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Original Article

Comparative study of episiotomy repair: Absorbable synthetic versus chromic catgut suture material

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Abstract

Objectives : To compare absorbable synthetic sutures with chromic catgut sutures for episiotomy repair with respect to pain analgesic requirement, nature of wound healing, and removal of residual suture material. *Methods :* The study was conducted in a tertiary care hospital for Southern Railway patients. It is a prospective, comparative study between polyglactin 910 rapide 2-0 versus polyglactin 910 1-0 versus chromic catgut 1-0. For the present study, a total of 150 patients were selected. The patients were divided into 3 groups according to their turn. Outcome studies were pain assessment by visual analogue scale (VAS) in lying, walking and sitting postures, analgesic requirement, nature of wound healing, and removal of residual suture material. *Results:* Compared with chromic catgut, and polyglactin 910, polyglactin 910 rapide group is associated with less pain in walking and sitting postures, and there was less need for analgesics ($P<0.05$). Removal of residual suture material was more common in polyglactin 910 (28%). *Conclusions:* Polyglactin 910 rapide is the better suture material than polyglactin 910 and chromic catgut for episiotomy repair in pain perception resulting in less analgesic requirement in postpartum period.

Key words: episiotomy polyglactin 910, chromic catgut, polyglactin 910 rapide.

Introduction

Important aims of care during delivery are to reduce the risk of damage to the perineum at birth, and to minimize pain, and discomfort from perineal sutures. It is therefore important to find sutures with the best properties for perineal repairs. Episiotomy was introduced in the 18th century without having strong scientific evidence of its benefits. Its use was justified for prevention of severe perineal tears, better future sexual function and a reduction in urinary and fecal incontinence. It facilitated child birth but created challenging anatomical reconstruction. However no data support long term benefits of a routine episiotomy in obstetric practice.

A recent Cochrane meta analysis review[1] concluded that the use of episiotomy should be restricted to essential indications viz., threatened perineal injury in primigravida with rigid perineum, operative vaginal delivery, breech delivery, and fetal distress.

Factors which may influence the extent of any subsequent morbidity include the type of suture material

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used, the suturing technic and the skill of the operator.

Suture materials used are absorbable and nonabsorbable. Initially nonabsorbable sutures like silk and nylon were used, which needed removal after 1 week of procedure. Of absorbable suture materials, only polyglycolic and polyglactin cause minimal tissue reaction and inflammation as per the current literature. A relatively new material polyglactin 910 rapide (PR consists of smaller molecules of the same components as coated polyglactin 910 (PG) and is absorbed more quickly than other absorbable materials.

Chromic catgut (CC) is a natural absorbable suture material treated with chromic acid salts which bind to antigen sites in the collagen degraded by lysozymes, the proteolytic enzymes released by inflammatory cells. It maintains 60% tensile strength for 7-10 days. Tensile strength is lost within 28 days, and suture material digested within 90 days.

Polyglactin 910 (PG) is a synthetic absorbable suture material composed of a copolymer, 90% glycolide and 10% L-lactate, coated with polyglactin 370 and calcium stearate. Original tensile strength is lost between 4-5 weeks and absorption is completed between 56-70 days.

Polyglactin 910 rapide (PR) has the same composition as polyglactin 910 (PG) but has rapid absorption achieved by exposure to gamma irradiation resulting in

Table 1. Description of groups and outcome (n=50).

