



Differences of Dyspareunia in Primipara with 2nd Degree Perineal Laceration Sutured with Rapide Polyglactin 910 and Chromic Catgut Threads

Satrio Arief Wibowo, Yuli Trisetiyono, Herman Kristanto,
Putri Sekar Wiyati, Hary Tjahjanto, Erwinanto

Obstetric and gynecology Division, Medical Faculty of Diponegoro University/
Central General Hospital of Kariadi Semarang, Indonesia

Abstract

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Author Affiliation:
Obstetric and gynecology Division,
Medical Faculty of Diponegoro University/
Central General Hospital of Kariadi Semarang,
Indonesia

Author Correspondence:
Satrio Arief Wibowo
Dr. Sutomo 16 street, Semarang,
Central Java 50244, Indonesia

E-mail:
satrioariefst@gmail.com

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Background : Dyspareunia is persistent or recurrent pain during sexual intercourse. Perineal laceration, spontaneous or episiotomy, is one of the most common causes. Perineal lacerations that occur must be treated through suturing. Chromic catgut is a natural thread that is often used in medical practice, but this thread have a higher inflammatory response compared to Rapide Polyglactin 910. The purpose of this study was to analyze the difference in the incidence of dyspareunia in primipara with 2nd degree perineal lacerations sutured with Rapide Polyglactin 910 and Chromic catgut threads

Methods : True experimental research with randomized controlled trial-single blinded method. The research was conducted at dr. Kariadi Semarang, RA Kartini Hospital and dr. Soeselo from August 2022 to February 2023. The research subjects were primipara with 2nd degree perineal lacerations which were divided into 2 groups, namely 45 subjects in the Chromic catgut group and 45 subjects in the Rapide Polyglactin 910 group. Evaluation of dyspareunia after 3 months was carried out using the Female Sexual Function Index (FSFI)

Results : Subjects sutured using Chromic catgut had a 2.7 times greater risk of experiencing dyspareunia when compared to using Rapide Polyglactin 910 (OR=2.7; 95% CI=1.1–6.6). A significant confounding factor was found, namely the act of episiotomy (p=0.047; OR=9.56; 95% CI=1.86–48.97). After controlling for these variables, the subjects who were sewn using Chromic had a significant risk (p=0.002, OR=5.39; 95% CI=1.76–16.50)

Conclusion : Subjects with Chromic catgut have a higher risk of experiencing dyspareunia than using Rapide Polyglactin 910 threads after 3 months of suturing.

Keywords : dyspareunia; chromic catgut; rapide polyglactin 910; perineal laceration, FSFI

INTRODUCTION

Dyspareunia is persistent or recurrent pain during sexual intercourse. Ten to twenty percent of women will experience dyspareunia for any reason.¹ It often occurs in postpartum women and is suspected to occur due to anatomical and hormonal changes.^{2,3} Postpartum women experience sexual dysfunction as much as 69% and 17–36% of them experience dyspareunia.⁴⁻⁷ The most common risk factors for dyspareunia after delivery are perineal and genital trauma and episiotomy.⁷⁻⁹

Perineal laceration is the most common occurrence. This can be caused by a spontaneous tear or an episiotomy. At delivery, 66% of women experience perineal lacerations.¹⁰ Perineal lacerations, whether arising spontaneously or because of an episiotomy, must be repaired with the best possible surgical technique and with the ideal thread.

Chromic Catgut is a natural thread that is often used in medical practice in developing countries, including in Indonesia. The use of natural threads can cause a more severe tissue reaction compared to synthetic threads. Postpartum patients who are sutured with Chromic Catgut have 3.9 times the risk of experiencing dehiscence compared to using synthetic threads.¹¹ The dehiscence that occurs is influenced by various factors, including inflammation and infection that occurs in the suturing area. Inflammatory conditions and infections in the suturing area can cause dyspareunia. Dyspareunia occurs more frequently in women with perineal lacerations who are sutured with Chromic Catgut.¹²

Rapide Polyglactin 910 is a synthetic material thread which can also be used for repair of perineal lacerations to prevent prolonged morbidity. Research shows that there are significant differences regarding the

repair of perineal lacerations, both in wound healing and the incidence of dyspareunia.

