INCIDENCE AND RISK FACTORS FOR SCAR DEHISCENCE IN LOWER SEGMENT CESAREAN SECTION

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ABSTRACT

Objective: To assess the incidence and risk factor for scar dehiscence in parturient with previous LSCS.

Study Design: Prospective, observational study.

Place and Duration of Study: Department of Gynecology and Obstetrics; department of Anesthesiology, Combined Military Hospital, Okara, from Jul to Dec 2018.

Methodology: After the approval of hospital ethical committee, 300 parturient undergoing cesarean section were included in our study. The outcomes were incidence and risk factors for scar dehiscence. SPSS version 20 was used to analyze data. Descriptive data was presented as frequency and percentage. Chi square was used to calculate significance and *p*-value less than 0.05 taken as significant.

Results: A total of 300 patients with previous cesarean delivery were included in our study. Our study has shown that no use of antepartum nutritional supplement (30.3% vs 66.7%), early term pregnancy, emergency LSCS (40.9% vs 8.1%), laboring patient (30.3% vs 4.7%) with duration of labor more than 24 hours (3% vs 0.9%) and inter-delivery gap (2.01years ± 1.05 vs 2.3 years ± 0.96) are independent risk factors for scar dehiscence in patient with history of previous cesarean sections, *p*-value <0.05. However parturient age, anemia, presence of co-morbidity, previous gravidity or parity, previous number of LSCS did not show significant difference between patient with or without scar dehiscence.

Conclusion: Scar dehiscence in setting of previous cesarean section fairly common in our population and high index of suspicion is required for timely diagnosis and management to improve maternal outcomes.

Keywords: Age, Anemia, Gravida, Incidence of scar dehiscence, Last born child, parity, Previous cesarean section, Risk factor.

INTRODUCTION

The lower segment cesarean section (LSCS) rates have increased from 2.7% in 1990-91 to 15.8% in 2012-13, with a higher ratio in urban population, educated women and richest parturient[1]. More and more parturient are presenting with history of cesarean delivery. Various obstetrics societies have published their consensus guidelines for management of parturient with previous cesarean section[2,3]. A study in Pakistan has shown that previous LSCS was an indication for cesarean delivery (11.1%) in only a minority of patient undergoing LSCS and a high successful vaginal delivery after cesarean section (VBAC) delivery rate (63.6%)[4]. Patients who undergo cesarean delivery may be at increased risk of secondary infertility, placenta Previa, placenta accreta, uterine rupture or still birth[5,6]. Scar dehiscence is the process of gradual myometrial rupture without the rupture of membranes[7]. Prematurity and non-progress of labor have been found to be independent risk factors for uterine scar dehiscence. The two layered closure of uterine scar has been shown to result in lesser number of scar dehiscence in subsequent pregnancies[8]. Scar dehiscence has been reported to be present in 0.2 to 4% in patient with previous cesarean section[9]. It is usually occult clinically and has been found to be associated with potential risk for preterm labor, low birth weight and peri-partum hysterectomy. Baron *et al* didn't report any increased risk of uterine rupture, placenta accrete or perinatal mortality[10]. In a study, ultrasound study of ratio of depth of

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Received: 08 Apr 2019; revised received: 10 Oct 2019; accepted: 17 Oct 2019

triangular scar tissue to residual myometrial thickness (D/RMT ratiogreater than 1.3035) in non-pregnant uterus indicated a likelihood of scar dehiscence[11]. Other test for predicting risk of scar dehiscence include lower uterine scar thickness at 34-38 weeks of gestation[12,13]. However, no single parameter has been shown to accurately predict chance of scar dehiscence or uterine rupture in pregnancy. In the absence of unequivocal sign or symptom as well as non-reliable predictor of dehiscence, the obstetrician must maintain a high index of suspicion for possible dehiscence or impending rupture. Scar dehiscence in early labor may result is uterine rupture, especially in prolonged labor and non-progress of labor. According to authors' knowledge, limited data is available for scar dehiscence in Pakistan. Our institute is a secondary level care unit which caters to obstetric emergencies including category 1 cesarean delivery. The purpose of our study to assess the incidence and its associated risk factors of scar dehiscence in parturient with previous LSCS.

