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To Compare the Clinical Outcomes Following Episiotomy Wound Repair Using Chromic Catgut versus Fast Absorbing Polyglactin 910

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Abstract **Original Research Article**

Episiotomy, a very common surgery in obstetrics meant to reduce difficulty during delivery of the baby can itself be the cause for distress if it lands up in complications. Many of these complications like pain and swelling in the wound, induration, urinary retention, feeling of uncomfortable stitches, wound dehiscence etc. are related to the type of suture used for repair. This study is aimed at comparing the clinical outcomes following episiotomy wound repair using the two commonly used absorbable sutures chromic catgut and fast absorbing polyglactin 910 (vicryl rapide). 200 patients were included in the study with half of them undergoing repair with chromic catgut and the remaining half with vicryl rapide. They were evaluated at 24-48 hrs, 3-5 days and at the end of 6 weeks. Factors considered were pain and swelling around episiotomy, need for analgesia, induration, feeling of uncomfortable stiches, wound dehiscence, wound healing etc. It was observed that Pain score and need for analgesia were significantly less in the vicryl rapide group at 24-48 hours and 3-5 days, as well as the patients with complaints of uncomfortable stitches (11% vs. 27%), wound indurations (11% vs. 23%), wound discharge (infection) (8% vs. 19%) and wound dehiscence (7% vs. 16% at 3-5 days and 8% vs. 16% at 6 weeks). Dyspareunia was also less in the vicryl rapide group (9% vs. 21%). Wound healing was also observed to be better in the vicryl rapide group than the other group. So it was concluded that fast absorbing polyglactin is a better suture for episiotomy wound repair than chromic catgut considering the lesser complications and better healing with it.

Keywords: Episiotomy, dyspareunia, wound dehiscence.

INTRODUCTION

Vaginal delivery popularly known as normal delivery was so named because of it's spontaneous nature and association with minimal complications. But in today's world, with increasing rates of caesarean deliveries and it's associated complications, it is of utmost importance to promote vaginal delivery. One such way to promote vaginal delivery is to make the post-delivery period more comfortable with lesser episiotomy wound complications.

Episiotomy is a surgically planned incision made in the perineum in order to increase the girth of the birth canal and ease the process of delivery. As far as repair of episiotomy wound is concerned there is no argument that some form of absorbable suture material is the best choice in the perineum. Although collagen sutures such as chromic catgut performed admirably for generations, but the newer synthetic suture materials elicit less inflammatory tissue response than chromic catgut [1, 2] and this has been hypothesized that the use of synthetic materials in perineal repairs might translate into reduced postpartum pain [3].

Kette and Johnson at the Cochrane Database in 2001 reviewed several randomized trials and concluded that "The absorbable synthetic suture material (in the form of polyglycolic acid and polyglactin sutures) for perineal repair following childbirth appears to decrease women's experience of short-term pain [4]".

Since that review, fast absorbing polyglactin 910 was introduced and 2 trials have demonstrated less postpartum pain and faster resumption of sexual intercourse without a difference in wound dehiscence or residual suture material when fast absorbing polyglactin 910 was used in place of chromic catgut [5, 6].

In the only published trial comparing a multifilament suture, polyglycolic acid, and a monofilament suture, glycomer 631, more women in the monofilament group reported problems with the repaired episiotomy wound [7]. Based on these studies,

it's handling characteristics, and the theoretical advantage of this newer material, fast absorbing polyglactin 910 would seem to be the logical choice today over chromic catgut. Therefore this study is aimed at putting more light into the subject matter for better patient care.

Aims and objectives

The aim of this study was to compare clinical outcomes following episiotomy wound repair using chromic catgut versus fast absorbing polyglactin 910. Several parameters were taken into consideration- pain in the episiotomy wound, induration, feeling of uncomfortable stitches, urinary retention, wound dehiscence etc.

MATERIALS AND METHODS

Place of study: Department of Obstetrics and Gynaecology, Gauhati medical college and hospital.

Study design: Hospital based prospective randomized comparative study.

Source of data: Patients undergoing repair of episiotomy wounds in the labour room of this institution.

Sample size: 100 patients each in the chromic catgut and fast absorbing polyglactin 910 group.

