

COMPARISON OF PROLENE AND VICRYL SUTURES IN EMERGENCY LAPAROTOMY CLOSURE: A RANDOMIZED CONTROLLED TRIAL

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Abstract

Acute abdomen can lead to complications such as electrolyte imbalance, septicemia, anemia, and dehydration, increasing morbidity and mortality if left untreated. Surgical intervention, typically via emergency laparotomy, is often required in conditions like intestinal obstruction, gut perforation, peptic ulcer perforation, and abdominal trauma. A major postoperative complication of laparotomy is burst abdomen, closely linked to the technique and material used for abdominal closure. Although various studies have assessed closure techniques, limited data is available comparing Prolene and Vicryl sutures in our population. The aim of current study is to compare the frequency of burst abdomen using Prolene versus Vicryl sutures for emergency laparotomy closure. This randomized controlled trial was conducted at the Department of General Surgery, Lady Reading Hospital, Peshawar, from 03-12-2019 to 03-06-2020. A total of 262 patients undergoing emergency laparotomy were randomly assigned to two groups: Group A received abdominal closure with Prolene, and Group B with Vicryl. Patients were followed until the 15th postoperative day to assess the incidence of burst abdomen. The mean age in the Prolene group was 39.7 ± 8.5 years, and in the Vicryl group, 41.4 ± 9.6 years. Demographics and operative variables were comparable. Burst abdomen occurred in 7.6% of the Prolene group and 28.2% of the Vicryl group ($p < 0.001$), showing a statistically significant difference. The findings revealed that prolene sutures significantly reduce the incidence of burst abdomen compared to Vicryl in emergency laparotomy closure. Further large-scale RCTs are recommended to confirm these findings.

INTRODUCTION

Intestinal perforation, peritonitis, intestinal blockage, and blunt and piercing trauma to abdomen are the common surgical causes of acute abdomen, which indicates signs and symptoms of intra-abdominal disease that are typically best treated by surgery (Fink et al 2014). Acute abdomen can lead to fluid loss,

anemia, dehydration, septicemia, and electrolyte imbalance (Muysoms et al 2015). Excessive mortality and morbidity may result from these pathophysiological processes if they are not controlled. The patient with acute abdomen needs to have a proper history, evaluation, investigation, and

recuperation (Grundmann et al 2010). The surgical treatment of acute abdomen laparotomy is performed in the majority of patients, including intestinal obstruction, gut perforation, peptic ulcer disease perforation, blunt abdominal trauma to abdomen, and penetrating injuries to the abdomen. Midline laparotomy is the highly advised technique for emergency laparotomy (Cartwright & Knudson 2008, Sreeharsha et al 2014).

Burst abdomen is very serious postoperative problem and causes high morbidity and mortality (Burger et al 2002). It has significant impact on health care cost both for the patient and hospital. Many risk factors were incriminated in causation of burst abdomen including malnutrition, anemia, hypoproteinaemia, pre and post operative prolonged steroid therapy, peritonitis, malignancy, jaundice, uremia, prolonged postoperative abdominal distention and cough.

Wound dehiscence is linked to the abdominal wound closure technique and the suture employed. Several research have been carried out to evaluate the confusing range of closure methods and suture types (Sreeharsha et al 2014). Murtaza B et al. observed that the typical incidence of abdominal rupture during midline emergency laparotomy is between 1 and 2 percent. In contrast, the risk of abdominal rupture is 5.9% greater in developing nations (i.e. India) (Waqar et al 2005). There have been several studies on the best suture material to use for closing midline wounds, and recent research from India indicates that using prolene to close the abdomen following midline laparotomy significantly reduces the likelihood of an abdominal rupture. In one study conducted by Pandey S et al had reported that there was significant difference in the incidence of wound dehiscence (burst abdomen) between the two groups: 6% with Prolene and 17 % with Vicryl, ($\chi^2 = 5.944$, 1 DF, P value = 0.0148) (Kiran Shankar 2016). Studies comparing these two suture materials are limited in our local population. Results of different studies have shown variability in results regarding burst abdomen and wound infection, for example one study¹ showed more difference regarding frequency of wound dehiscence comparing these two suture materials while other show no difference (Agarwal et al 2011). Same implies on wound infection while comparing these studies (Agarwal et al 2011, Murtaza et al 2010). Therefore these results cannot be generalized on all

