Does suture type used in vaginal repair surgery affect postoperative voiding dysfunction?

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Hypothesis / aims of study

It is well established that transient voiding dysfunction is a common complication of vaginal repair for pelvic organ prolapse surgeries, with a prevalence of 15–45% of patients. [1- 5] We looked for all possible factors that increase the risk of voiding dysfunction of anterior vaginal wall repair studied in the literature. These factors were either the patient's factors or intraoperative factors. Among the patient factors are age, body mass index, comorbidities, parity. [1,2,4] The intraoperative factors include the type of anesthesia used, concomitant suspension or hysterectomy, and the use of a mid-urethral sling. [1,2,4] Those factors have been studied extensively and reported in the literature. We hypothesize that the type of suture material used in anterior vaginal wall repair may create a difference in postoperative voiding dysfunction. This factor was deficient in the literature. We compared anterior plication using monofilament (Polydioxanone and Polyglycolide-trimethylene carbosnate) sutures to multifilament polyglactin sutures in terms of postoperative voiding dysfunction.

Study design, materials and methods

This was a retrospective cohort chart review study (observational) of all patients who underwent anterior vaginal repair surgery in the past 5 years between 2019 and 2023 in King Fahad Medical City, specifically the urogynecology department. A total of 164 patients were included. No patient was excluded.

Data was collected from the hospital system. All operative room schedules were revised, all anterior vaginal wall repair cases under the urogynecology department were collected, and their files were reviewed in detail. Divided into two main groups based on the suture material used in anterior plication, the first group is monofilament (Polydioxanone and Polyglycolide-trimethylene carbosnate) sutures, and the second group is multifilament Polyglactin suture in terms of postoperative voiding dysfunction.

Charts reviewed Looking for all factors that may affect voiding dysfunction postoperatively to ensure the similarity between the two populations. Factors we studied are age, past surgical history, body mass index, parity, smoking, coexisting overactive bladder syndrome, pre- and post-operative urinary tract infections, intraoperative blood loss, duration of surgery, concomitant surgeries, bladder injury, and anesthesia type, voiding trial studies in detail.Concomitant surgeries were divided into three subgroups. First anterior and posterior repair only. Second, anterior and posterior repair cases with slings. Third, anterior and posterior repair cases with suspension or hysterectomy. Then the voiding trials were studied in detail. As there is no global standard definition of Voiding dysfunction, we defined Voiding dysfunction in our paper as Post postvoid residual of more than one third of the total volume or a postvoid residual volume of >150 mL documented by catheterization on at least two occasions within the first 48 hours of surgery [3].
Data was collected in an Excel file in a confidential way. Then the data was processed with the Statistical Package for the Social Sciences software.All variables were analyzed using multivariant regression.There is no conflict of interest. No funding. No harm.

Results and interpretation

We had 68 patients in the polyglactin group and 95 patients in the polydioxanone and polyglycolide-trimethylene carbosnate group. Here is the descriptive analysis of the two groups: First patient related: age P = 0.569, body mass index P = 0.665, parity P = 0.176, past medical history P = 0.218, past surgical history P = 0.721, smoking P = 0.141, coexist Overactive bladder P = 0.553; pre-operative urine retention P = 0.417; pre-operative urinary tract infection P = 0.417. Intraoperatively related: anesthesia type P = 0.529; duration of surgery: P = 0.671; estimated intraoperative blood loss: P = 0.203; concomitant surgery is divided into three subgroups: First, anterior and posterior repairs only P = 0.985. Second group: presence of slings, P = 0.893. Third-group association with hysterectomy or suspension of any type P = 0.96. Post-operative urinary tract infetion P = 0.584. bladder injury intraoperatively, P = 0.571. Eventually, voiding dysfunction between the two groups P =0.589
All numbers are shown in the table below:

Comparison between Type of Suture and the Studied Confounders					
Characteristic	Description	Polydioxanone and Polyglycolide–trimethylene carbosnate	Polyglactin	Total	p-value
		N (%) 95 (58.3)	N (%) 68 (41.7)	N (%) 163 (100.0)	
Age (year)	min - max	33 - 83	36 - 79	33 - 83	0.569
	Mean ± SD	50.9 ± 9.6	51.7 ± 8.8	51.2 ± 9.3	
	Median (P25 - P75)	51 (44 - 57)	51 (46 - 58)	51 (45 - 57)	
BMI	min - max	17 - 54.7	22.4 - 48.6	17 - 54.7	0.665
	Mean ± SD	31.6 ± 6.2	31.7 ± 4.6	31.6 ± 5.5	
	Median (P25 - P75)	30.8 (27.7 - 34.4)	31.4 (28.6 - 33.8)	31.3 (28.1 - 33.9)	
Parity	min - max	1 - 13	0 - 12	0 - 13	0.176
	Mean ± SD	6 ± 3	7 ± 3	7 ± 3	
	Median (P25 - P75)	6 (5 - 8)	7 (6 - 8)	7 (5 - 8)	
Past medical	No	25 (26.3)	24 (35.3)	49 (30.1)	0.218
	Yes	70 (73.7)	44 (64.7)	114 (69.9)	
Past surgical history	No	29 (30.5)	19 (27.9)	48 (29.4)	0.721
	Yes	66 (69.5)	49 (72.1)	115 (70.6)	
Parity	0 (nulliparity)	0 (.0)	1 (1.5)	1 (.6)	0.143
	1-3 (low multiparity)	12 (12.6)	4 (5.9)	16 (9.8)	
	≥4 (grand multipara)	83 (87.4)	63 (92.6)	146 (89.6)	
Smoker	No	91 (95.8)	68 (100.0)	159 (97.5)	0.141
	Yes	4 (4.2)	0 (.0)	4 (2.5)	
Coexist Overactive bladder	No	70 (73.7)	53 (77.9)	123 (75.5)	0.553
	Yes	25 (26.3)	15 (22.1)	40 (24.5)	
Pre-operative urine retention	No	95 (100.0)	67 (98.5)	162 (99.4)	0.417
	Yes	0 (.0)	1 (1.5)	1 (.6)	
Pre-OP UTI	No	95 (100.0)	67 (98.5)	162 (99.4)	0.417
	Yes	0 (.0)	1 (1.5)	1 (.6)	
Duration of surgery (Minutes)	min - max	100 - 369	87 - 414	87 - 414	0.671
	Mean ± SD	207.5 ± 56.8	205.4 ± 63.1	206.6 ± 59.4	
	Median (P25 - P75)	198 (169 - 234)	201 (168 - 227)	199 (169 - 232)	
Intraoperative blood loss (ml)	min - max	50 - 1000	22 - 3200	22 - 3200	0.203
	Mean ± SD	282.6 ± 145.8	292 ± 384.7	286.5 ± 271.2	
	Median (P25 - P75)	250 (200 - 300)	200 (200 - 300)	200 (200 - 300)	
Concomitant surgery	Repair of cystocele & rectocele only	32 (33.68)	23 (33.8)	55 (33.7)	0.985
	Repair with TVT, TVTO	35 (36.8)	24 (35.3)	59 (36.2)	0.893
	Repair with hysterectomy, McCall, sacrospinous suspension, Sacrospinous ligament fixation, vaginectomy	29 (30.5)	21 (30.9)	50 (30.7)	0.961
Anesthesia type	General	79 (83.2)	59 (86.8)	138 (84.7)	0.529
	Spinal	16 (16.8)	9 (13.2)	25 (15.3)	
Post OP UTI	No	90 (94.7)	63 (92.6)	153 (93.9)	0.584
	Yes	5 (5.3)	5 (7.4)	10 (6.1)	
Bladder injury	No	94 (98.9)	66 (97.1)	160 (98.2)	0.571
	Yes	1 (1.1)	2 (2.9)	3 (1.8)	
Voiding trial	No (failed)	17 (17.9)	10 (14.7)	27 (16.6)	0.589
	Yes	78 (82.1)	58 (85.3)	136 (83.4)	

Conclusions

Suture type used in pubocervical fasciaplication in anterior vaginal wall repair Surgery has no rule for postoperative voiding dysfunction.

References

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