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REVIEW ARTICLE

Mesh-associated complications in minimally invasive ventral mesh rectopexy: a systematic review

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Abstract

Background Ventral mesh rectopexy (laparoscopic and robotic) is a common and well established treatment of rectal prolapse. Although described as safe and effective, complications, especially mesh-associated ones are often mentioned. Additionally, there is no consensus regarding the mesh type and fixation method as well as the materials used for this purpose. The aim of this systematic review was to identify the total amount of complications and of those the mesh-associated ones.

Methods Pubmed, Web of Science and Cochrane Central Register were screened for complications in general and in detail regarding the mesh(es) and a systematic review was performed.

Results Following qualitative evaluation, 40 studies were identified for further investigation. Across 6269 patients, complications were found in 9.2% (622 patients). Mesh-related complications were described in 1.4% (88 patients) of which 64.8% were erosions, 11.4% fistulas and 13.6% mesh releases. The complication rate according to the different materials were low with 1% in biological and synthetic meshes and 1.8% in not further described or mixed mesh type. Non-absorbable material to fixate the mesh was most frequently used to fixate the mesh.

Conclusion Laparoscopic ventral mesh rectopexy is a safe operation with a low-complication rate, regardless of mesh type.

Keywords Rectopexy · Rectal prolapse · Mesh · Obstructive defecation

Rectal prolapse (RP) due to posterior pelvic floor weakness, is a life-impairing problem. Up to 90% of the patients are women [1]. Aetiology is multifactorial, including chronic constipation, vaginal delivery, previous pelvic surgery, heavy lifting, obesity and age, the aetiology is multifactorial [2]. Various problems such as bleeding, soiling, incontinence, constipation, formation of rectal ulcers and metaplasia can occur. RP can be categorised by the Oxford classification (I-V) in which distinction is made between internal and external, as well as different expressions of the intussusception [3]. When conservative therapy using laxatives, nutritional therapy and physiotherapy fail, surgical treatment is indicated in internal rectal prolapse. External rectal prolapse is considered a relative indication for surgery. The current most popular approach, described by D'Hoore, is laparoscopic or robotic anterior or ventral mesh rectopexy (LVMR/RVMR) [4]. The literature shows tendencies that the minimally invasive approach is preferable to the open technique especially with regard to the short-time outcomes [5]. However, a clear consensus regarding the best technique is not yet described in the literature [6–9]. In some health systems like the NHS in United Kingdom, ventral mesh rectopexy (VMR) is a highly debated topic and under *"high vigilance restriction"* [10]. Furthermore, the United States Food and Drug Association (FDA) warns of mesh erosions up to 4% in the first 23 months after surgery [11]. Given these public concerns and reports, pelvic floor surgeons have reported on mesh-related complications in a number of prospective and retrospective studies in the past. A total of three systematic reviews of the available literature have been published since 2013 addressing the mesh-related complications with limited patient numbers and conflicting or unclear

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results concerning the role of mesh type and other contributing factors such as the type of mesh fixation [12–14].

The present systematic review includes all available publications and a larger number of patients with further analysis of contributing factors for mesh complications such as the type of fixation.

Methods

The present systematic review was prepared in accordance to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [15]. Inclusion criteria, search strategies and endpoints were defined in advance. The study was registered on PROSPERO (CRD42023423962).

Literature search strategy, study selection and data collection

A representative literature search was conducted using the electronic databases of Pubmed, Web of Science and Cochrane Central Register of Controlled Trials, and studies published up to the 31th of March 2024 were considered. Search parameters were: *(mesh rectopexy) AND (ventral rectopexy)*. The common literature understands a minimally invasive, especially laparoscopic (LVMR) and nowadays more often robotic (RVMR) procedure under VMR mesh rectopexy. Only minimally invasive operations were considered. The reference lists of previous systematic reviews and meta-analyses also were reviewed to identify potentially relevant articles. Two investigators (GFH and FN) performed data extraction, quality assessment and critical appraisal. Disagreements were resolved through a third reviewer (DCS).