Inclusion criteria

Primiparous patients with normal pregnancy and with uncomplicated episiotomy wounds were included.

Exclusion criteria

Patients having known complicating factors which may hamper wound healing such as GDM, PIH, sepsis etc were not included.

METHODS OF SAMPLE COLLECTION

On a particular day, two primiparous patients with uncomplicated episiotomy wounds were randomly selected and they were given two folded chits of paper to draw. One of the two folded chits had vicryl rapide written on it and the other had chromic catgut. Thus, they got selected in one of the two groups and repair of the episiotomy was done accordingly. Prior to this both the patients were explained about this procedure and their written consent taken. The sutures used were fast absorbing polyglactin 2-0 with a 40 mm round body needle and chromic catgut 1 -0 with 40 mm round body needle. The episiotomies were repaired by 3 step approach. First, the vaginal mucosa was repaired by continuous interlocking sutures, followed by muscle-interrupted sutures. In half of the patients in each group skin was repaired with mattress sutures and the other half with subcutecular sutures.

Both the groups were observed and assessed at 24-48 hours, on days 3-5 and 6 weeks postpartum. The following parameters were noted at (1) 24 – 48 hours: Perineal pain, swelling, temperature, retention of urine and feeling of uncomfortable stitches. (2) At 3-5 days: pain, induration, temperature, and wound discharge, wound dehiscence (3) at 6 weeks postpartum: perineal pain and dyspareunia wound dehiscence and wound healing by primary, secondary and tertiary intentions. The patients were given capsule contramol 100mg in BID doses for initial 3 days. The pain was measured by an oral analogue scale. The absence of pain, presence of pain and asking for more analgesia were rated as score 0, 1 and 2 respectively.

STATISTICAL ANALYSIS

The descriptive data were presented as numbers and percentages with mean and standard deviations, whenever required. Chi-square test was used for analysing the categorical data. The "t" test was used for comparing the means between the two groups. A p-value of 0.05 or less was considered statistically significant.

RESULTS

This study was conducted on two hundred women who were admitted at the department of obstetrics and gynaecology, Gauhati medical college and hospital, Guwahati. They were divided into two groups A and B, with strength of 100 in each group. Group A: Fast absorbing polyglactin 910 (vicryl rapide), Group B: Chromic catgut. The repair of episiotomy wounds were done by the postgraduate trainees. However, during the period of this study countrywide lockdown was imposed due to Corona pandemic and so, there were dropouts and, 63 (Group A) and 61 (Group B) numbers of patients came for follow up at 6 weeks.

Both the groups were comparable in terms of age, BMI, parity, number of ANC, mode of delivery, duration of second stage of labour. The amount of local anaesthetics used, the time between episiotomy and start of suturing, and the time taken to complete the suturing were also noted and compared. While the LA and time interval between episiotomy and start of suturing were comparable, the time taken to complete the suturing in Group A was little more than Group B, and this difference was clinically significant. Vicryl rapide required more number of knots leading to more time consumption.

The pain scores were less in Group A compared to Group B during both the 24-48 hours and 3 – 5 days observation, however this difference was statistically significant during the 3 – 5 days observation period ($x^2 = 11.5385$, p value = 0.0006). Moreover, it was observed that the patients in both Group A and B who underwent skin repair by the

subcutecular technique had less complaints of pain compared to those undergoing suturing by the mattress technique.

The percentage of patients with urinary retention were less in Group A compared to the other group B (4% vs. 8%) but this difference was not statistically significant.

While 11% patients of Group A complained of uncomfortable stitches, it was 27% in Group B and this difference was statistically significant (x^2 = 8.3171, p value = 0.0039).

Less number of women in Group A had wound indurations (11% vs. 23%) (t = 5.1028, p value = 0.0238), wound discharge (infection) (8% vs. 19%, x^2 = 5.180 9, p value = 0.02) and wound dehiscence (7% vs. 16% at 3-5 days, p = 0.04 and 8% vs. 16% at 6 weeks, p value = 0.1488) compared to group B.

Dyspareunia was reported in 10% of patients (Group A) vs. 21% (Group B) at 6 weeks (x^2 = 2.4394, p = 0.1183). The complaints of perineal pain as such was also less in Group A compared to Group B.