This study aims to determine differences in the incidence of dyspareunia in patients after perineal suturing with Chromic Catgut and Rapide Polyglactin 910 threads which are focused on evaluating 3 months postpartum.

METHODS

True experimental research with randomized controlled trial-single blind method. The research was conducted at dr. Kariadi Semarang, RA Kartini Hospital and dr. Soeselo for 6 months from June 2022 to November 2022. The research subjects were primiparas with grade 2 perineal lacerations who met the inclusion criteria and did not have exclusion criteria. The study inclusion criteria included: 1) primiparous, 2) normal sexual intercourse before pregnancy (FSFI score ≥ 36), 3) vaginal delivery and perineal laceration degree 2 either spontaneously or with an episiotomy, and 4) willing to participate in the study and sign informed consent. The study exclusion criteria included: 1) perineal infection before suturing, 2) previous perineal injury, 3) perineal wound > 24 hours, 4) device delivery, 5) positive Cotton Swab Test, 6) post-perineal suturing 24 hours. Based on the calculation of the sample using the 2-group comparison formula using $p2 = 0.32$ and RR 1.85 from previous studies, it was found that there were 45 subjects in each group with a total of 90 subjects. Evaluation of dyspareunia after 3 months was carried out using the Female Sexual Function Index (FSFI) questionnaire question number 19. If a score is obtained with a value of 5 then it is said that there is no dyspareunia, but if a value < 5 is obtained then it is said that dyspareunia has occurred.



Figure 1. Types of suture threads. (a) Rapide Polyglactin 910, (b) Chromic catgut

RESULTS

Obstetric and gynecological status assessments performed between the Chromic and Rapide Polyglactin 910 groups showed that there were significant differences in episiotomy procedures ($p=0.050$), where there were more episiotomies performed in the Rapide Polyglactin 910 group than the Chromic group (Table 1).

The FSFI assessment conducted between the Chromic and Rapide Polyglactin 910 groups showed no significant difference in the interval between the first postpartum sexual day ($p=0.315$), total FSFI score ($p=0.292$), volitional FSFI score ($p=0.855$), arousal FSFI score ($p=0.351$), lubrication FSFI score ($p=0.196$), climax FSFI score ($p=0.501$), satisfaction FSFI score ($p=0.702$) and dyspareunia FSFI score ($p=0.139$) (Table 2).

TABLE 1
Characteristics of research subjects

Characteristics	Thread Type				<i>p</i> *	
	Chromic (n=45)		>48 hours (N=176)			
	n	Mean (SD); Median (min-max)	n	Mean (SD); Median (min-max)		
Age		23.82 (4.14); 24 (17-35)		24.24 (3.94); 24 (15-32)	0.382 [‡]	
Education Level	Junior High School	18 (40)		12 (27)	0.404 [§]	
	Senior High School	23 (51)		28 (62)		
	Bachelor	4 (9)		5 (11)		
Diabetes mellitus	No	42 (93)		41 (91)	1.000 [§]	
	Yes	3 (7)		4 (9)		
Antibiotic	No	20 (44)		24 (53)	0.527 [¥]	
	Yes	25 (56)		21 (47)		
Birth weight	≤4000 grams	45 (100)	2882.11 (536.93); 3000 (1300-3900)	45 (100)	2955.89 (498.57); 2965 (1100-3900)	0.765 [‡]
	>4000 grams	0 (0)		0 (0)		
Long phase 2	<2 hour	45 (100)	24.80 (13.79); 20 (5-60)	45 (100)	23.07 (12.74); 20 (5-60)	0.596 [‡]
	≥2 hour	0 (0)		0 (0)		
Episiotomy	No	9 (20)		2 (9)	0.050 [¥]	
	Yes	36 (80)		43 (91)		