Data from the included studies was entered in an Excel™ (Microsoft Corporation, Redmond, Washington, USA) database. A double data-entry method was used to avoid errors in data extraction. Data was compared and discussed by the two investigators regarding discrepancies until a consensus was achieved.

Eligibility criteria

Data extraction was performed by the two authors independently considering titles and abstracts of the articles for eligibility. The inclusion criteria were as follows: (1) a prospective or retrospective study design; (2) surgical treatment of rectopexy with a mesh; (3) patient age > / = 18 years. Accordingly, the following exclusion criteria were also used: (1) no reports relating to mesh complications; (2) were not written in English; (3) reported as part of the same study population; (4) the article was published as a case report, review article, letter to the editor, editorial, or conference abstract; (5) cohort under 10 participants.

Outcome measures

The main outcomes analysed were postoperative complications, separated into overall and mesh-specific complications. Mesh complications include erosions, fistulas, mesh release (detachment/separation from the underlying fascia), discitis and complications not described in detail. Furthermore, a differentiation was made between minor and major complications. A major complication was defined as Clavien Dindo IIIb or higher [16]. In studies where no differentiation between minor and major was made, the complications were reviewed by the two investigators (GFH and FN) and allocated to minor and major where applicable.Any discrepancies were discussed with a third reviewer (DCS). In 10 studies, a distinction between minor and major complications was not possible, i.e. some studies subdivided the patients between surgical and medical complications.

Secondary outcome measures were type of suture material utilised and mesh types in relation to complications. Additionally, papers were screened for operation details such as redo-surgeries after a prior rectopexy repair, laparoscopic or robotic approach and combination surgery.

Methodological quality

To evaluate the methodological quality of the randomised controlled trials (RCTs), the Cochrane Collaboration tool was used to assess the risk of bias. Random sequence generation, allocation concealment, blinding of participants, personnel and outcome assessment, incomplete outcome data, selective reporting and other sources of bias were considered. For each domain, the risk of bias was classified as low, unclear or high according to the Cochrane Handbook for Systematic Reviews of Interventions [17]. Non-randomised trials were rated according to the Newcastle–Ottawa quality assessment scale for case–control studies [18]. Up to nine stars could be awarded: selection of study groups (maximum 4 stars); comparability of the groups (maximum 2 stars); and ascertainment of the outcome of interest (maximum 3 stars).

Statistical analysis

Data from the included studies was pooled according to whether a complication after mesh implant occurred or not. The data was recorded in Microsoft Excel and analysed using Graphpad Prism 8.0 (Graphpad Software, Inc., La Jolla, CA).

Results

Figure 1 shows the flow chart with inclusion and exclusion criteria. Data extraction from electronic databases resulted in a total of 652 abstracts. After the exclusion of duplicates and non-relevant citations, 81 studies of potential relevance remained for full-text screening. Four studies were excluded, because outcome parameters of interest were either not reported or unavailable. Another 20 papers were excluded due to multiple use of the same data set(s). Studies were included based on the amount of data, the time period and the quality of the reported points of interest. Following screening, 40 studies were included for qualitative synthesis. A total of three RCTs with a cumulative number of114 VMR patients were found (Table 1) [19–21]. In 13 studies, a prospective design was present with 894 consecutive patients, (Table 2) [22–34]. A total of 24 retrospective studies [35–58] with 5261 patients were considered (Table 3). Regarding the operation approach, 5986 (95.5%) received a laparoscopic repair and 283 (4.5%) were operated with the robot. A redo operation