Healing by primary intention was seen in 92% (Gp. A) vs. 80% (Gp. B), secondary intention 8% (Gp. A) vs. 18% (Gp. B) and none (Gp. A) vs. 3%(Gp. B) of patients who came for follow up at 6 weeks and this difference was clinically significant (x^2 = 6.8159, p value = 0.009).

Puerperal fever was seen in 3 nos. and 5 nos. of patients in Group A and Group B respectively. This difference however was not statistically significant.

Table-1: Details of groups at the entry of study

Parameters		**Fast absorbing polyglactin 910 (N= 100)**	**Chromic catgut (N= 100)**	**Statistical significance**
Age(Years)	Mean age ± SD	24.19± 4.03	23.68±3.21	t= 0.9899, p value = 0.3234 ≥ 0.05
	Range	18 – 34	18 - 33	
BMI (kg/m²)	Mean ± SD	23.53±1.64	23.14±2.35	t= 1.3609, p value= 0.1751 ≥ 0.05
	Range	18 – 27	18 - 28	
ANC care	Booked	89	83	X^2 =1.495, p value = 0.22 ≥ 0.05
	Unbooked	11	17	
Duration of second stage of labour (mins)	Mean ± SD (mins)	35.11±8.22	36.89±8.90	t = 1.492, p value= 0.1434 ≥ 0.05
	Range	10 – 50	10 - 55	
Mode of delivery	Spontaneous	79	81	x^2 = 0.275, p value= 0.87 ≥ 0.05
	Ventouse	12	12	
	Forceps	9	7	

Table-2: Factors assessed in episiotomy suturing

Parameters		**Fast absorbing polyglactin 910 (N= 100)**	**Chromic catgut (N= 100)**	**Statistical significance**
Amount of local anesthetic used (ml)	Mean ± SD	8.11±1.50	7.98±1.64	t = 0.5849, p value = 0.5593 ≥0.05
	Range (ml)	5-10 ml	5-10 ml	
Time between episiotomy and start of suturing (mins)	Mean ± SD	9.81±3.30	9.84±3.65	t = 0.0610, p value = 0.95 ≥0.05
	Range (mins)	5 – 18	5 - 20	
Time taken for suturing (mins)	Mean± SD	8.14±1.45	6.22±1.27	t = 9.9609, p value = 0.0001 ≥0.05
	Range (mins)	6 – 15	5 - 10	
Technique of suturing	Interrupted Mattress (100)	50	50	
	s.c (100)	50	50	