populations. This prompts me to get local evidence on this important subject by comparing adverse outcomes with absorbable suture and non absorbable suture in midline closure of laparotomy wounds. Result of my study will generate further evidence to pave the way for further research in our local population.

Objective

To compare the frequency of burst abdomen in prolene suture versus vicryl suture material in emergency laparotomy wound closure.

Hypothesis

Prolene suture is more effective than Vicryl in the treatment emergency laparotomy wound closure in terms of burst abdomen.

LITERATURE REVIEW

An exploratory laparotomy is, by definition, a laparotomy carried out to gather data not accessible by clinical diagnostic techniques. In patients who have experienced abdominal trauma, sudden or inexplicable abdominal discomfort, or occasionally for staging in patients with cancer, it is typically performed. Following the identification of the underlying pathology, an exploratory laparotomy may be performed as a therapeutic operation; in certain cases, it may be used to confirm a diagnosis (e.g., laparotomy and biopsy for intra-abdominal masses that are considered inoperable). These uses are not the same as laparotomies for specific medical conditions, where the surgeon performs a therapeutic surgery (Kiran Shankar 2016).

The scope and indications for exploratory laparotomy have decreased over time due to the growing availability of advanced imaging modalities and other investigative approaches. Exploratory laparotomy has become less common since laparoscopy, a less invasive method of abdominal inspection, has become more widely available. However, it is impossible to overstate the value of exploratory laparotomy as a quick and affordable treatment for trauma and severe abdominal disorders. According to Hua et al., a 25-year-old primigravida experiencing acute lower abdomen pain in the eighth week of pregnancy was described. US revealed a single healthy embryo inside the womb along with a 6 x 6 cm right ovarian cyst. Following an

exploratory laparotomy, a right adnexectomy was performed due to the discovery of 360° torsion of the right adnexa. The diagnosis and treatment of endometrioma-induced torsion are difficult due to its rarity; confirmation of the diagnosis requires either diagnostic laparoscopy or exploratory laparotomy. In order to remove a fishbone that had moved through the stomach wall and into the periportal region, Greene et al. used exploratory laparotomy. This resulted in a confined gastric perforation and a porta hepatitis abscess. The patient was treated with antibiotics and anticoagulant medication for portal vein thrombosis, which resulted from the abscess. The patient made a full recovery with no lasting effects. Exploratory laparotomy was traditionally performed to rule for intra-abdominal damage in patients with penetrating abdominal trauma (PAT). Kevric et al. discovered, however, that peritoneal breach did not always indicate visceral injury requiring surgery; in cases where the CT scan is benign, they recommended sequential investigation. Similar results were reported by Sanie et al. (Sanei et al 2013).

O'Malley et al. (2013) conducted a systematic study that emphasized the relevance of laparoscopy in PAT patients (O'Malley et al 2013). According to research, laparoscopy can be helpful in detecting diaphragmatic injuries, but it is less sensitive when it comes to detecting hollow visceral injuries. However, it works incredibly well for determining whether an exploratory laparotomy is necessary. One significant factor influencing the result of a laparotomy is the patient's physiological state at the procedure. As a result, every effort should be taken to improve the patient's overall health. This covers blood transfusions, bronchodilator nebulizations as necessary, and the correction of fluid and electrolyte imbalances. An indwelling urine catheter and a nasogastric tube are placed prior to the procedure in order to decompress the bladder and stomach. The danger of aspirating stomach contents during anesthetic induction is decreased when the stomach is decompressed. Due to paralytic ileus and the emergency nature of the treatment, these patients are at a significant risk of aspiration. Because the midline incision is prolonged inferiorly for improved exposure, decompression of the bladder lowers the possibility of bladder damage.