METHODOLOGY

After the approval of the Hospital Ethical Committee, this prospective-observational study was conducted at Department of Gynecology and Obstetrics and Department of anesthesiology, Combined Military Hospital, Okara Cantt for the duration of 6 months, from 1st July to 31st Dec, 2018. WHO sample size calculator was used to calculate a sample size of 300 cases, using 30% incidence of scar dehiscence from our pilot study; with confidence level 95% and alpha error 5%. Parturient who presented to our department with history of previous LSCS were randomly selected by non-probability, convenient sampling. These included: pregnant ladies above 18 years with history of previous uncomplicated cesarean delivery undergoing elective as well as emergency LSCS. Patient with overt signs of uterine rupture, ongoing hemorrhage and unwilling to participate in study were excluded from study. The time to delivery, mode of anesthesia and pre-operative preparation were done as per institute protocol and no changes were made for study. The outcome were: incidence and the risk factors for of scar dehiscence. The risk factors studied were: age; inter-delivery interval, laboring/non- laboring; mode of admission; antepartum visits and use of nutritional supplements; obstetric history; previous numbers of LSCS; indication of current LSCS and presence as well as severity of anemia.

SPSS version 20 was used for data analysis. The qualitative variables like parity, previous number of LSCS were presented as frequency and percentage. Chi-square was used to calculate significance, with *p*-value <0.05 as statistically significant.

RESULTS

A total of 300 patients were included in our study. The mean age of our study was 28.01 ± 4.0

Table-I: Associated of age, admission mode, co-morbidity, anemia with scar dehiscence.

Variable		Scar Dehiscence n(%)		*p*-value
		No	Yes	
Age (years)	18-25	60 (25.6)	13 (19.7)	0.481
	26-30	134 (57.3)	36 (54.5)	
	31-35	26 (11)	12 (18.2)	
	>36	13 (5.6)	5 (7.6)	
Antenatal visits	Yes	215 (91.9)	55 (83.3)	0.041
	No	19 (8.1)	11 (16.7)	
Severity of anemia	No	74 (31.6)	24 (36.4)	0.194
	Mild	142 (60.7)	38 (57.6)	
	Moderate	18 (7.7)	3 (4.5)	
	Severe	-	1 (1.5)	
Antepartum use of nutritional supplements	Yes	78 (33.3)	46 (69.7)	<0.001
	No	156 (66.7)	20 (30.3)	

years. Scar dehiscence was observed preoperatively in 66 (22%) of our patients. The mean hemoglobin in parturient with scar dehiscence was 10.8g/dL ± 1.2 vs 10.7g/dL ± 1.0 in parturient without dehiscence, *p*-value=0.073. The

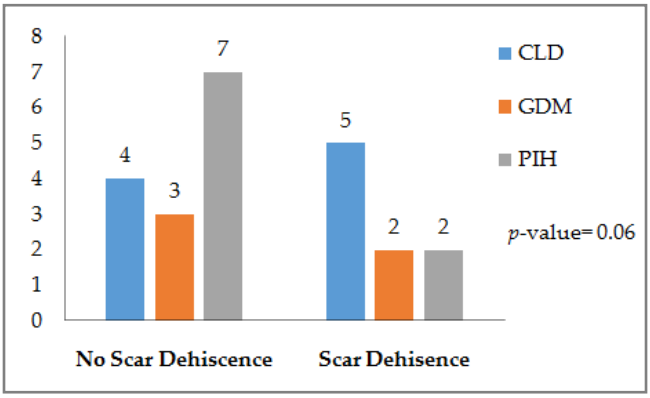

Figure-1: Distribution of co-morbidity in study groups.

