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ORIGINAL ARTICLE

Skin Closure with Vicryl Vs Prolene in Day Case Surgeries

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ABSTRACT

Objective: To compare the post-operative outcomes after skin closure with Vicryl as compared to Prolene in paediatric day case surgeries.

Study Design: Comparative Cross-sectional Study

Place and Duration of Study: Department of Paediatric Surgery, Children Hospital, Pakistan Institute of Medical Sciences, Islamabad for six months (1st November,2021 to 30th April,2022)

Patients and Methods: A total of sixty patients under the age of 12 years, who presented for day-case surgeries were divided into two groups: Vicryl (group A) and Prolene (group B). A single surgical team performed all the surgeries. The incidence of outcomes, such as pain, hematoma, infection, suture breakage and keloid formation was recorded after the procedure. At the 30th post-operative day, the scar assessment scale was used to evaluate the wound's healing.

Results: Comparitive Cross-sectional study was conducted on 60 patients who underwent surgeries, having 30 in each group. Age and scar score for both the groups were compared. There was no sigfnificant difference observed for age $p = 0.628$ and it was significant for scars $p = 0.007$. Incidence of pain and infection was not statistically significant $p \geq 0.05$. No hematoma, keloids and suture breakage were observed in both the sutures. Success Rate of Vicryl was 76.7% and that of Prolene was 93.3%. Success was positively correlated with scar $r = 0.685$.

Conclusion: In our paediatric samples, we analyzed and concluded that prolene suture was better as compared to vicryl in terms of pain and infection.

Keywords: Absorbable sutures, Day-case surgeries, Non-absorbable sutures, Prolene, Vicryl**.**

INTRODUCTION

The length of a hospital stay is a key measure used to evaluate hospital performance, patient case quality, and functional assessment. With the recent advances in surgical techniques, the duration of post-surgical hospital stay has decreased notably [1, 2]. The idea of a daycase treatment is not a novel one. A surgical daycase patient is the one, that has been chosen for a scheduled procedure on a non-residential basis and is assigned to a ward bed for a specific period [3]. Owing to advancements in surgical and anaesthesia procedures, the number of daycase surgeries has increased in recent years. Limiting the patients' hospital stay has several advantages, including more cost-effective treatments, reduced time consumption, lowering the risk of hospital-acquired infections transmission, and reducing the patients' psychological distress [4, 5]. The choice of the operative procedure, from surgical incision to simple wound closure, must be accurate and timely to provide successful case in a daycase surgery. [6]. Similarly, in a daycase surgery, the skin wound closure must be performed with adequate suture material that can avo id wound dehiscence and infection [7]. To achieve an aesthetic but full skin closure, the choice between the absorbable, Vicryl suture and the non-absorbable, Prolene suture is critical [8]. Since absorbable sutures do not need to be removed, they save time in the hospital and also reduce patients' anxiety [9]. Non-absorbable sutures, on the other hand, are less likely to split and trigger an inflammatory reaction [10]. Daycase surgical procedures are common in paediatric cases, but the literature comparing the efficacy of the aforesaid sutures is inadequate to indicate a high-quality evidence recommendation to favor the use of a specific suture. The current study aims to evaluate the post-operative outcomes of Vicryl sutures (absorbable) with those of Prolene (non-absorbable) in paediatric daycase surgeries.

PATIENTS AND METHODS

This comparative cross-sectional study was conducted at the Department of Pediatric Surgery, Children Hospital, Pakistan Institute of Medical Sciences, Islamabad for six months (1st November,2021 to 30th April,2022) after taking approval from the hospital ethical committee. The Reference number of the ERB certificate was F.1-1/2015/ERB/SZABMU/711. The sample size of sixty was calculated. The patients of ≤ 12 years of age, presenting in the outpatient department were included through non-probability purposive sampling after taking the informed consent from their parents or guardians. All the participants were given different codes. Even coded and odd coded patients were equally divided into groups A (Vicryl sutures) and B (Prolene sutures) respectively. A total of 30 patients were included in each group. All the procedures were performed by a single surgical team. Following the procedure, the occurrence of outcomes was tracked for each follow-up visit on the 7th day. The presence of pain, hematoma, infection, suture breakage and keloid formation was assessed and recorded. The scar assessment scale was noted on the 30th post-operative day to assess the wound's healing. On a predefined proforma, all the results were recorded. Relevant statistical tests were carried out after testing the normality of the results.