According to Ambiru et al. (2011), patients undergoing emergency laparotomies can have their results predicted using the emergency surgery score (Ambiru et al 2011). Preoperative lab test results, the existence of comorbidities, and a few demographic factors are used to calculate it. This score is a practical risk stratification tool at the patient's bedside that can help with decision-making and patient and family counselling. There is ongoing discussion on the placement of drains following an exploratory laparotomy. Routine drain insertion cannot be supported by the evidence currently available. Drains in the pelvis and subhepatic region may be helpful for patients with severe contamination (Drew 2012). The abdominal wall is closed after the treatment is finished. However, it is necessary to double-check the instrument and pad counts prior to closing. Even if the scrub nurse determines that the count is accurate, the surgeon should personally check the peritoneum for any residual pads or tools.

Closure is accomplished with either a continuous or interrupted suture, using either a delayed absorbable suture (like polydioxanone) or a nonabsorbable suture (like polypropylene). Sutures are typically positioned 1 cm from the margin of the incised linea alba, with a 1-cm gap between bites. About 4 million open abdominal surgeries take place in the US each year, and many operative procedures require surgical access to the abdomen (Kirshtein et al 2007). Depending on their level of comfort, situation, and training, different doctors may employ different techniques to closure the abdomen. All abdominal closures, however, are governed by fundamental rules.

The choice of sutures is heavily influenced by the doctor. Every specific suture has intrinsic potential benefits and drawbacks. Tensile strength, longevity, and size can all be taken into consideration while selecting a suture. The use of nonabsorbable or delayed-absorbing sutures has been demonstrated to have a considerable positive impact on abdominal closures. Because it maintains its tensile strength, nonabsorbable suture is a popular option; nonetheless, it has been shown to cause more incisional pain (Mäkelä et al 1995). Since delayed-absorbable sutures can maintain their initial tensile strength for a while and have been shown to reduce suture pain, many surgeons have chosen to use them as a result (Millbourn et al 2009). For sufficient fascia

bites and to prevent sutures from being spaced too widely apart, the suture length should be at least four times the length of the incision (Theodorou et al 2022). Since peritoneal closure has not been shown to be beneficial in a number of randomized, controlled trials, it is generally believed that shutting the peritoneum is not beneficial (Mouse et al 2025). There is currently little scientific evidence to support the opinion held by some surgeons that peritoneal closure decreases adhesions between the abdominal contents and the suture line.

According to Denys et al. (2021), there is no proof that mass closure is linked to a higher risk of hernia development or wound dehiscence (Denys et al 2021). According to a number of studies and meta-analyses, continuous mass closure is the best closure technique (Kafeel et al 2025, van den Berg et al 2025). Seiler and colleagues observed no discernible advantage to any of the three abdominal wall closure techniques used in the INSECT trial, which had 625 patients (Norman & Richardson 2024). The findings of this study highlight the need for additional randomized, controlled trials to help generate agreement on the optimal abdominal closure technique. The authors of a later systematic review evaluating the effectiveness of closure techniques highlighted that in elective midline closure, using a slowly absorbable suture material for continuous closure with the small-bite technique led to significantly fewer incisional hernias than a large-bite technique. The review included 23 randomized controlled trials, nine of which involved the use of prophylactic mesh (Cengiz et al 2001). The incisional hernia rate was much lower in high-risk individuals who used prophylactic mesh as opposed to primary suture closure of the midline incision.

MATERIALS AND METHODS

Study design

The study was conducted in the Department of General Surgery at Lady Reading Hospital, Peshawar. It was designed as a randomized controlled trial to ensure the reliability and validity of the results. The duration of the study spanned six months, starting from December 3, 2019, and concluding on June 3, 2020.