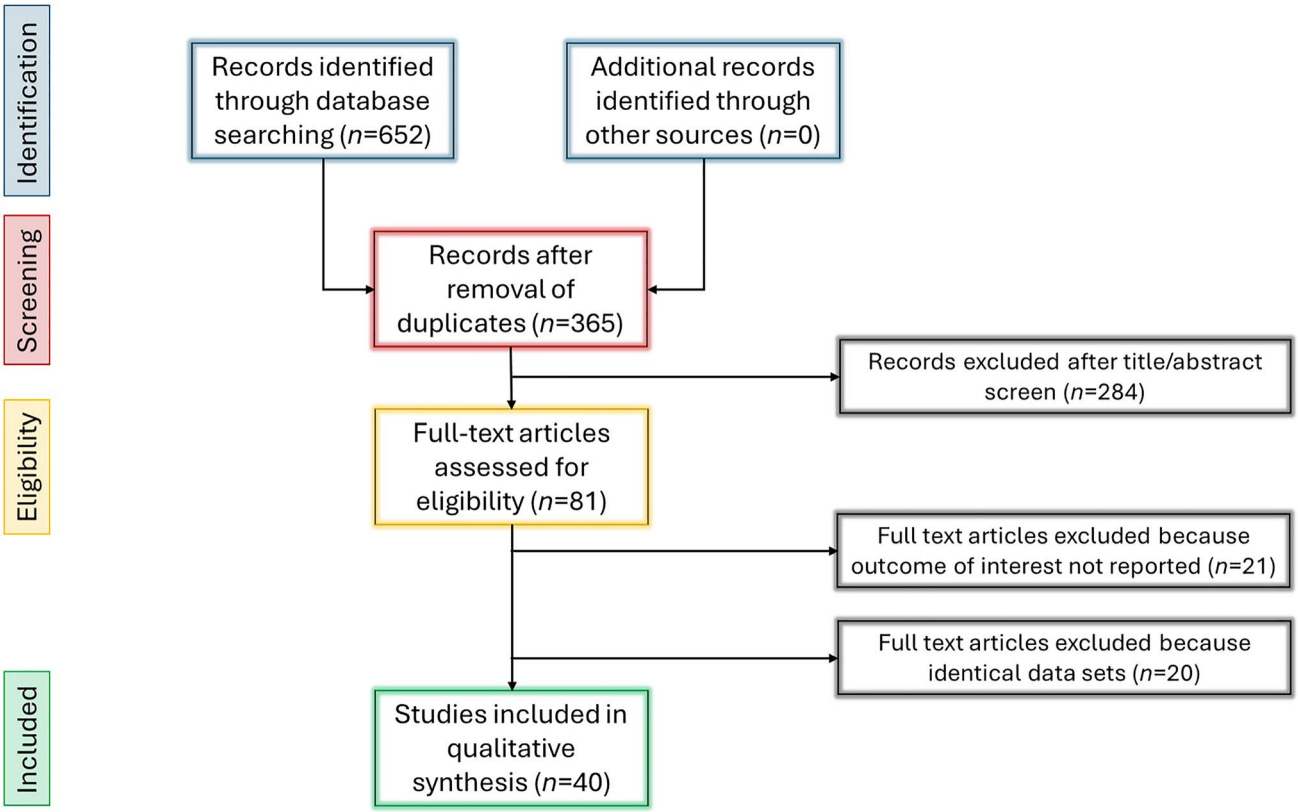

Fig. 1 Flowchart

Table 1 Randomised controlled trials (RCTs) included in the systematic review

	Country	*n*	Study group		Mesh complications		Total complications	
			LVMR *n* = 97	Control *n* = 79	LVMR (%)	Control (%)	LVMR (%)	Control (%)
Mehmood et al. [19]	UK	51	LVMR (*n* = 34)	Robotic (*n* = 17)	0	0	6 (18)	0
Lundby et al. [20]	Denmark	38	LVMR (*n* = 38)	LPSR (*n* = 37)	0	–*	2 (5)	1 (3)
Emile et al. [21]	Egypt	25	LVMR (*n* = 25)	Delorme (*n* = 25)	0	–*	5 (20)	3 (12)