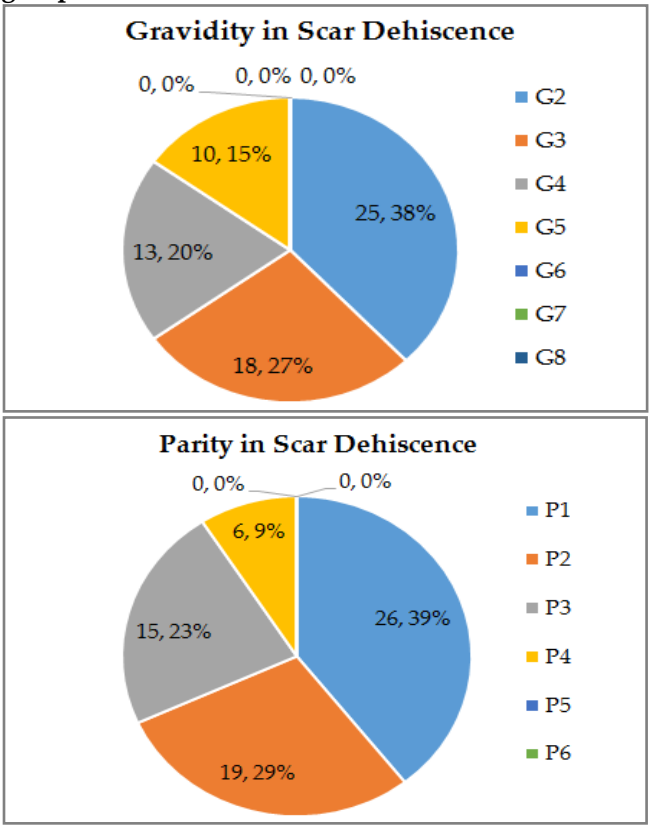

Figure-2: Gravidity and parity in patients with scar dehiscence.

association of age, antenatal visits, nutritional supplementation and severity of anemia are tabulated as table-I.

There were no co-morbidity reported in 220 (94%) patients without scar dehiscence, whereas 58 (87.9%) patients with scar dehiscence did not have any comorbidity, *p*-value 0.108. The distribution of comorbidity is given in fig-1.

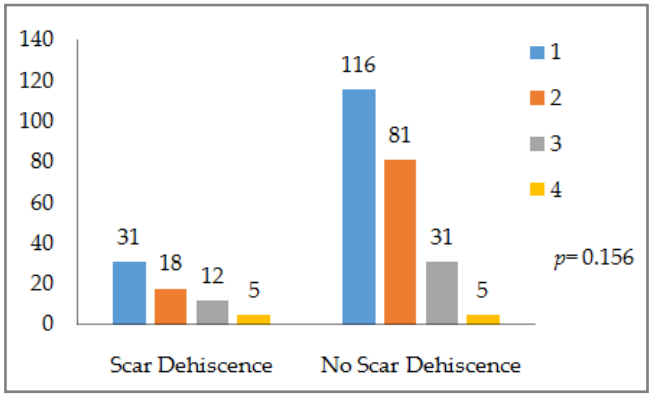

Figure-3: Comparison of previous number of LSCS in both groups, *p*-value=0.156

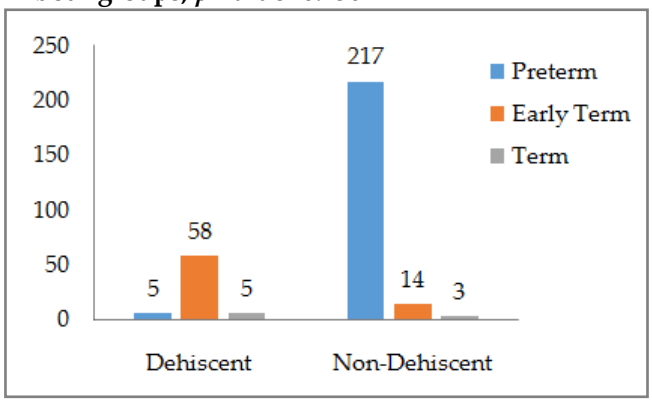

Figure-4: Distribution of gestational age.