[‡]Mann Whitney U; [¥]Chi-square; [§]Fischer exact; significant $p \leq 0.05$

TABLE 2
Female Sexual Function Index

		Thread Type				<i>p</i>
		Chromic (n=45)		Rapide Polyglactin 910 (n=45)		
		n	Mean (SD); Median (min-max)	n	Mean (SD); Median (min-max)	
First sexual intercourse after childbirth	<3 months	38 (84)	51.56 (17.83); 60 (30-90)	42 (93)	53.33 (20.11); 60 (30-90)	0.315 [¥]
	≥3 months	7 (16)		3 (7)		
FSFI Total	No sexual dysfunction	4 (9)	25.99 (2.65); 25.9 (20.3-30.6)	25 (55)	26.05 (4.04); 27.1 (18.9-39)	0.292 [¥]
	Sexual dysfunction	42 (93)		20 (45)		

TABLE 2. Continued.

	Thread Type				p
	Chromic (n=45)		Rapide Polyglactin 910 (n=45)		
	n	Mean (SD); Median (min-max)	n	Mean (SD); Median (min-max)	
FSFI (Desire)	-	3.96 (0.61); 4.2 (2.4-4.8)	-	3.92 (0.95); 4.2 (1.2-5.4)	0.855 [‡]
FSFI (Arousal)	-	4.22 (0.44); 4.2 (3-5.1)	-	4.11 (0.62); 4.2 (2.4-5.4)	0.351 [‡]
FSFI (Lubrication)	-	4.76 (0.69); 4.8 (2.1-6.0)	-	4.48 (0.98); 4.5 (0-5.7)	0.196 [‡]
FSFI (Climax)	-	4.27 (0.73); 4.4 (2.4-5.6)	-	4.42 (0.62); 4.4 (3.2-5.6)	0.501 [‡]
FSFI (Satisfaction)	-	4.34 (0.82); 4.8 (2.4-6.0)	-	4.26 (0.82); 4.8 (2.4-5.8)	0.702 [‡]
FSFI (Dyspareunia)	-	4.39 (0.83); 4.4 (2.8-6.0)	-	4.64 (0.82); 4.8 (2.8-6.0)	0.139 [‡]

[†]Independent T test; [‡]Mann Whitney U; [¥]Chi-square; [§]Fischer exact; significant p≤0.05

TABLE 3
The incidence of dyspareunia based on the type of thread

Dyspareunia	Thread Type		p	OR (CI 95%)
	Chromic (n=45)	Rapide Polyglactin 910 (n=45)		
Yes	34 (75.6%)	24 (53.3%)	0.047 [¥]	2.70 (1.10-6.63)
No	11 (24.4%)	21 (47.7%)		

[¥]Chi-square; significant p≤0.05

TABLE 4
Factors influencing dyspareunia

Dyspareunia	p	OR (95% CI)
Thread Type	0.004	5.515 (1.712 - 17.764)
Age	0.429	1.053 (0.926 - 1.199)
Education	0.658	1.234 (0.487 - 3.131)
Episiotomy	0.007	9.564 (1.867 - 48.977)
First sexual intercourse after childbirth	0.404	0.509 (0.104 - 2.492)
Long phase II	0.403	0.983 (0.944 - 1.023)
Birth weight	0.570	1.000 (0.999 - 1.001)
Diabetes mellitus	0.298	0.392 (0.067 - 2.289)
Antibiotics	0.657	1.260 (0.455 - 3.493)

[£]Logistic regression; significant p<0.05

TABLE 5
The incidence of dyspareunia based on the type of thread after controlling the episiotomy subject

Dyspareunia on episiotomy	Thread Type		p	OR (CI 95%)
	Chromic (n=36)	Rapide Polyglactin 910 (n=43)		
Yes	31 (86.1%)	23 (53.5%)	0.002 [¥]	5.39 (1.76–16.50)
No	5 (13.9%)	20 (46.5%)		

