Australasia (32% vs 40% vs 61%, $p<0.01$). Instead, a perineal approach was the most preferred approach in the Americas and Europe and surrounding countries (35% and 51%, respectively). In a woman in her 80s with moderate dementia who lives in a care facility with reducible FTRP, previous abdominal hysterectomy, mild constipation on fiber, and weak anal resting tone, most participants would perform a perineal approach (81%). Ventral rectopexy would be performed by approximately 15% of participants, followed by posterior suture rectopexy. There were no statistically significant differences in this trend among geographic regions.

When presented with the scenario of a recurrent rectal prolapse of a woman in her 60s who is approximately 4 years after a robotic suture rectopexy in the setting of infrequent constipation, 50% of participants said they would perform a ventral rectopexy, whereas 23% would perform a perineal approach, and 14% would perform a resection rectopexy. While all three geographic regions had consensus among ventral rectopexy being the most preferred surgery for this scenario, there were statistically significant differences in the number of participants who preferred a perineal approach (Americas 10%, Australasia 33%, and Europe and surrounding countries 27%, $p<0.01$).

Most participants who performed abdominal surgery for rectal prolapse preferred the laparoscopic approach (57%) whereas 33% preferred the robotic approach and 9% an open approach. In terms of geographic regions, the laparoscopic approach remains the preferred approach in Australasia and Europe and surrounding countries relative to the Americas (64% vs 85% vs 24%, $p<0.01$), whereas the robotic approach is the most preferred in the Americas relative to Australasia and Europe and surrounding countries (65% vs 24% and 9%, respectively, $p<0.01$). This is true for surgeons in the 30–45 years and 46–60 years age groups. In the 60+ years age group, there is no longer a statistically significant difference in approach type between the three regions (0.69). Additionally, surgeons in an academic/university

hospital, multispecialty group, or private practice in the Americas prefer a robotic approach, whereas those in Australasia and Europe prefer a laparoscopic approach. No difference exists between regions for those who work in a government affiliated hospital ($p=0.14$).

Of those who routinely use support when performing ventral rectopexy, 48% prefer biologic graft with the remainder preferring synthetic mesh (table 3). We identified significant variation with type of support used among geographic region, with participants in Australasia preferring biologic mesh (68% vs 29% in the Americas and 44% in Europe and surrounding countries, $p<0.01$) and those in the Americas and Europe and surrounding countries preferring synthetic mesh (48% and 44%, respectively vs 23% in Australasia, $p<0.01$). If performing a posterior suture or resection rectopexy, 42.6% of responding participants would add an anterior dissection. When performing a posterior mesh rectopexy, 52% place mesh posteriorly in a Wells fashion, 19% wrap mesh around the rectum in a Ripstein fashion, and the remainder do various modifications. These trends were consistent across geographic regions.

When performing a perineal approach, 50% routinely perform a Delorme whereas 41% routinely perform a perineal rectosigmoidectomy (Altmeier) (table 4). Among the remainder, use depended on the clinical situation. The Altmeier procedure is the preferred surgery in the Americas relative to Australasia and Europe and surrounding countries (79% vs 17% and 23%, respectively, $p<0.01$). In Australasia and Europe and surrounding countries, Delorme is the preferred surgery (74% and 70%, respectively, vs 13% in the Americas, $p<0.01$).

Education

Most participants would be interested in further skill development regarding surgery for rectal prolapse (table 5). Of those who were interested, there was wide variability in the repairs they wished to hone skills in, however, ventral rectopexy was the most selected (53.9%), and a significantly higher proportion of colorectal surgeons in the Americas desired it over colorectal surgeons in

Table 3 Survey responses to: Preferred support in ventral rectopexy

Response	Overall (n=228)	Americas (n=81)	Australia and New Zealand (n=70)	Europe and surrounding countries (n=77)	P value
Synthetic mesh	89 (39)	39 (48.1)	16 (22.9)	34 (44.2)	<0.01
Biologic graft	109 (47.8)	24 (29.6)	48 (68.6)	37 (48.1)	<0.01
I do not routinely perform ventral rectopexy	24 (10.5)	14 (17.3)	6 (8.6)	4 (5.2)	0.03
Do not use mesh	5 (2.2)	3 (3.7)	0 (0)	2 (2.6)	0.38
Only in conjunction with anterior repair	1 (0.4)	1 (1.2)	0 (0)	0 (0)	--
	Synthetic mesh		Biologic graft		P value
Americas (n=81)	39 (61.9)		24 (38.1)		0.01
Australia and New Zealand (n=70)	16 (25)		48 (75)		<0.01
Europe and surrounding countries (n=77)	34 (47.9)		37 (52.1)		0.62
8.4% of participants did not provide an answer.					