Evaluation	Lying			Walking			Sitting		
	Polyglactin 910 rapide (PR)	**Polyglactin 910 (PG)**	**Chromic catgut (CC)**	**Polyglactin 910 rapide (PR)**	**Polyglactin 910 (PG)**	**Chromic Catgut (CC)**	**Polyglactin 910 rapide (PR)**	**Polyglactin 910 (PG)**	**Chromic catgut (CC)**
2nd day									
No pain	33 (60%)	25 (50%)	24 (48%)	21 (42%)	10 (20%)	4 (8%)	5 (10%)	2 (4%)	1 (2%)
Mild	12 (24%)	19 (38%)	16 (32%)	19 (38%)	20 (40%)	22 (44%)	21 (42%)	14 (28%)	10 (20%)
Mod	4 (8%)	5 (10%)	7 (14%)	9 (18%)	16 (32%)	19 (38%)	20 (40%)	28 (56%)	31 (62%)
Severe	1 (2%)	1 (2%)	3 (6%)	1 (2%)	4 (8%)	5 (10%)	4 (8%)	6 (12%)	8 (16%)
Total	50	50	50	50	50	50	50	50	50
	x^2 = 3.35 Table value = 9.49 df =- 4, P>0.05			x^2 = 12.9 Table value = 9.49, df = 4, P<0.05			x^2 = 7.38 Table value = 9.49, df = 4, P> 0.05		
7th day									
No pain	41 (82%)	32 (62%)	29 (58%)	34 (68%)	19 (38%)	13 (26%)	18 (36%)	8 (16%)	6 (12%)
Mild	7 (14%)	15 (30%)	17 (34%)	12 (24%)	17 (34%)	18 (36%)	20 (40%)	13 (26%)	9 (18%)
Mod	2 (4%)	3 (6%)	3 (6%)	4 (8%)	12 (24%)	15 (30%)	10 (20%)	25 (50%)	28 (56%)
Severe	0 (0%)	1 (2%)	1 (2%)	0 (0%)	2 (4%)	4 (8%)	2 (4%)	4 (8%)	7 (14%)
Total	50	50	50	50	50	50	50	50	50
	x^2 = 6.60 Table Value = 9.49, df = 4, P>0.05			x^2 =11.96 Table value = 9.49, df = 4, P < 0.05			x^2 = 12.48 Table value = 9.49, df = 4, P<0.05		
30th day									
No pain	50 (100%)	47 (94%)	45 (90%)	50 (100%)	36 (72%)	25 (50%)	44 (88%)	24 (48%)	22 (44%)
Mild	0 (0%)	3 (6%)	5 (10%)	0 (0%)	10 (20%)	19 (38%)	4 (8%)	14 (28%)	10 (20%)
Mod	0 (0%)	0 (0%)	0 (0%)	0 (0%)	3 (6%)	4 (8%)	2 (4%)	12 (24%)	16 (32%)
Severe	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (2%)	2 (4%)	0 (0%)	0 (0%)	2 (4%)
Total	50	50	50	50	50	50	50	50	50
	x^2 = 5.02 Table Value = 5.99, df = 2, P>0.05			x^2 = 27.18 Table value = 9.49, df = 4, P<0.05 x2 =			x^2 = 15.29 Table value =9.49, df = 4, P<0.05		
42nd day									
No pain	50 (100%)	49 (98%)	48 (96%)	50 (100%)	48 (96%)	46 (92%)	50 (100%)	40 (80%)	35 (70%)
Mild	0 (0%)	1 (2%)	2 (4%)	0 (0%)	2 (4%)	4 (8%)	0 (0%)	8 (16%)	8 (16%)
Mod	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	2 (4%)	6 (12%)
Severe	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Total	50	50	50	50	50	50	50	50	50
	x^2 = 2.04 Table Value = 5.99, df = 2, P> 0.05			x^2= 4.17 Table value = 5.99, df = 4, P< 0.05			x^2 = 10.8 Table value = 9.49, df = 4, P<0.05		

Table 2. Complications (n=50).

Parameter	Polyglactin 910 rapide (PR)	Polyglactin 910 (PG)	Chromic catgut (CC)
Tight Sutures			
2nd day	10 (20%)	20 (40%)	26 (52%)
7th day	2 (4%)	14 (28%)	16 (32%)
Analgesia given			
2nd day	50 (100%)	50 (100%)	50 (100%)
Analgesic required			
7th day	6 (12%)	16 (32%)	25 (50%)\
30th day	0 (0%)	5 (10%)	9 (18%)
42nd day	0 (0%)	1 (2%)	4 (8%)
Residual suture material removal			
30th day	0 (0%)	10 (20%)	6 (12%)
42nd day	0 (0%)	4 (8%)	3 (6%)

material with low molecular weight. The original tensile strength is lost by approximately 10-14 days and absorption is completed by 42 days.

Methods

This is a prospective, comparative study between polyglactin 910 rapid 2-0 (PR), polyglactin 910 1-0(PG) and chromic catgut 1-0 (CC) used for episiotomy repair. Each group had 50 women. Patients were divided into 3 groups - 3 different suture materials were used in the study.

A) Polyglactin 910 rapide 2-0(PR) was used in group 1 patients.
B) Polyglactin 910 1-0(PG) was used in group 2 patients.
C) Chromic catgut 1-0(CC) was used in group3 patients.