LVMR laparoscopic ventral mesh rectopexy, *LPSR* laparoscopic posterior suture rectopexy

*No mesh in use

Table 2 Non-randomised, prospective studies included in the systematic review

	Country	Type of study	$n=894$	Complications		Newcastle–Ottawa Scale		
				Mesh (%)	Total (%)	S	C	E
Wong et al. [22]	France	PCH	84	1 (1.1)	2 (2.4)	xx*x	*	*x*
Faucheron et al. [23]	France	PCH	175	1 (0.6)	7 (2.3)	*x**	**	***
van der Hagen et al. [24]	Netherlands	PCH	27	0	2 (7.4)	xxx*	x	*xx
Maggiori et al. [25]	France	PCH	33	0	0	xx*x	*	**x
Tsunoda et al. [26]	Japan	PCH	68	0	n.a	xx**	x	xxx
Ye et al. [27]	China	PCH	19	0	n.a	xxx*	x	*xx
Gurland et al. [28]	USA	CS	101	0	22 (31.0)	*x*x	*	**x
Abdulwahab et al. [29]	Egypt	PCH	33	0	3 (9.1)	xx*x	*	*xx
Gültekin et al. [30]	Turkey	CS	30	0	0	xxxx	x	**x
Postillon et al. [31]	France	PCH	96	0	12 (12.5)	*x**	**	***
Degasperi et al. [32]	Italy	PCH	50	0	1 (2.0)	*x*x	*	**x
Alemrajabi et al. [33]	Iran	PCH	156	0	6 (3.9)	*x**	*	***
Fabiani et al. [34]	Italy	PCH	22	0	0	xxx*	x	**x

PCH prospective cohort with historical control, *CS* case series, *PPS* point prevalence study

Newcastle–Ottawa Scale: S (****) 1. Representativeness of exposed cohort 2. Selection of the nonexposed cohort 3. Ascertainment of exposure 4. demonstration that outcome of interest was not present at the start of the study C (**) 5. Comparability of cohorts on the basis of the design or analysis E (***) 6. assessment of outcome 7. was follow-up long enough for outcome to occur? 8. adequacy of follow-up of cohorts

was performed in 156 (2.5%) patients, whereas a combined operation (i.e. sacrocolpopexy), when documented by the authors, took place in 307 (4.9%) patients (Table 4).

Mesh complications

Across all studies, 577 complications were found in 6269 patients (9.2%). Among the complications, 423 (6.8%) were classified as minor and 124 (2.0%) as major In 21/40 (53%) studies, a distinction between major and minor complications was made by the author (Fig. 2).

Mesh-related complications were described in 88 patients (1.4%). The most common complication was mesh-erosion in 57 cases (64.8%), followed by rectovaginal fistula in 10 patients (11.4%) and 12 mesh releases (13.6%). Less common complications include discitis, pain and adhesions as well as of one complication not classified. The different complications are listed in Table 5. Only three studies stated postoperative mortality, with 5 patients in total (0.08%). Death from non-surgical causes were included. In general, the documentation of complications varied widely. While specific complications such as erosions, fistula and mesh release were commonly reported even if there was no such complication present, the standardised report of, for example pain, is questionable. Due to lack of standardised reporting of complications such as pain, limited information could be gained from this compilation.

Mesh characteristics and fixation

A synthetic mesh was inserted in 2963 consecutive patients, while in 294 patients only biological meshes were used. The remaining 6223 patients were either from a study where both, synthetic and biological meshes were used or no specification about the mesh was made. Generally, mesh-related complications are low, ranging from 0.5% with biological mesh was used, up to 1.9% from studies where the mesh type was not specified. Despite being one of the top three most commonly reported complications, mesh release was not reported following use of biological mesh. Over a third of mesh erosions occurred following a synthetic mesh implant. The group where both types of meshes were used contained the most erosions and fistulations (Table 6).