Table 4 Survey responses to: Preferred perineal operation

Response	Overall (n=236)	Americas (n=84)	Australia and New Zealand (n=69)	Europe and surrounding countries (n=83)	P value
Perineal rectosigmoidectomy (Altmeier)	98 (41.5)	67 (79.8)	12 (17.4)	19 (22.9)	<0.01
Delormes	120 (50.8)	11 (13.1)	51 (73.9)	58 (69.9)	<0.01
Either depending on the clinical situation	13 (5.5)	3 (3.5)	5 (7.2)	5 (6)	0.6*
Other perineal method	4 (1.7)	2 (2.4)	1 (1.4)	1 (1.2)	--
	Perineal rectosigmoidectomy	Delormes			P value
Americas (n=84)	67 (85.9)	11 (14.1)			<0.01
Australia and New Zealand (n=69)	12 (19.1)	51 (80.9)			<0.01
Europe and surrounding countries (n=83)	19 (24.7)	58 (75.3)			<0.01

*5.6% participants did not provide a response for this question.

Australasia or Europe and surrounding countries (71% vs 44% vs 43%, respectively). Instead, colorectal surgeons in Europe and surrounding countries wished to learn more about posterior suture rectopexy and resection rectopexy. Most participants (56%) felt that one-on-one proctoring would be the most effective for learning new technical skills, however video coaching (50%), hands-on cadaveric or model practicing (44%), online tutorials (41.7%), and lecture setting (30%) were also commonly selected (table 6). Most participants (78.2%) would be willing to submit a de-identified case video for review.

DISCUSSION

Rectal prolapse continues to remain relatively rare, and there is wide variability in management among all age groups.^{9,10} Data from surveys completed in 1997 and 2014 by members of the APCGBI have shown that the annual median number of operations per surgeon has remained stable. Our survey results show that the annual median caseload for rectal prolapse has increased over the past decade. Participants in Europe and surrounding countries report their annual median caseload is twice that of what was reported by members of the APCGBI in 2014 (12 vs 6).⁹ The reason for the increase in case volume is unclear, however possible explanations include an increasingly ageing population, more surgical specialization, change

in diet, obesity epidemic, or some combination of them all. In addition, increased patient awareness and willingness to seek treatment might also explain the increase.

An increasing percentage of surgeons continue to favor the abdominal approach for healthy patients and the perineal approach for older patients compared with survey results from 2014 (90% from 81.7%, and 86% from 38.5%, respectively).⁹ The use of minimally invasive abdominal procedures continues to remain high at around 90%, however there has been a decrease in the percentage of surgeons using a laparoscopic approach in favor of the robotic approach. This becomes more apparent when analyzing participants from different geographic regions, with the Americas being the only region to have a greater proportion of participating surgeons favoring the robotic approach over the laparoscopic approach, likely secondary to the increasing availability of robotic platforms. When looking at the preferred abdominal approach for all participants, ventral rectopexy is often the procedure of choice, likely secondary to its excellent safety profile, functional outcomes, and recurrence rates.¹²⁻¹⁴ On subanalysis by geographic region, clinical scenarios in which the patient had a history of hysterectomy resulted in surgeons in the Americas choosing a different approach, presumably in an attempt to minimize anterior dissection through adhesions related to

Table 5 Survey responses to: Which operation would you like to learn more about? (check all that apply)

Response*	Overall (n=204)	Americas (n=79)	Australia and New Zealand (n=50)	Europe and surrounding countries (n=75)	P value
Posterior suture rectopexy	56 (27.5)	12 (15.2)	16 (32)	28 (37.3)	<0.01
Posterior mesh rectopexy	52 (25.5)	16 (20.3)	12 (24)	24 (32)	0.23
Resection rectopexy	40 (19.6)	7 (8.9)	12 (24)	21 (28)	<0.01
Ventral rectopexy	110 (53.9)	56 (70.9)	22 (44)	32 (42.7)	<0.01
Altmeier	54 (26.5)	14 (17.7)	12 (24)	28 (37.3)	0.02
Delormes	38 (18.6)	18 (22.8)	6 (12)	14 (18.7)	0.3
Other	28 (13.7)	5 (6.3)	13 (26)	10 (13.3)	<0.01

*Multiple responses per participant allowed, therefore percentages reflect the proportion of participants who chose that response and may total over 100.