Most of the LSCS in non-dehiscent group were elective, 215 (91.9%) vs only 39 (59.1%) in scar dehiscence group; *p*-value <0.001. Scar dehiscence was more common in early term 58, (87.9%) versus 3 (4.5%) of full term pregnancy and 5 (7.6%) scar dehiscence observed in preterm pregnancy; *p*=0.019. There was no statistical difference in frequency of scar dehiscence in regards to gravidity and parity; *p*-value 0.058, 0.288 and 0.156 respectively. The gravidity and parity is presented as fig-2.

The comparison of number of previous LSCS in patients with scar dehiscence and no dehiscence is shown in fig-3.

In patients with scar dehiscence 18 (31.8%) had pre-operative labor versus 11 (4.7%) in

patients without dehiscence, *p*-value <0.001, odds ratio 9.461 (4.26-20.9). Most of patients with scar dehiscent had early term pregnancy 58 (97.9%) versus 217 (92.7%) in non-dehiscent, *p*-value 0.019. Distribution of gestational age is given as fig-4.

The mean inter-delivery gap was 2.01years ± 1.05 parturient with in scar dehiscence versus 2.3 years ± 0.96 in patients without dehiscence; *p*=0.008. The present obstetric complaints are tabulated as table-II.

Table-II: Comparison of obstetric complaints between two groups.

Variable		Scar Dehiscence		*p*-value
		No, n (%)	Yes, n (%)	
Duration of labor	<1 hour	2 (0.9)	1 (1.5)	<0.001
	2-4 hours	5 (2.1)	12 (18.2)	
	5-12 hours	5 (2.1)	5 (7.6)	
	12-24 hours	2 (0.9)	2 (3)	
	>48 hours	-	1 (1.5)	
Nature of surgery	Emergency	19 (8.1)	27 (40.9)	<0.001
	Elective	215 (91.9)	39 (40.9)	
Inter-delivery Interval	<1 year	5 (2.1)	13 (19.7)	<0.001
	1-3 years	204 (87.2)	48 (72.7)	
	> 3 years	21 (9)	3 (4.5)	

DISCUSSION

Our study has shown that no use of antepartum nutritional supplement, early term pregnancy, emergency LSCS, laboring patients with duration of labor more than 24 hours and inter-delivery gap of less than 3 years to be independent risk factors for scar dehiscence in patient with history of previous cesarean sections. However parturient age, anemia, presence of co-morbidity, previous gravidity or parity, previous number of LSCS did not show significant difference between patient with or without scar dehiscence.

Uterine rupture is a rare but fatal complication of labor. Its incidence has been reported to be extremely low (0.0006%) in pregnant women without previous cesarean section and up to 1% in patients with previous LSCS[14]. Uterine dehiscence is the gradual myometrium rupture without a rupture of membrane or visceral peritoneum with fetus, placenta and umblical cord remaining intra-uterine. It has not been reported to result in significant maternal and fetal mortality or morbidity. The cesarean section for suspected scar dehiscence is performed for obstetric reasons rather than fetal distress due to antepartum hemorrhage. According to the authors' knowledge, limited data is available for risk factors for uterine scar dehiscence in Asian population. Osser *et al* reported uterine cesarean scar defect in 20% of women 6-9 months after cesarean section[15].

A study by Bashiri *et al* reported preterm labor, non-progress of first stage of labor and increased number of previous LSCS as risk factor for uterine scar dehiscence. However, they reported a much lower incidence of 81 (1.03%) of scar dehiscence versus 22% on our study[16]. In addition, we did not find the previous number of LSCS (*p*=0.156) as risk factor for scar dehiscence and majority of scar dehiscence was in early term (87.9%) pregnancy in our study. Ramadan *et al* reported incidence of scar dehiscence to be higher in patients with previous more than 03 LSCS (63% versus 39%, *p*=0.013) and inter-pregnancy gap ≤24 months (66.7% versus 45.1%; *p*=0.028), preterm delivery (33.3% versus 15.2%; *p*=0.012)[17]. These finding correlate with our study. Similarly, they didn't find presence of maternal comorbidity (*p*=0.65), maternal age (*p*=0.6), mean parity (*p*=0.52) as significant risk factors for scar dehiscence. However, we reported patient in labor to be at risk of scar dehiscence versus insignificant difference in their study. Similar finding of

increased risk of uterine scar dehiscence in inter-pregnancy gap less than 24 months; greater number of previous LSCS; were reported by other authors[18,19]. The increased risk of dehiscence with less gap may be due to the fact that it takes up to 6 months for a uterine scar to heal fully.