Regarding mesh fixation, the use of non-absorbable material was the favoured technique, followed by a combination of absorbable and non-absorbable material. Absorbable fixation alone was never used. Complication rates related to suture material were 1.5% or below (Table 7).

Complication rates due to fixation technique, are described in Table 8. Different fixation techniques included sutures alone or sutures in combination with a tacker. The highest complication rate of 2% among 2519 patients was observed in the non-specified mesh group when only sutures were used. In the synthetic mesh group, a single-technique appeared slightly superior to a combination of tacker and suture.

Table 3 Non-randomised, retrospective studies included in the systematic review

	Country	Type of study	$n=5261$	Complications (%)		Newcastle–Ottawa Scale		
				Mesh	Total	S	C	E
van den Esschert et al. [35]	Netherlands	RCH	17	1 (5.8)	5 (35.3)	xxxx	x	*xx
Lauretta et al. [36]	Italy	RCH	30	0	1 (3.3)	xxxx	x	*xx
Formijne Jonkers et al. [37]	Netherlands	RCG	245	0	9 (3.7)	*x**	x	*x*
Ogilvie et al. [38]	USA	CMS	58	1 (1.7)	10 (17.2)	*x**	*	*x*
Consten et al. [39]	Belgium	multi RCH	919	18 (2.0)	114 (12.4)	*x**	x	**x
Evans et al. [40]	UK	RCH	2203	45 (2)	239 (10.8)	*x**	**	***
Horisberger et al. [41]	Switzerland/Germany	RCH	27	2 (7.4)	2 (7.4)	xxxx	x	*xx
Albayati et al. [42]	Australia	RCH	51	0	7 (13.7)	*x*x	x	*xx
Silveira et al. [43]	France/Brazil	RCH	176	1 (0.6)	13 (7.4)	*x**	*	*xx
Inaba et al. [44]	USA	RCH	24	0	0	xxxx	x	*xx
Fu et al. [45]	Singapore/Australia	RCH	231	1 (0.4)	17 (7.4)	*x**	x	*x*
Madbouly et al. [46]	Egypt	Case Series	41	1 (2.4)	6 (14.6)	*x**	*	*x*
Yang et al. [47]	Korea	RCH	69	0	3 (4.3)	*xxx	x	*xx
Gleditsch et al. [48]	Norway	RCH	22	0	2 (9.1)	*x**	x	**x
Mäkelä et al. [49]	Finland	RCH	501	7 (1.4)	33 (6.6)	****	x	*x*
Ahmad et al. [50]	UK	RCH	58	0	0	*xxx	x	*xx
Kremel et al. [51]	UK/Austria/Switzerland	RCH	74	2 (2.7)	14 (18.9)	*xx*	x	*xx
Brunner et al. [52]	Germany	RCH	123	0	17 (13.8)	*xx*	**	*x*
Altomare et al. [53]	Italy	RCH	21	0	1 (4.8)	xxx*	*	*x*
Chandra et al. [54]	India	RCH	25	0	6 (24)	xxxx	x	*xx
Martin del Olmo et al. [55]	Spain	RCH	32	1 (3.1)	1 (3.1)	xxxx	x	*xx
Campagna et al. [56]	Italy	RCH	98	0	2 (1.9)	*xx*	x	*xx
Tsiaousidou et al. [57]	UK	RCH	86	3 (3.5)	5 (5.8)	*xx*	*	*x*
Olatunbode et al. [58]	UK	RCH	130	3 (2.3)	4 (3.1)	*x**	*	*x*

RCH retrospective cohort with historical control, *RCG* research clinic group, *CMS* case-matched series, *CS* case series

Newcastle–Ottawa Scale: S (****) 1. Representativeness of exposed cohort 2. Selection of the nonexposed cohort 3. Ascertainment of exposure 4. demonstration that outcome of interest was not present at the start of the study C (**) 5. Comparability of cohorts on the basis of the design or analysis E (***) 6. assessment of outcome 7. was follow-up long enough for outcome to occur? 8. adequacy of follow-up of cohorts

Discussion

Our detailed analysis of the current literature has demonstrated that minimally invasive mesh rectopexy is a safe procedure with a low rate of mesh-associated complications but with a relevant number of overall morbidity of approximately 9%. Although fewer complications were observed with use of biological meshes a definitive statement cannot be made as this group was underrepresented in the studies considered.