Sample size

The sample size for the study was calculated to be 262 patients, with 131 patients allocated to each group. This calculation was based on the expected prevalence of wound dehiscence (burst abdomen), which was estimated at 6% for the Prolene group and 17% for the Vicryl group. The sample size was determined using a 95% confidence level, an alpha of 5% (two-sided), and a statistical power of 80%. Here, p_1 and p_2 represent the expected proportions of wound dehiscence in the two populations under study. Group A consisted of 131 patients who received absorbable sutures, while Group B included 131 patients who received non-absorbable sutures. The sampling technique employed was non-probability consecutive sampling.

Inclusion criteria

1. All the patients undergoing midline laparotomy.
2. All the patients in age range 18-60 years
3. Either gender
4. ASA score I and II

Exclusion criteria

Patient with history of laparotomy and patient with comorbid condition including malignancy, end stage renal disease, cirrhosis of liver, chronic obstructive pulmonary disease, ischemic heart disease was excluded from the study. These above mention criteria are aimed to minimize confounding and bias in the outcome of the study.

Data collection procedure

All the patients fulfilling the inclusion criteria was included in the study through emergency department of Lady Reading Hospital Peshawar. The purpose and benefits of the study was explained to all patients and a written informed consent was obtained. Complete history and routine examination was done from all the included patients undergoing emergency laparotomy. The patients was divided in two groups randomly. patients in group A was subjected with abdominal wound closure through Prolene suture (synthetic, monofilament, non absorbable polypropylene suture) while patients in group B was subjected for abdominal wound closure through Vicryl suture (polyglactin 910, absorbable, synthetic, usually braided suture). All patients was examined for

burst abdomen till 15th post operative day and burst abdomen was considered positive on the presence of intestine omentum, viscera over seen in the abdominal wound at 15th post operative day assessed on the basis of clinical examination. All the surgeries and clinical examination was performed under the supervision of expert consultant having at least 5 years of experience. All the above mentioned information like age, gender, duration of surgery, BMI, type of laparotomy, and ASA grades was recorded in a pre design proforma. Exclusion criteria was strictly followed to control bias in study results.

Data analysis:

Data was analyzed in SPSS 22. Mean \pm SD was presented for quantitative variables like age, weight, height, BMI, duration of procedure. Frequency and percentage was computed for qualitative variables like gender, type of laparotomy, ASA grades, burst abdomen. Chi-square test was applied to compare burst abdomen in both groups taken $p \leq 0.05$ as significant. Burst abdomen was stratified with age,

gender, duration of surgery, BMI, type of laparotomy, and ASA grades to see the effect modification. Post stratification chi-square test was applied in which P value ≤ 0.05 was considered statistically significant.

RESULTS

The study was conducted on 262 patients subjected to laparotomy. The patients were randomly allocated in two groups. Patients in prolene group were subjected to abdominal closure with prolene and patients in Vicryl group to vicryl. The mean age of the whole study sample was 40.1 ± 10.3 years with minimum age of 25 and maximum age of 55 years. The mean age of patients in prolene group was 39.7 ± 8.5 years and in Vicryl group, it was 41.4 ± 9.6 years (p 0.139) as shown in Table 1.

Prolene group comprise of 44.3% were males compared to 51.9% in Vicryl group (p 0.0216). The mean BMI of the study sample was $25.2 \pm 2.4 \text{ kg/m}^2$. The mean BMI of prolene group was $25.2 \pm 2.6 \text{ kg/m}^2$ and the mean BMI of Vicryl group was $25.1 \pm 2.1 \text{ kg/m}^2$. (p 0.628).