SPSS 25 was used for analysis of data. Categorical variables like gender, pain, hematoma, infection, keloids, scar groups,and age groups were measured in frequency and percentages. Continuous variables i.e age and scar score were measured in mean and standard deviation. Chi squared test was used to determine the significance of categorical variables. Independent sample t test was used to test the scar score, correlation was used to measure the relationship between success and Scar score groups . All the results were determined on baseline and 7th day follow-up. P value ≤ 0.05 was considered statistically significant.

RESULTS

In present study, 60 patients were equally distributed in both groups by randomization through lottery method. 91.7% males and 8.3% females were included having mean age of 4.25 ± 2.89 and mean scar score was 10.43 ± 4.474. We had all males in prolene group, while 5(16.7%) females in vicryl group with $p \leq 0.05$. Age for prolene and vicryl groups was compared, which was 4.43 ± 3.036 and 4.07 ± 2.791 respectively (with $p \geq 0.05$). Scar assessment was done at 30th day. Scar score for Prolene was 8.90 ± 2.564 and 11.97 ± 5.411 with $p \leq 0.05$ Table 1. Follow up done at day 0 and day7. At day 0, 33.3% patients complained of pain and 66.7% had no complain of pain in both the groups, while there was no complain of hematoma and infection in both the groups (0%).

At 7th day, pain was observed in 3(10%) patients in prolene group and 5(16.7%) patients in vicryl group (with $p \geq 0.05$), while

infection was found in 2(6.7%) patients and 4(13.3%) patients, in prolene and vicryl groups respectively with p ≥ 0.05. Hematoma was 0% in both the groups. There was not a single case of suture breakage and keloid formation observed in both the groups. With these experimental information, we found that the success rate is higher for prolene as compared to vicryl i.e 93.3% and 76.7% respectively p ≥ 0.05 fig 1. At 30th post-operative day, it was seen that 2(6.7%) patients had bad scar in Prolene group and 11(36.7%) patients in Vicryl group having p ≤ 0.05 (table 2). When Success is correlated with scar groups, it was noted that they were positively correlated with r = 0.685 & p ≤ 0.05.

Table 1:Comparison of Scale parameters

Variables	Age	Scar Score
Prolene	4.43 ± 3.036	8.90 ±2.564
Vicryl	4.07 ± 2.791	11.97 ± 5.411
P Value	0.628	0.000

Table 2: Comparison of categorical parameters

Variables	Gender		Age Groups		pain		Infection		Success		Scar Score	
	Male	Female	≤ 5	≥ 5	yes	no	Yes	No	Yes	No	≤ 12	≥ 12
Prolene	30(100%)	0(0.0%)	23(76.7 %)	7(23.3 %)	3(10.0 %)	27(90.0 %)	2(6.7%)	28(93.3 %)	28(93.3 %)	2(6.7%)	28(93.3 %)	2(6.7%)
Vicryl	25(83.3%)	5(16.7 %)	20(66.7 %)	10(33.3 %)	5(16.7 %)	25(83.3 %)	4(13.3 %)	26(86.7 %)	23(76.7 %)	7(23.3%)	19(63.3 %)	11(36.7 %)
P Value	0.020		0.390		0.448		0.389		0.071		0.005	