There are a number of studies and systematic reviews describing the outcome and complications of the surgical treatment in rectopexy. Smart et al. discussed the difference between synthetic and biological mesh in their 2013 review, and found that the complication rate in both groups was low [12]. In 2019, a systematic review, meta-analysis and meta-regression by Emile et al. depicted laparoscopic VMR (LVMR) as a safe and effective option in full-thickness RP treatment. Additionally, they assumed that male patients and the length of the mesh potentially had an impact on the recurrence rate [59]. Recently, van der Schans et al. conducted a systematic review and meta-analysis describing the mesh-related complications with synthetic versus biological mesh [14]. Due to the heterogeneity and the quality of the study, they were not able to state a definitive conclusion. Regarding the frequency of mesh complications, Evans et al. analysed 2203 patients in their multicentre collaboration and found erosions in 45 patients, which is 2% (2.4% synthetic, 0.7% biological), with a re-operation rate over 90% [40]. From the initial 45 erosions, three patients had a mesh removal with colostomy and three an ultra-low anterior resection with a temporary ileostomy [40]. Balla et al. analysed 8 studies in their systematic review in 2017 and mentioned an erosion rate for synthetic and biological meshes of 1.87 and 0.22%, respectively [13]. All erosions were treated surgically [13]. Our results of 0.9% erosion overall are thus

Table 4 Operation details

	VMR $n=6269$
Operation approach	
Laparoscopic ventral mesh rectopexy	5986 (95.5%)
Robotic ventral mesh rectopexy	283 (4.5%)
Redo operation	156 (2.5%)
Combination procedure*	
Sacrocolpopexy	156 (2.5%)
Rectocolposacropexy	32 (0.5%)
Midurethral sling	30 (0.5%)
Posterior colporrhaphy	27 (0.4%)
Bladder mesh because of cystocele	26 (0.4%)
Hysterectomy	15 (0.2%)
Salpingectomy/oophorectomy	7 (0.1%)
Anterior vaginal mesh	7 (0.1%)
Rectocele repair	5 (0.1%)
Transvaginal tape	2 (0.03%)

VMR ventral mesh rectopexy

*Reproducible combination interventions were described in six papers [22, 24, 28, 49, 55, 56]

in line with the current literature. A release of the mesh was one of the frequently reported mesh complications. The clinical relevance can, depending on the time of occurrence, be of crucial importance. An inadequate fixation, whether through absorbable or non-absorbable material, can be of utmost importance with regard to an early recurrence. This is because, regardless of the mesh material used, these complications occur early and the resorption of a biological mesh may not yet have fully taken place. Moreover, a loss of mesh-continuity, if not actively sought, is potentially underrepresented in asymptomatic patients.

Generally, the documentation of adverse events across the studies included varied widely. This could be related to the consideration that VMR is a low risk operation, therefore there is a variety of granularity concerning the reporting of complications. The focus is often on recurrence and generally the clinical outcome with improvement of the underlying cause for surgery. A simple factor like pain after surgery is documented as complication in only two studies [38, 51].

In this review of 40 studies reporting the mesh complications after (L/R)VMR only 1.4% adverse events were stated. This rate is in line with the recently published data of van der Schans et al. which showed complications for synthetic and biological meshes up to 2.4 and 0.7% respectively [14]. Although it appears, that a biological mesh should be favoured in terms of mesh-related complications, van der Schans et al. could not find any literature supporting a clear statement in favour of any one mesh type [14]. Our data confirms the low complication rate of biological, compared to synthetic meshes. The recurrence rate is one of the significant points regarding the LVMR, but no statement can be made in this regard with our data. In their systematic review 2017, Balla et al. analysed the erosion rates after LVMR, with significantly more erosions after insertion of a synthetic mesh [13].