Table No. 1. Comparison in both treatment groups on basis of age and gender (n = 131 each)

		Treatment Groups		P value
		Prolene	Vicryl	
Age Groups	25-35 years	45	51	< 0.001
		34.4%	38.9%	
	> 35-45 years	58	14	
		44.3%	10.7%	
	> 45-55 years	28	66	
		21.4%	50.4%	
Gender	Male	58	68	0.216
		44.3%	51.9%	
	Female	73	63	
		55.7%	48.1%	
BMI	21-24	49	67	0.066
		37.4%	51.1%	
	> 24-27	58	42	
		44.3%	32.1%	
	> 27-30	24	22	
		18.3%	16.8%	
Total		131	131	
		100.0%	100.0%	

ASA grade I comprised of 56.5% patients in prolene group as compared to 57.3% in Vicryl group (p

0.901). Similarly the mean duration of laparotomy of the whole sample was 65.5 ± 17.2 minutes with

minimum duration of 40 minutes and maximum duration of 100 minutes. The mean duration of laparotomy of prolene group was 65.6 ± 17.6 minutes compared to 65.5 ± 16.9 minutes in Vicryl group (p

0.986). 42% in prolene group were subjected to midline exploratory laparotomy compared to 39.7% in Vicryl group. (p 0.657) (Table 2)

Table No. 2. Comparison of ASA, types and duration of laparotomy in categories between both groups (n = 131 each).

		Treatment Groups		P value
		Prolene	Vicryl	
ASA Grade	Grade I	74	75	0.901
		56.5%	57.3%	
	Grade II	57	56	
		43.5%	42.7%	
Type of laparotomy	Midline Exploratory	55	52	0.657
		42.0%	39.7%	
	Midline Elective	52	49	
		39.7%	37.4%	
	Midline Emergency	24	30	
		18.3%	22.9%	
Duration of procedure	40-60 minutes	72	69	0.887
		55.0%	52.7%	
	> 60-80 minutes	24	27	
		18.3%	20.6%	
	> 80-100 minutes	35	35	
		26.7%	26.7%	
Total		131	131	
		100.0%	100.0%	

Overall frequency of burst abdomen was 47 (17.9%). In prolene group, 7.6% patients developed burst

abdomen compared to 28.2% in Vicryl group. (p < 0.001) as shown in Table 3.

Table No. 3. Comparison of burst abdomen between both groups (n = 131 each)

		Treatment Groups		P value
		Prolene	Vicryl	
Burst abdomen	Yes	10	37	< 0.001
		7.6%	28.2%	
	No	121	94	
		92.4%	71.8%	
Total		131	131	
		100.0%	100.0%	

The study found burst abdomen occurred significantly more with Vicryl (94.1% in 25–35 years, 100% in 45–55 years) than Prolene. In males, 82.6% occurred with Vicryl; in females, 75% (Table 4).

Prolene showed lower complication rates across all groups, indicating its potential superiority with statistically significant p-values (< 0.001 to 0.002).

Table No. 4. Age groups and gender wise stratification of burst abdomen in both groups

Groups			Treatment Groups		P VALUE
			Prolene	Vicryl	
25-35 years	Burst abdomen	Yes	1	16	< 0.001
			5.9%	94.1%	
No		44	35	0.908	
		55.7%	44.3%		
> 35-45 years		Yes	9	2	0.001
			81.8%	18.2%	
No		49	12	0.002	
		80.3%	19.7%		
> 45-55 years		Yes	0	19	0.002
			0.0%	100.0%	
Male	No	28	47	0.002	
		37.3%	62.7%		
Female	Yes	4	19	0.002	
		17.4%	82.6%		
	No	54	49	0.002	
		52.4%	47.6%		
	Yes	6	18	0.002	
		25.0%	75.0%		
	No	67	45	0.002	
		59.8%	40.2%		

Burst abdomen incidence was significantly higher with Vicryl across all BMI ranges: 92.9% (21-24, $p = 0.005$), 71.4% (24-27, $p = 0.002$), and 75% (27-30, $p = 0.028$).

Prolene showed consistently lower complication rates, suggesting it may be a safer choice irrespective of BMI as presented in table 5.