Table 6 Survey responses to: What do you envision to be the most beneficial way to gain new skills regarding these operations? (check all that apply)

Response*	Overall (n=235)	Americas (n=85)	Australia and New Zealand (n=68)	Europe and surrounding countries (n=82)	P value
Lecture setting	68 (29.8)	29 (34.1)	15 (22.1)	24 (29.3)	0.26
Hands on cadaveric or model practicing	104 (44.3)	43 (50.6)	20 (29.4)	41 (50)	0.01
1:1 proctoring	132 (56.2)	39 (45.9)	43 (63.2)	50 (61)	0.05
Video coaching	119 (50.6)	49 (57.6)	27 (39.7)	43 (52.4)	0.08
Online tutorials	98 (41.7)	42 (49.4)	23 (33.8)	33 (40.2)	0.14
Other	6 (2.6)	1 (1.2)	4 (5.9)	1 (1.2)	–

*Multiple responses per participant allowed, therefore percentages reflect the proportion of participants who chose that response and may total over 100.

prior hysterectomy. With respect to perineal repairs, participating surgeons from Europe and surrounding countries and Australasia favored the Delorme procedure and participating surgeons from the Americas preferred the Altmeier procedure. This is likely attributable to differences in exposure during training since both procedures have been shown to be successful for management of FTRP with similar postoperative complication rates.^{15 16}

When evaluating mesh-type preference among all participating surgeons, there was nearly an even split between those who preferred biologic graft and those who preferred synthetic mesh. The differences became more pronounced when evaluating participants by geographic region, with participants in the Americas favoring synthetic mesh and participants in Australasia favoring biologic graft. Participants in Europe and surrounding countries were evenly split in their preference for mesh choices. While there is no international consensus, there is geographic preference. Although there are theoretically more risks associated with the use of synthetic mesh for prolapse repair, such as fistula formation, mesh erosion, and dyspareunia, studies in the literature show that the complication rates remain very low.^{17 18} The more favorable risk profile of biologic grafts, in addition to having equivalent recurrence rates to synthetic mesh and less medicolegal concern,^{1 6 19} might explain why colorectal surgeons in Australasia and Europe and surrounding countries prefer it. In addition, many colorectal workshops in Australasia use biologic graft which may increase the familiarity of participants to the graft. Unfortunately, biologic grafts cost significantly more than synthetic mesh, and the cost difference likely explains the reason for its preference in the Americas.

As demonstrated, there is substantial variability between countries, and even within countries, regarding surgical management of FTRP. Therefore, it is not surprising that survey responses indicate that participants from all geographic regions are interested in further education on management of FTRP, with further education on ventral rectopexy being the most preferred topic. We believe this confirms the ongoing opportunity for colorectal surgery societies to continue to bolster the education to its members and fellows regarding rectal

prolapse. The preferred methodology for providing education is more variable, however. There is a substantial number of participants who would support a virtual platform for continuing education such as video conferences or online tutorials. Currently, CSSANZ and TPFs of ACPGIBI host more workshops and educational forums pertaining to surgical management of rectal prolapse compared with ASCRS. Perhaps the desire for virtual education could allow experts in a particular approach to remotely educate/train colleagues worldwide. While further education on the common repair types may help reduce variability, further research on which repair is more optimal is crucial.

Limitations for our study include the inherent shortcomings of survey data such as response bias and recall bias. Given the voluntary nature of the survey, we cannot say what the overall denominator is of those performing rectal prolapse surgery. In terms of the response within the Americas, the survey was limited to those within the Pelvic Floor Consortium of ASCRS, thereby selecting those with specific interest in pelvic floor disorders. We therefore suspect that newer approaches such as ventral rectopexy may be over-represented among this cohort. We were also limited to regional locations where English was the primary language, therefore our survey fails to adequately represent Central and South America, as well as most of Asia.

Despite these limitations and given the absence of large-scale descriptive data regarding surgery for rectal prolapse, this work still represents the largest of its kind and serves as an important step in understanding the current state of rectal prolapse surgery. It becomes critical to use such survey data to establish a current baseline of the status of care for rectal prolapse. Future collaborations within and between international societies will be imperative to prospectively evaluate the optimal individualized approach for patients with rectal prolapse.

Acknowledgements The authors thank the members of the Pelvic Floor Consortium of the American Society of Colorectal Surgeons (ASCRS), the Colorectal Surgical Society of Australia and New Zealand (CSSANZ) and the Pelvic Floor Society (TPFS) for participating in this survey. The authors also thank Alicia Stowe for statistical analyses.

Contributors JKK wrote the main manuscript text and prepared all tables within the text. ERH, BG, ARLS, and JWO reviewed the manuscript. JKK acts as guarantor.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests BG has speaking disclosures for Intuitive. ARLS has speaking disclosures for Intuitive, Cook Biotech, and Stryker. JKK, ERH, and JWO have no competing interests to disclose.

Patient consent for publication Not applicable.

Ethics approval This study involves human participants. From our institutional review board: On January 19, 2021, the above referenced project was reviewed and determined that the proposed activity does not meet the definition of human subjects research as defined by Department of Health and Human Services (DHHS) or U.S. Food and Drug Administration (FDA) regulations. Therefore, it does not require review by the Spectrum Health IRB. This determination applies only to the activities described in the submission referenced above. If changes to this project occur that require review of this determination, submit a new request for determination to the IRB for a review. Participants gave informed consent to participate in the study before taking part.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data may be obtained from a third party and are not publicly available.

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