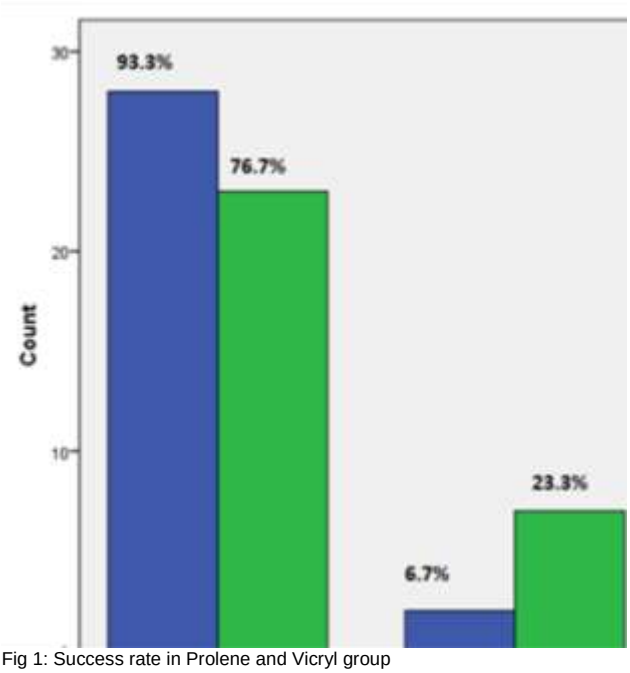

Fig 1: Success rate in Prolene and Vicryl group

DISCUSSION

To give a functional and cosmetic result to the patient, the choice of suture material for each surgery should be based on knowledge of the material, physical properties and expected tissue reaction [12]. Absorbable sutures usually produce a stronger tissue reaction and may cause chronic scar discomfort and suture extrusion. However, non-absorbable sutures can cause discomfort and skin scarring while removing them and the patients may experience an inadequate aesthetic result [13, 14].

The findings of our study on the use of absorbable and non-absorbable sutures, in daycase surgeries are comparable to those of other researchers. With our experimental information, pain was observed in 3(10%) patients in prolene group and in 5(16.7%) patients in vicryl group while infection was seen in 2(6.7%) and 4(13.3%) in prolene and vicryl groups respectively. Hematoma was not seen in both the groups. There was not a single case of suture breakage and keloid formation in both the groups. The success rate was higher for prolene as compared to vicryl i.e 93.3% and 76.7% respectively. At 30th day, it was seen that 2(6.7%) patients had bad scar in Prolene group and 11(36.7%) patients in Vicryl group. Success was positively correlated with scar groups. According to Kundra et al., there was no statistical difference in pain score or scar assessment scale between absorbable and non-absorbable sutures. This research was done on day-case surgeries on the hands and wrists [15]. Xu et al. found no statistically significant difference between the two sutures in terms of infections and cosmetic outcomes in a meta-analysis of 19 randomized controlled trials [13]. Wade et al. published similar findings in a meta-analysis of five studies [16]. Both Xu et al. and Wade et al. indicated that scar cosmetics had no statistically relevant results in both the groups.

Gillanders et al. have found no significant variations in pain score, inflammation, erythema, or the cosmetic scale in any of their analyses [17]. Incidences of wound dehiscence and surgical site wound infection did not vary statistically, significantly. The Vicryl group, on the other hand, had more cases of tissue reactivity [18].

There are some limitations to our research. Only 60 patients were included in this study. A multi-institutional study with a larger sample size should be conducted to obtain more insights. We did not include the parents' educational and residential statuses, which would have helped us stratify the data in terms of scar evaluation scale variations. This research was done in daycase surgeries, so a similar study could be done in elective surgeries as well.

CONCLUSION

During the application of both the sutures in 60 patients, it was concluded that the success rate of Prolene was found 93.3%, whereas, that of Vicryl was 76.7%. Although, both the sutures are found successful, but Prolene has produced more productive results in terms of pain, hematoma, infection and scar healing comparatively.

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Conflict of Interest: None

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