The complication of mesh release is also rare, but of great therapeutic relevance if detected, as mentioned above. Consten et al. described in their cohort of 919 patients 9 such detachments, with consecutive re-operation Consten et al. [39]. In biological mesh repair, a mesh release logically has a much lower or no significance due to the resorbability of the mesh. Due to this, potentially high number of unreported cases of mesh release should also be considered.

The placement of a synthetic mesh can be associated with fistulation or the occurrence of erosions while these risks are reduced through the use of a biological mesh [12, 13]. Our data described a much higher erosion and fistulation rate in

Fig. 2 Complications

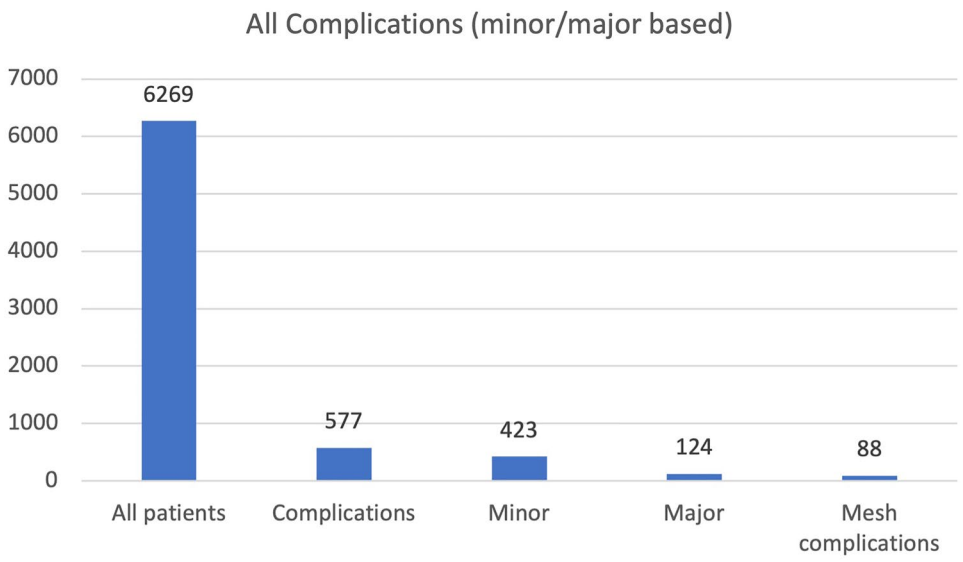

Table 5 Mesh-related complications

	n	Mesh complications (*n* = 88)
Complication type		
Erosion[ϛ] (specific)		
• Vaginal	25	28.4%
• Rectal	18	21.6%
• Perineal	1	1.1%
Erosion (unspecific)	13	14.8%
Rectovaginal fistula[%]	10	11.4%
Mesh release[+]	12	13.6%
Discitis[&]	3	3.4%
Pain[°]	3	3.4%
Adhesion SB/Omentum[?]	2	2.3%
Unknown*	1	1.1%

SB small bowel

[ϛ][23, 39, 40, 46, 49, 51, 55], [%][39, 40, 49], [+][39, 41, 43], [&][38, 45], [°][51, 57], [?][35, 39], *[41]

the synthetic mesh group, while no erosion or fistulation was observed in biological mesh patients. The position statement by the Pelvic Floor Society also states that synthetic meshes are related to higher morbidity [60]. An erosion often results in a surgical re-intervention, but interestingly, the time of diagnosis can vary widely [13].