Table No. 5. BMI wise stratification of burst abdomen in both groups

BMI Categories (kg/m ²)			Treatment Groups		P VALUE
			Prolene	Vicryl	
21-24	Burst abdomen	Yes	1 7.1%	13 92.9%	0.005
		No	48 47.1%	54 52.9%	
> 24-27	Burst abdomen	Yes	6 28.6%	15 71.4%	0.002
		No	52 65.8%	27 34.2%	
> 27-30	Burst abdomen	Yes	3 25.0%	9 75.0%	0.028
		No	21 61.8%	13 38.2%	

Burst abdomen was more frequent with Vicryl in both ASA Grade I (69.2%, $p = 0.034$) and Grade II patients (90.5%, $p < 0.001$). Prolene had lower rates (30.8%

and 9.5%, respectively), indicating a statistically significant advantage in reducing postoperative complications across both ASA grades (Table 6).

Table No. 6. ASA grade wise stratification of burst abdomen in both groups

ASA Grade			Treatment Groups		P VALUE
			Prolene	Vicryl	
Grade I	Burst abdomen	Yes	8	18	0.034
			30.8%	69.2%	
		No	66	57	
			53.7%	46.3%	
Grade II	Burst abdomen	Yes	2	19	< 0.001
			9.5%	90.5%	
		No	55	37	
			59.8%	40.2%	

Burst abdomen was significantly higher with Vicryl during surgeries lasting 40–100 minutes (75–88.9%, $p = 0.002$ – 0.040). Midline exploratory (73.9%, $p = 0.006$) and elective surgeries (88.2%, $p < 0.001$) also

showed higher rates with Vicryl. Prolene consistently showed lower complication rates, reinforcing its clinical advantage (Table 7).

Table No. 7. Duration of laparotomy wise stratification of burst abdomen in both groups

Groups			Treatment Groups		P VALUE
			Prolene	Vicryl	
40-60 minutes	Burst abdomen	Yes	7	21	0.002
			25.0%	75.0%	
		No	65	48	
			57.5%	42.5%	
> 60-80 minutes	Burst abdomen	Yes	1	8	0.017
			11.1%	88.9%	
		No	23	19	
			54.8%	45.2%	
> 80-100 minutes	Burst abdomen	Yes	2	8	0.040
			20.0%	80.0%	
		No	33	27	
			55.0%	45.0%	
Midline Exploratory		Yes	6	17	0.006
			26.1%	73.9%	
		No	49	35	
			58.3%	41.7%	
Midline Elective		Yes	2	15	< 0.001
			11.8%	88.2%	
		No	50	34	
			59.5%	40.5%	
Midline Emergency		Yes	2	5	0.365
			28.6%	71.4%	

		No	22	25	
			46.8%	53.2%	

DISCUSSION

According to Khan et al. (2019), dehiscence of the incision following abdominal surgery is a dangerous complication that still plagues the surgeon and puts the patient at risk (Khan et al 2019). It significantly affects the cost of medical care for both hospitals and patients (Armellini et al 2024). It is the result of deeper abdominal incisions failing to come together, which could have unintended consequences during the postoperative period, such as an incisional hernia, the dramatic "burst abdomen," or evisceration, which is the protrusion of the abdominal viscera as a result of the dehiscence of all the abdominal wall planes following laparotomy (Bucknall 1983). Wound healing is influenced by several factors. Hypoalbuminemia, anemia, starvation, chronic lung illness, and emergency procedures are among the conditions that are substantially linked to wound dehiscence (Putra et al 2023). According to Waqar et al. (2005), vomiting, extended intestinal paralysis, recurrent urine retention, and increased coughing are additional postoperative variables that have been determined to be important (Waqar et al 2005). Although disruption can happen at any point throughout the recovery period, it usually happens between the sixth and eighth day following surgery (Rodríguez-Hermosa et al 2005). This complication is caused by an increase in horizontal tensile pressures at the suture insertion point, which causes the rectus sheath to be severed. Although this kind of disturbance has historically been linked to a high death rate, the underlying diseases that generated the disruption are typically what lead to death. At the bedside, appropriate care entails covering the intestines with sterile towels, giving a narcotic as soon as possible—preferably intravenously—and bringing the patient to the operating room right away so that the wound may be sutured again and tension sutures can be applied.