[¥]Chi-square; significant $p \leq 0.05$

TABLE 6
Factors influencing dyspareunia after episiotomy control subjects

Dyspareunia	p	OR (95% CI)
Thread Type	0.002	7.56 (2.06 – 27.66)
Age	0.944	1.00 (0.86 – 1.16)
Education	0.337	1.65 (0.59 – 4.63)
First sexual intercourse after childbirth	0.652	0.67 (0.12 – 3.76)
Long time II	0.422	0.98 (0.94 – 1.02)
Birth weight	0.255	0.99 (0.99 – 1.00)
Diabetes mellitus	0.299	0.37 (0.61 – 2.36)
Antibiotics	0.625	1.32 (0.43 – 4.06)

[£] Logistic regression; significant $p < 0.05$

The results of calculating the OR value proved that subjects sutured using Chromic had a 2.7 times greater risk of experiencing dyspareunia when compared to subjects sutured using Rapide Polyglactin 910 (OR=2.7; 95% CI=1.1-6.6; $p=0.047$) (Table 3).

Based on the multivariate test using logistic regression, a relationship was found between the incidence of dyspareunia and the type of suture thread ($p=0.004$) and episiotomy ($p=0.007$). Patients who are sutured using Chromic thread have a 5.51x higher risk of experiencing dyspareunia. Patients who undergo episiotomy have a 9.56x higher risk of experiencing dyspareunia (Table 4).

Further analysis was carried out by controlling the episiotomy variable so that it was able to show a direct relationship between the use of the type of thread and the incidence of dyspareunia.

After controlling the episiotomy subject, the results of calculating the OR value proved that subjects sutured using Chromic had a 5.39 times greater risk of experiencing dyspareunia when compared to subjects sutured using Rapide Polyglactin 910 (OR=5.39; 95% CI=1.76-16.50; $p=0.002$) (Table 5).

Based on the multivariate test using logistic regression, a relationship was found between the

incidence of dyspareunia and the type of suture thread ($p=0.002$). Patients who are sutured using Chromic thread have a 7.56x higher risk of experiencing dyspareunia (Table 6).

DISCUSSION

Evaluations carried out on 90 sexually active research subjects showed that the total FSFI score at the end of the study between the two study groups did not show a significant difference. Based on the analysis of the incidence of dyspareunia, there was a significant difference between the two study groups.

The FSFI questionnaire consists of several assessment components, namely volition, arousal, lubrication, climax, satisfaction, and dyspareunia. This shows that it is not only the condition of dyspareunia that plays a major role in the incidence of sexual dysfunction, but there are 5 other components that play a role. In this study, the median FSFI score for lubrication was higher in the Chromic group, the median FSFI score for dyspareunia was higher in the Rapid Polyglactin 910 group, but the median FSFI score for volition, arousal, climax, and satisfaction was similar between the two groups. Most of the final FSFI scores were similar

between the two study groups, meaning that there was no significant difference in the total final FSFI scores.

The final FSFI score for dyspareunia between the two study groups did not show a significant difference, but the incidence of dyspareunia showed a significant difference between the two study groups.

Patients who are sutured with Chromic sutures or undergo episiotomy are at high risk for dyspareunia. After controlling for the episiotomy variable, a relationship was still found between the use of Chromic threads and the risk of dyspareunia.