The interpretation of the results is affected by two other potentially relevant factors. In the data considered, redo-operations were carried out, albeit in small numbers. Furthermore, a few authors documented combination surgeries. Both issues hamper the inclusive assessment of complication rates. However, the documented redo operations are at 2.5% and the combination operations cumulatively at less than 5%. This data would have to be analysed separately for a reasonable assessment.

In addition to the mesh type, the material and technique used are also discussed in literature. Only a few patients had their fixation through solely absorbable sutures, while the vast majority had non-absorbable fixation or a combination of absorbable and non-absorbable suture fixation. Most often, the technique contained a combination of tacker and suture fixation. The literature is currently vague regarding a material recommendation. Mercer-Jones et al. comments on the possible influence of the suture material on morbidity in their position statement [60]. Tejedor et al. analysed 495 patients in a matched-case study and found a 3.3% erosion-rate after the use of non-absorbable material. Meanwhile, there were no complications in the absorbable group [61].

Table 6 Reported mesh complications in relation to mesh type

	Cases	Complications	Erosion	Fistulation	Mesh release
Total	6269	88 (1.4%)	57 (0.9%)	10 (0.2%)	12 (0.2%)
Synthetic	2963	30 (1%)	15 (0.5%)	3 (0.1%)	10 (0.3%)
Biological	311	3 (1%)	0 (0%)	0 (0%)	0 (0%)
Both/unknown	2995	55 (1.8%)	42 (1.4%)	7 (0.2%)	2 (0.1%)

Table 7 Mesh complications in relation to mesh type and fixation material

	Synthetic (*n* = 2931)	Complication (*n* = 30)	Biological (*n* = 311)	Complication (*n* = 3)	Both (*n* = 542)	Complication (*n* = 5)
Absorbable	–	–	–	–	–	–
Non-absorb-able	*2109*	*21 (1%)*	**311**	**3 (1%)**	289	4 (1.4%)
Combination	*822*	*9 (1.1%)*	–	–	253	1 (0.4%)

Only the patients with defined mesh and fixation material were included. Synthetic mesh (italic), biological mesh (bold), synthetic and biological mesh (underline)

Table 8 Mesh complications in relation to mesh type and suture technique

	Synthetic (*n* = 2763)	Complication (*n* = 30)	Biological (*n* = 311)	Complication (*n* = 3)	Both (*n* = 2837)	Complication (*n* = 52)
Suture	*1103*	*10 (0.9%)*	–	–	2548	50 (2%)
Tacker	*232*	*1 (0.4%)*	–	–	=	=
Combination	*1428*	*19 (1.3%)*	**311**	**3 (1%)**	289	2 (0.7%)

Only the patients with defined mesh and suture technique were included. Synthetic mesh (italic), biological mesh (bold), synthetic and biological mesh (underline)

In a large gynaecological systematic review about laparoscopic sacrocolpopexy, conducted by Gluck et al., the topic of absorbable and non-absorbable sutures was discussed briefly [62]. They stated no difference in mesh failure when late-absorbable material was used (level 2 of evidence) and also glue appeared to be safe (level 3 of evidence) [62].

Uniform, large-scale, randomised studies are still needed to make a definitive recommendation regarding mesh selection. To date, biological mesh has been used in patients at risk of fistula, possibly because the higher costs are thought to be justified given the assumed lower mesh-associated fistula rate. However, there seems to be a trend towards a slightly higher risk of recurrence [14].

We would like to acknowledge the limitations of our study: First, this is a retrospective analysis with the potential risk of lack of information and loss to follow-up. Secondly, documentation of the (mesh) complications may be under-reported. Thirdly, a clear definition of complication and mesh-related complication was sometimes difficult to set. And lastly, the data suffers from huge heterogeneity.

In conclusion, rectopexy, especially the laparoscopic procedure with mesh insertion, is a well established and safe operation with a low risk of mesh-related complications.

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Declarations

Disclosures The authors have no conflict of interest to declare.

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