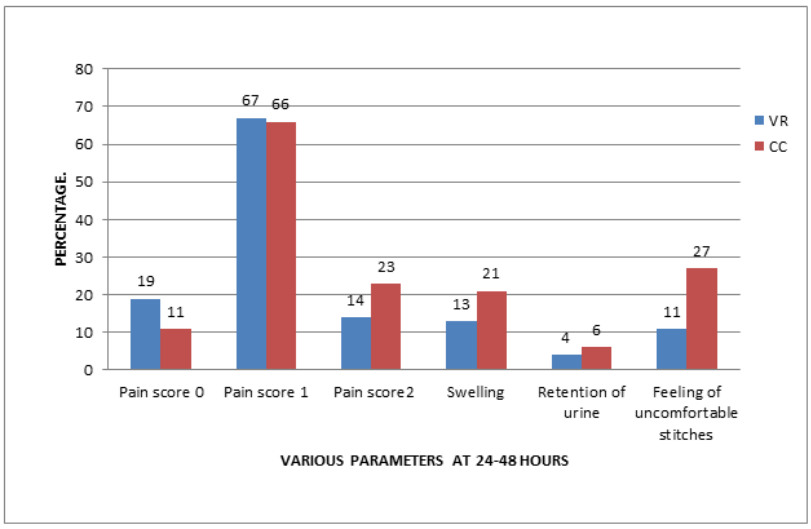

Fig-1: Factors assessed during 24-48 hours observation

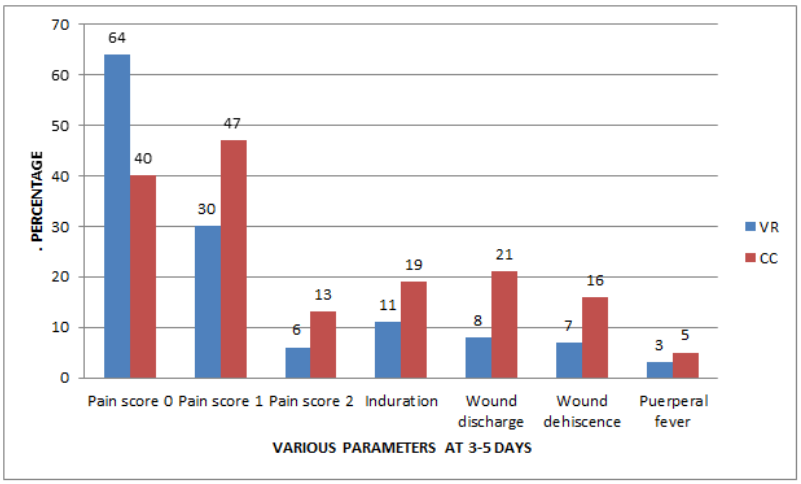

Fig-2: Factors assessed during 3-5 days observation

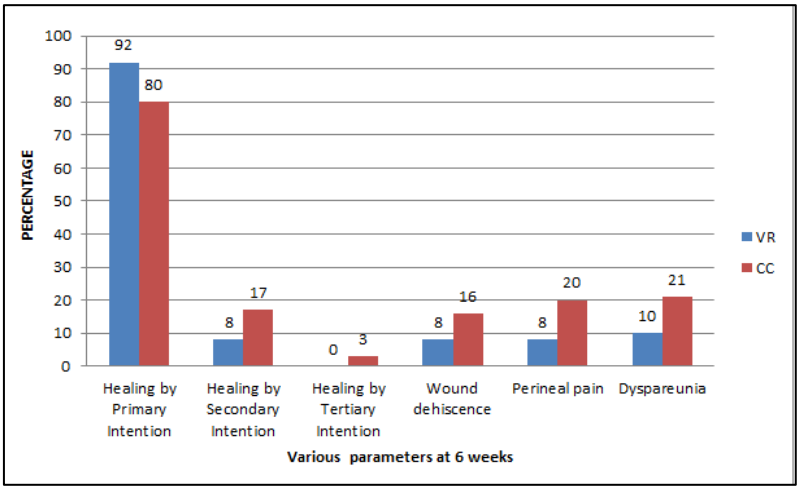

Fig-3: Factors assessed at 6 weeks follow up

DISCUSSION

Episiotomy was brought into practice to ease the final stage of labour and to prevent perineal tear and to make repair easier. Long term benefits were to prevent pelvic organ prolapse and sexual dysfunction. However, episiotomy itself has some unpleasant effects like pain, local swelling, wound infection, urinary retention etc, much of which is determined by the type of suture material used for repair. This study, therefore, was planned to find out the effect of two different

suture materials fast absorbing polyglactin (vicryl rapide) and chromic catgut on episiotomy and to compare the short term benefits as well as morbidity.

There is least chance of any bias in this study because both the groups are comparable in terms of multiple important factors like age, parity, BMI, mode of delivery, duration of second stage of labour and time interval between episiotomy and start of suturing. Also, the fact the cases were selected randomly on a routine basis, for a period of 10 months. The results of this study were compared with those of other national and international studies.

Perineal Pain

The post-delivery perineal pain is an agonizing factor for the mother and it has a deleterious effect on the quality of life. In our study, in the first 24-48 hours observation period, there was no statistically significant difference between the two groups, however 23% patients in Group B asked for extra analgesics compared to 14% patients in group A.

In the subsequent follow up period, there was a significant reduction in the perineal pain (36% vs. 60%) at 3 – 5 days observation and (8% vs. 20%) at 6 weeks, in the fast absorbing polyglactin group. There was a difference as regards to dyspareunia as well (10% vs. 21%) between Group A and B. The study conducted by Bharathi *et al*. [8] reported similar results with more pain and requirement of analgesics in the chromic catgut group (15.5% vs. 5%) at 48 hours and (57% vs. 32.5%) at 3-5 days and (85.5% vs. 79%) at 6 weeks period, compared to vicryl rapide group.