Our study had certain limitation. Firstly, we didn't study the neonatal outcomes or the incidence of cesarean hystrectomy. Secondly, we didn't study the trial of labor and its correlation with scar dehiscence in patients with previous LSCS.

CONCLUSION

Scar dehiscence in setting of previous cesarean section fairly common in our population and lesser inter-delivery gap, ongoing labor of more than 24 hours, emergency LSCS, no antenatal care and no antenatal nutritional supplements are independent risk factors for scar dehiscence. A high index of suspicion is required for timely diagnosis and management to improve maternal outcomes.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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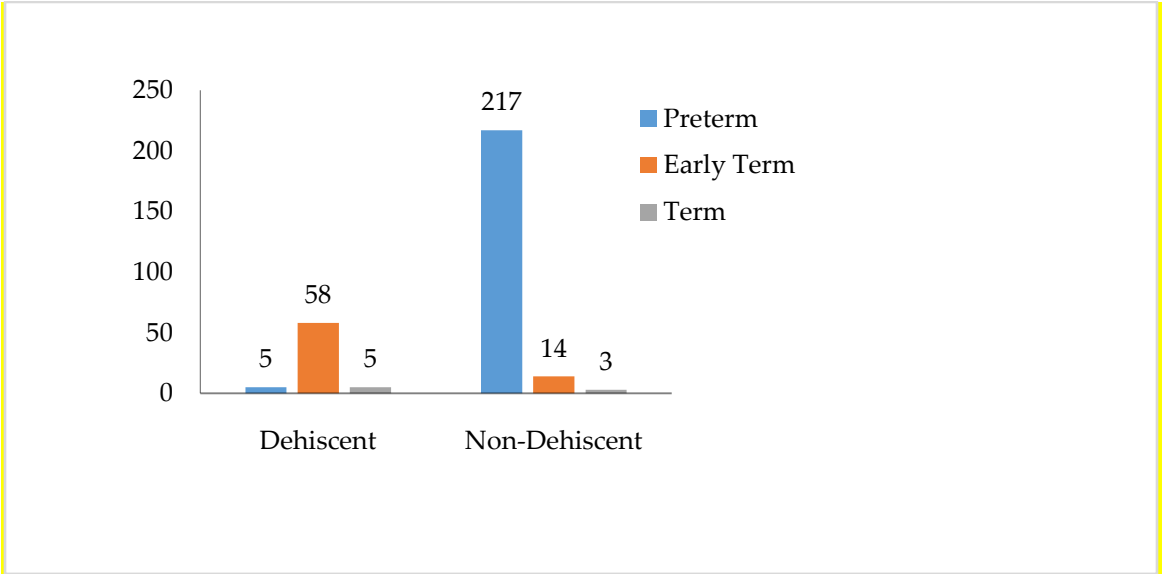
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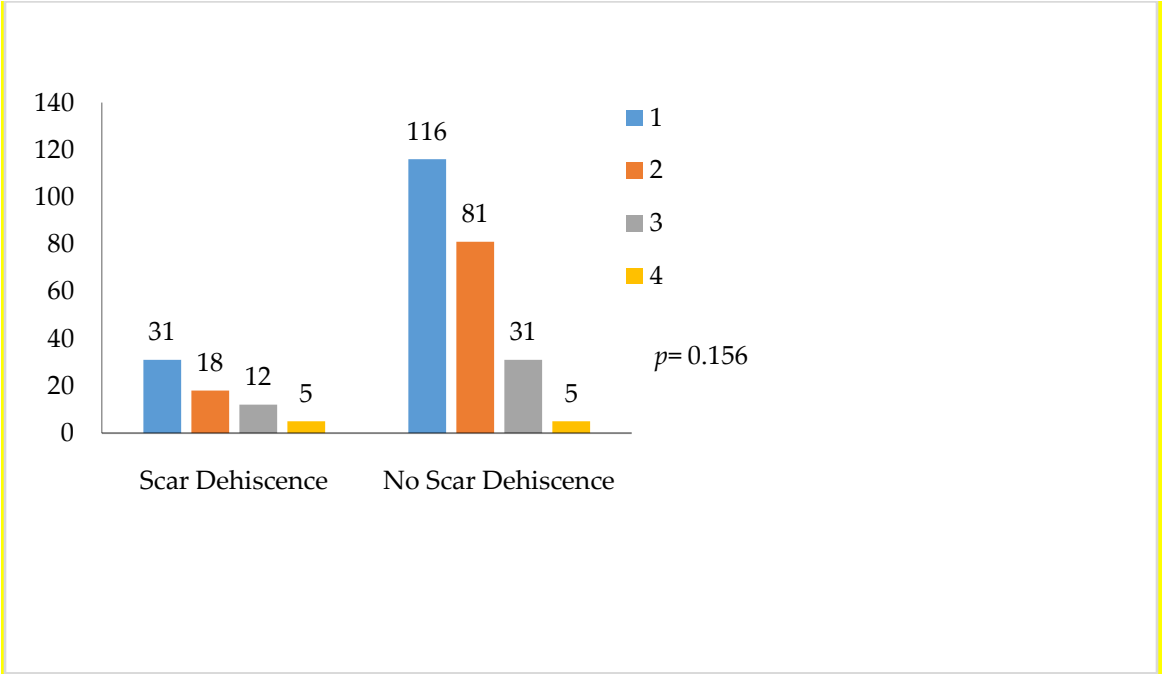
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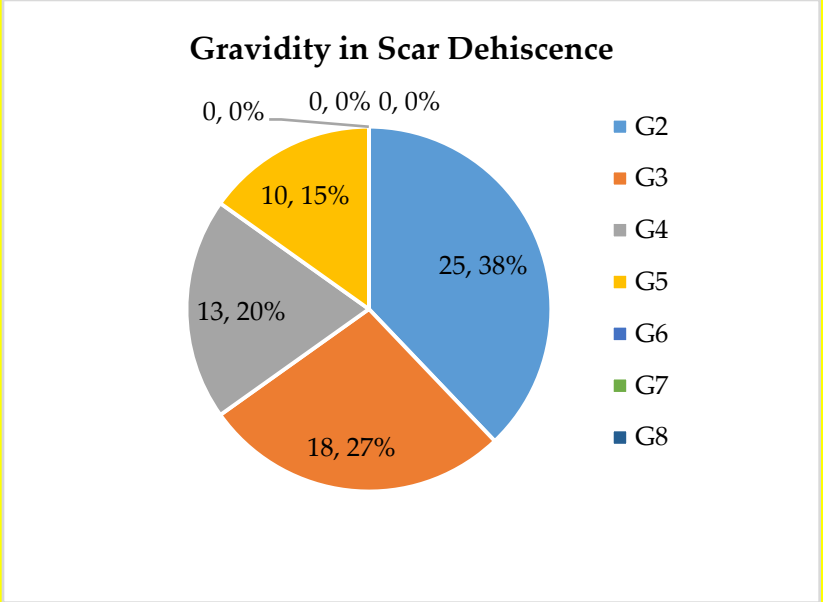
Scar Dehiscence
No Scar Dehiscence