There is a difference in the tensile strength between Chromic and Rapide Polyglactin 910 threads. Chromic threads are known to have a tensile strength of 17–21 days while Rapide Polyglactin 910 threads have a tensile strength of 10–14 days. The use of Chromic threads has an absorption capacity of up to 90–100 days, while Rapide Polyglactin 910 threads have a faster absorption rate of 42 days.^{13–15} The use of Rapide Polyglactin 910 threads can be absorbed naturally thereby reducing pain compared to the use of Chromic threads. This difference causes Chromic threads to have the ability to bond between networks longer and the absorption capacity of threads lasts longer. Even so, the use of Rapide Polyglactin 910 threads still causes dyspareunia. A study conducted in the Netherlands in 2017 found that 52–59% and 20–32% of patients still complained of symptoms of dyspareunia after 6 weeks and 3 months of suturing using Rapide Polyglactin 910 thread.¹⁶ These results are supported by previous studies where 34–67% of women have not continued sexual intercourse at 6–7 weeks and 2–12% at 3 months after episiotomy or grade 2 perineal rupture due to dyspareunia.^{17,18} A study in the Czech Republic found that after 3 months 49% of subjects complained of dyspareunia, and after 6 months 32% each complained of dyspareunia.

A study in Jogjakarta in 2021 assessing pain and wound repair found that a significant reduction in pain occurred on the 10th day for the Rapide Polyglactin 910 group and the 12th day for the Chromic group. Another study also stated that the complications of dyspareunia in the first 6 weeks in the group using Chromic threads were 86% and decreased to 12% after 3 months. Whereas in the use of Rapide Polyglactin 910 the incidence of dyspareunia was 8% in the first 6 weeks after suturing the perineal wound and after 3 months of observation there were no subjects complaining of dyspareunia. It can be concluded that the use of Rapide Polyglactin 910 thread has better absorption and better wound healing so that complications of dyspareunia are smaller than the use of Chromic thread.¹⁴ In line with the results of this study, it was stated that the use of Rapide Polyglactin 910 thread is an ideal suture thread for perineal laceration repair which results in better wound healing compared to the use of Chromic thread.

Chromic threads are produced from collagen

originating from the intestines of animals (sheep and cattle) and are reported to cause an inflammatory response in tissues because the threads are broken down by proteolytic enzymes and phagocytosis. Collagen is a very unstable and unpredictable substance in terms of how long it takes to be absorbed, especially if there is a wound infection or malnutrition. Rapide Polyglactin 910 yarn, composed of glycolide and lactide copolymers with a ratio of 90/10 and the substance is derived from glycolic and lactic acids. The material is stranded on top of each other for easier handling and coated with a 65/35 ratio copolymer blend of glycolide and lactide and the same ratio of calcium stearate to reduce bacterial attachment and excess traction on tissues. This is consistent with the results of a study which stated that Rapide Polyglactin 910 thread was preferred over Chromic thread because of its non-allergic nature (inflammatory response) and lower risk of complications of infection and removal of stitches.¹⁴ For this reason, there was a difference in the incidence of dyspareunia between the use of Chromic and Rapide Polyglactin 910 threads.

Episiotomy is also known to trigger dyspareunia. Episiotomy is a perineal surgical incision to speed up and simplify the delivery process by enlarging the birth canal.¹⁹ The most common type of episiotomy is performed mediolaterally (from the hymenal ring downwards at a 45-degree angle).²⁰ Several anatomical structures will be cut in a mediolateral episiotomy including the vaginal epithelium, transverse perineal muscles, bulbocavernosus muscles, and perineal skin. A mediolateral episiotomy that is too deep or too wide can expose the ischioanal fossa. The mediolateral incision is known to pose a greater risk of injury to the ipsilateral nerve, muscle, erectile, and glandular tissue.²¹ Therefore it is not surprising that an episiotomy can trigger dyspareunia due to damage to several structures in the perineal area.

CONCLUSION

There is a significant difference in the incidence of dyspareunia in primiparas with 2nd degree perineal lacerations sewn with Rapide Polyglactin 910 and Chromic Catgut threads, where subjects using Chromic threads have a greater risk of dyspareunia than subjects using Rapide Polyglactin 910 threads.

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Conflict of Interest

The authors clarify that they have no competing financial interests or personal relationships that could influence the work reported in this paper.

Research Ethics

The research was approved by the Health Research Ethics Committee, Faculty of Medicine, Diponegoro University – dr. Kariadi Hospital and carried out in accordance with the principles of the Declaration of Helsinki.

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