Abhinayaa *et al*. [9] observed that pain score 0 was seen in 81% cases in VR group and 69% in CC group. Pain score 1 was seen in 8% of CC group and none in VR group (statistically significant).

Abdullah *et al*. [10] concluded that the requirement of analgesia in vicryl rapide group was significantly lower than chromic catgut group.

Swelling or Induration of the wound

In this study, a statistically significant difference was observed in wound swelling or induration between the Groups A and B, both in the 24 – 48 hours (13% vs. 27%) and 3- 5days (11% vs. 23%) observation period. The less tissue reaction with fast absorbing polyglactin is the reason behind this.

A study conducted by Shah *et al*. [11] got similar findings (6.5% vs. 7.6%) at 24- 48 hours and (2.8% vs. 3.4%) on the 5th day between Vicryl rapide and chromic catgut respectively.

A feeling of uncomfortable stitches

Uncomfortable stitches are one of the common complaints in the postpartum period especially with chromic catgut. Besides tissue reaction, the cut ends of the suture irritate the perineal skin and cause discomfort. In our study we have observed significantly less complaints of such thing in the fast absorbing polyglactin group as compared to chromic catgut group (11% vs. 27%). This difference is again due to the softer texture and quality of less tissue reaction of the fast absorbing polyglactin suture material.

In the study by Bharathi *et al*. [8] statistically significant difference was observed between the two groups (31.5% vs. 48 %, at 24-48 hours and 12.5% vs. 27% at 3 – 5days observation).

Wound discharge and wound dehiscence

In our study, 8% cases in Group A had wound discharge compared to 15% cases in Group B, this difference was statistically significant. Mackrodt *et al*. [12] found similar results (33% vs. 40% at 24-48 hours, 19% vs. 26% at 10th day, p value 0.001) between vicryl rapide groups vs. chromic catgut group.

Wound discharge is an early sign of wound infection and thereafter wound dehiscence. Wound dehiscence is a reason for longer duration of hospital stay and/or readmission in hospital causing an increased economical and psychological burden on the patient and her family. In our study wound dehiscence was seen in 7% vs. 16% of cases in Group A and Group B respectively at 3-5 days observation (p value = 0.04 ≤0.05). At 6 weeks, 8% vs. 16% difference was observed among those who came for follow up. Mackrodt *et al*. [12] reported similar results with lesser cases of wound gaping with the use of fast absorbing polyglactin than chromic catgut (16% vs. 26%). Shah *et al*. [11] reported that chromic catgut group had more cases of wound gaping than vicryl rapide group (8% vs. 1.1%).

Wound healing

Wound healing depends on various factors like presence or absence of infection, hematoma, suture material used etc. In our study, healing by primary intention was seen 92% patients in Group A vs. 79% patients in Group B, by secondary intention 8% in Group A vs. 18% in Group B and by tertiary intention none in Group A vs. 3% in group B. This finding was found to be statistically significant (p value = 0.009). Mackrodt *et al*. [12] in his study got (84% vs 74%)-primary intention, (15% vs. 25%) in secondary intention and 1% cases each in tertiary intention group between vicryl rapide and chromic catgut groups respectively. Bharathi *et al*. [8] in their study also got statistically significant results ($p < 0.05$) showing better healing of episiotomy wounds with vicryl rapide compared to chromic catgut.

CONCLUSION

In this study, we have found that the fast absorbing polyglactin 910 showed better results than chromic catgut in regards to perineal pain, wound induration, feeling of uncomfortable stitches and retention of urine. The percentage of patients with wound discharge and wound dehiscence were also less with the use of fast absorbing polyglactin 910 (vicryl rapide). The wound healing was also more secure with the use of fast absorbing polyglactin 910. Considering all the above facts we recommend the use of vicryl rapide for the repair of episiotomy wounds.

However, episiotomy itself is a trauma to the perineum and it has it's own consequences. Considering the high elasticity of vagina during pregnancy, delivery is possible without the use of episiotomy even in primiparous women and so; it should be applied only when required.

Limitations

Fast absorbing polyglactin 910 is little costlier than chromic catgut which may be a hindrance to it's widespread use in all episiotomy cases especially in countries like India.

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Ethical clearance

The authors have appeared before the Institutional Ethics Committee, Gauhati Medical College and Hospital, and got the approval for the research study.

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