All patients in the reproductive age group with an episiotomy in the perineum were enrolled for the study after taking their consent. All episiotomies were repaired by the same technic using single continuous subcuticular perineal suture. Mothers were not aware of the kind of suture material used. Mothers were interviewed on 2nd, 7th, 30th and 42nd post partum days regarding perineal pain perception with lying, walking and in sitting postures using visual analogue scale (VAS). Local examination was done for wound gaping, and nature of healing. Routinely all women were put on analgesic tablet diclofenac sodium 50 mg 6 hourly for 5 days and antibiotic capsule ampicillin 500 mg, 6 hourly for 5 days.

Episiotomy incisions extended by instrumental deliveries and those having factors interfering in wound healing like severe anemia, diabetes mellitus, patients on corticosteroids and immunosuppressants and epidural labor analgesia which affects postpartum pain perception, were excluded in the study.

Table 1 gives the assessment of pain in the three groups done on 2nd, 7th, 30th and 42nd days.

Lying Posture
Fewer women with PR experienced pain as compared to PG and CC, the results were statistically insignificant (P>0.05) (Table 1)

Walking Posture

In the early postpartum period, women in the PR group reported significantly lesser pain than the PG and CC

groups (P<0.05). By the 30th day and thereafter all women in the PR group were absolutely pain free. However, the number of women with pain on the 42nd day was also minimal in the PG and CC groups.

Sitting Posture

In the early postepisiotomy period though the women in PR group appeared to have less pain than the other two groups, the difference was too narrow to be significant.

However, from the 7th day onwards fewer women in the PR group complained of pain in comparison with PG and CC group, and this was statistically significant. By the 42nd day all women in the PR group could sit comfortably without pain whereas 20% and 30% of the women in the PG and CC groups respectively, still continued to have mild pain (Table 1).

Complications

Table 2 gives the complications seen in the study.

Tightness of suture was reported in 20% women of PG group, in 32% of CC group, and in only 4% in PR group. Analgesic required was also low in the PR group after the 7th day and was nil after the 30th day whereas 10% and 18% of women in PG and CC groups still required analgesics on the 30th day. The suture material got completely absorbed in PR group but residual sutures were removed in 28% and 18% women in PG and CC group respectively. No significant difference was observed in wound healing in the three groups.

Discussion

When we compared our results with that of the other studies, the following observations are made.

Masson et al [2] studied 2000 episiotomies repaired with PR and found excellent pain relief in short and long term postpartum period and good wound healing. Anatomical and functional results were excellent in 1997 cases, only 2% had skin dehiscence.

Our findings correlate well with their study by showing polyglactin 910 rapide (PR) to be the better suture material compared to polyglactin 910 (PG) and chromic catgut (CC) in terms of short and long term pain relief in walking and sitting postures and in wound healing.

Gemynthe et al[3] conducted a comparative study between polyglactin 910 rapide (PR) (n=155) and polyglactin 910 (PG) (n-153) in 308 women and found no statistical difference between the two in terms of short term pain around 2, 5 days and 2 weeks on, lying, sitting and defecating but there was significantly less perineal pain and discomfort on walking at 14 days postpartum.

Cochrane database meta analysis review by Kettle et al[4] involving eight trials showed considerable variation in the gauge of suture material, the size of needle, suturing technic, duration of follow-up and outcomes assessed. Women experiencing short term pain were less in the PR & PG groups than in the catgut group. More women in the CC group had wound dehiscence and required resuturing than those in PG & PR groups. At 3 months after delivery, there was no significant difference in dyspareunia and in the amount of pain between the three groups. Removal of suture material was more common in PG & PR groups than in CC group.

Our study showed no statistical difference between PG and CC in terms of short and long term pain relief, analgesic requirement, and wound healing. But PG group had more cases of suture removal due to residual suture material than in CC group.

Mackrodt et al's[5] study revealed that PG was better than CC in terms of short term pain relief, but there was no difference in long term pain relief, analgesic requirement and wound healing. In PG group 12% needed suture removal due to residual suture material and tight sutures.

Out study showed no significant statistical difference between PG and CC in terms of pain relief and wound healing. The incidence of suture removal for residual suture material and tight sutures was same as in Mackrodt et al's[5] study.

Conclusion

Our study shows the distinct advantage of PR over PG and CC as far as wound healing, need for resuturing, requirement of analgesics, and subjective pain experience are concerned. However PR is costlier than PG and CC, its results are more satisfactory and hence, we recommend that those patients who can afford the extra cost may be given the benefit of using PR for episiotomy suturing.

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