Wound dehiscence occurred more frequently than anticipated in our investigation. There are a number of reasons for this, which we attempted to categorize as either patient-related or setting-related aspects. Patient-related clinical factors that contributed to the high rate of wound dehiscence include the patient's

poor overall health at presentation, previous healthcare providers' inadequate management, and the presence of complications such fluid and electrolyte imbalances and septicemia. Some socioeconomic characteristics associated with patients were poverty, health care neglect, and ignorance. One reason linked to the high rate of wound dehiscence in healthcare settings, particularly in emergency situations, may be improper sterilization in an emergency context. Since surgical residents performed the majority of emergency laparotomies, the surgeon's inexperience may also have played a role. The majority of our study participants had exploratory or elective surgery. Our investigation showed a considerably higher frequency of postoperative wound dehiscence, which was consistent with recent results by Niggebrugge et al., Penninckx et al., and McGinn et al. There are numerous preventable reasons of wound dehiscence (Mäkelä et al 1995, Niggebrugge et al 1995, Ramneesh et al 2014). Positive outcomes are influenced by effective and proactive preoperative resuscitation of patients, with a focus on fluid and electrolyte balance, antibiotic cover, nasogastric tube aspiration, and appropriate intake and output monitoring. Preventing paralytic ileus, chest problems, and wound infections through strict postoperative care might prevent a disastrous outcome.

The goal of minimizing problems may lower the rate of morbidity and death; nevertheless, the best suture material and method have been debated and not settled over the past ten to twenty years. The key to solving this problem is using the right suture material (Faris et al 2022). Study on this subject by Pandey S et al. found that there was a noticeable difference between the two groups when wound dehiscence was assessed (Pandey et al 2013). Wound dehiscence is 8% in the Prolene group and 17% in the Vicryl group. Despite the fact that this ratio exceeds the surgeon's expectations, it was determined that Prolene is a superior suture material to Vicryl for closing laparotomy incisions. These findings are exactly the same as ours; in our experiment, wound dehiscence was 28.2% in the Vicryl group and 7.6% in the Prolene group. Our findings are also consistent with

research by McGinn et al. and Penninckx et al.⁷⁰, which found a comparable greater ratio of wound dehiscence in the Vicryl group. In his study, Chalya PL found that the best way to close fascial tissue is to use vicryl for continuous mass closure in order to reduce the rate of problems such as wound dehiscence, incisional hernia, and wound pain (McGinn 1976). These findings contradict our findings, and the study constitutes a counterexamination of our work. Another study found a statistically significant difference between absorbable and non-absorbable suture material on days 8, 15, 30, and 45 in terms of post-operative wound complication characteristics. More patients with absorbable sutures had discomfort, edema, and indurations. At day 30 and day 45 of surgery, the maximum number of participants—86 (86%) and 93 (93%) from the prolene group—exhibited excellent wound healing, in contrast to 63 (63%) and 66 (68%) from the vicryl group. According to our study's observations, non-absorbing Prolene outperforms absorbable Vicryl suture in terms of results and wound dehiscence.

CONCLUSION

Burst abdomen is common in our population after laparotomy. The difference in the frequency of burst abdomen was statistically significant between two groups and it is concluded that prolene suture is an effective tool for its prevention in comparison to vicryl sutures. However, we recommend more RCTs on larger sample sizes and taking into account other factors which can affect the incidence of burst abdomen before recommending the use of prolene for routine closure of laparotomy wounds.

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Conflict of interest

None

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