Gravidity in Scar Dehiscence
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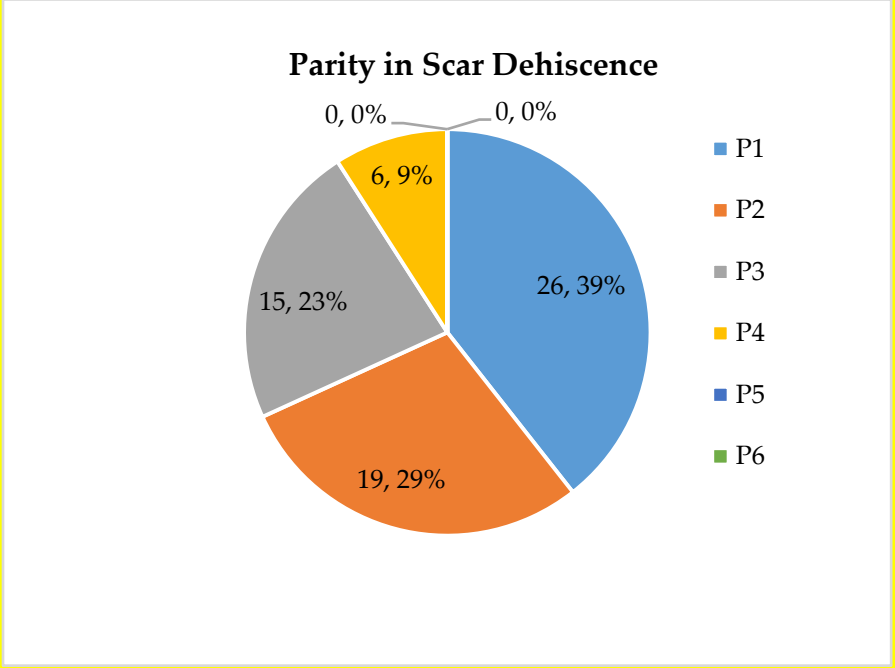
Parity in Scar Dehiscence
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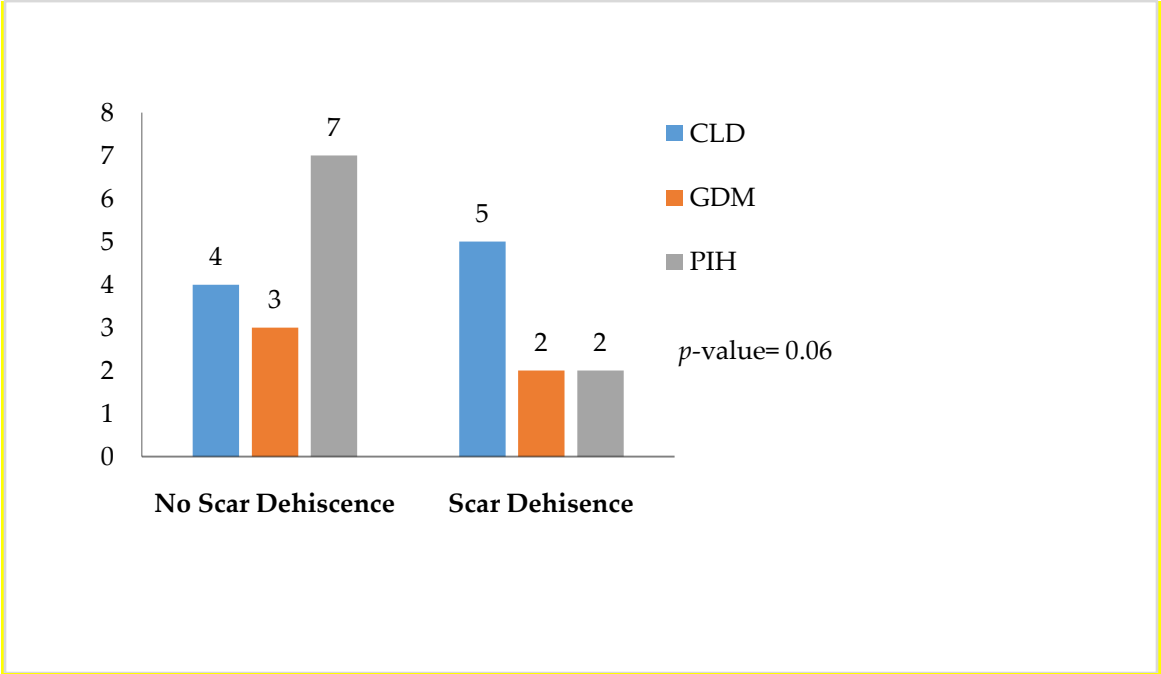
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No Scar Dehiscence
Scar Dehisence