IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 17, Issue 10 Ver. 12 (October. 2018), PP 01-07
www.iosrjournals.org

Skin Closure With Cyanoacrylate In Laparoscopic Cholecystectomy

Dr Sanjay Pandey[1], Dr Krishna Murty[2], Dr Amit Bhatnagar[3]
[1](Surgery Department, Subharti Medical College/Subharti University, INDIA)
[2](Surgery Department, Subharti Medical College/Subharti University, INDIA)
[3](Surgery Department, Subharti Medical College/Subharti University, INDIA)
Corresponding author: Dr Sanjay Pandey

Abstract: *Laparoscopic cholecystectomy is the most common laparoscopic operation done in our setup. Use of Iso Amyl 2-CyanoAcrylate bio adhesive for port site closure of skin resulted in statistically significant ($p<0.001$) reduction of post operative port site pain. The advantages of pain, better scar and psychological impact outweigh the disadvantage of more time taken for the new procedure (5 minutes) than the classical suture method.*

Date of Submission: 16-10-2018 Date of acceptance: 31-10-2018

I. Introduction

Laparoscopic cholecystectomy is one of the most common surgeries performed in general surgery. A number of modifications are occurring like 3 port and single port cholecystectomy. The authors used Iso Amyl 2- cyanoacrylate bioadhesive glue for port closure and compared it with the usual port closure with polyamide suture.

II. Material And Methods

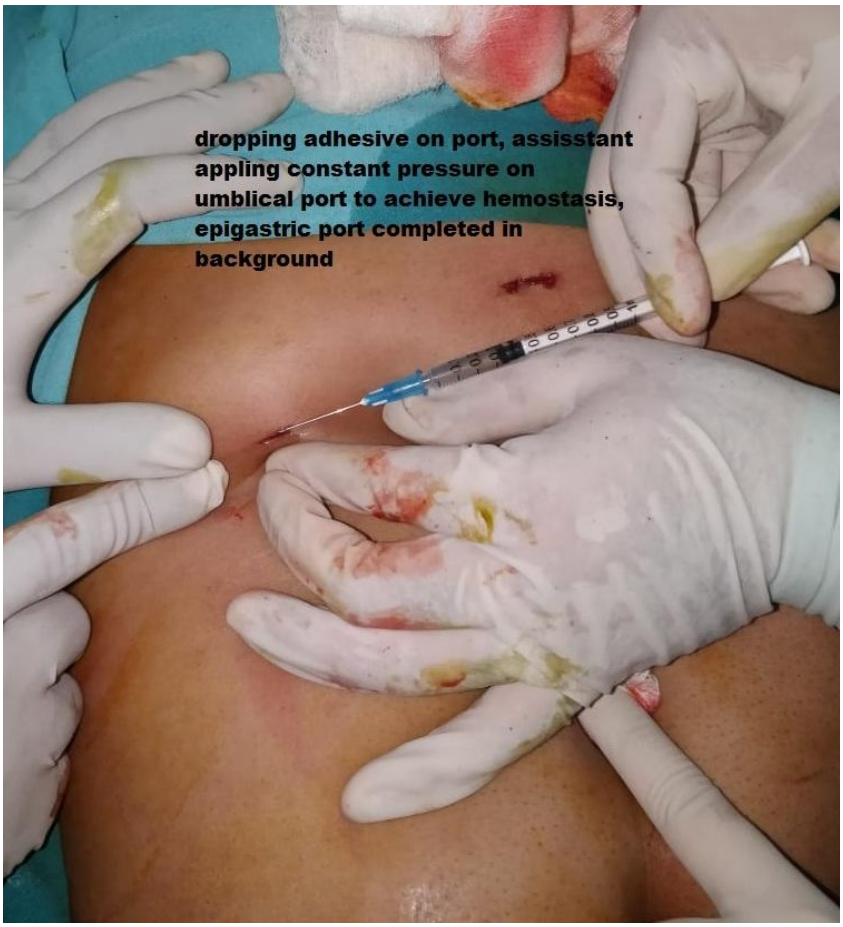
1. A study was planned to compare the use of bio adhesive glue with normal suturing of port skin in laparoscopic surgery on the time taken, complications, post operative pain and scar. The patients were admitted from surgery OPD after seeing an indication of laparoscopic cholecystectomy.
2. Cases that were converted to open, underwent open surgery straight away, histopathology showed carcinoma gall bladder and lost to follow up were excluded from the study.
3. The first group was labeled as the 'Veribond group' in which it was decided that veribond (cyanoacrylate glue from samples provided by Aurbindo Company) will be used to close port site skin incisions. The company was not informed about the intended use and no extra charge was taken from the patients.
4. The second group was called 'Nylon group'. Here the port sites were to be closed with polyamide 2-0 suture.
5. The cases were randomly divided into either of the 2 groups. Some patients who were earlier put in the Veribond group but refused to have 'suture less' surgery were put in the second group automatically.
6. In both the groups after completion of the placement of drain and fixing it to the skin the rectus sheath at the umbilical port was closed with Polyglactin 2-0.
7. Time required to close port site was then measured by an assistant from this point in time till the point when dressing was started.
8. In the veribond group as soon as the rectus closure at umbilical port was started the 1st assistant started application of pressure on the epigastric and hypogastric port site.
9. The 2nd assistant meanwhile loaded the cyanoacrylate solution in to the 1ml syringe already available in the pack of veribond as per instructions from the company
10. In most of the cases hemostasis of the margins was achieved. In some cases bipolar cautrey was used. The port site skin margins were opposed by distraction by the left hand of the surgeons (thumb) and 1st assistant. The surgeon then used his index to slightly push the lower margin up to oppose it to the upper margin. The operating surgeon then used his right hand to use the syringe stabilized over his left hand to drop the adhesive over the margin drop by drop. The tip of the needle did not touch the wound. The right hand of the assistant was used to absorb any drop of blood that oozed from the margin during the process with the help of a gauze piece held by a tooth forceps
11. After dropping the adhesive on the wound, it spread automatically to cover the wound and more of the adhesive was dropped to make a decent fill of the transparent liquid. The position was maintained for about 30 sec to 1min and the adhesive was allowed to dry.

12. The steps were repeated for all ports.
13. First 50 cases of both the groups from the start of the study were to be assessed. The study was started on December 1, 2017 and continued till July 2018. The cases were assessed for time taken for closure, complications if any related to the closing technique, post operative pain, complications, ease of dressing and resultant scar.
14. No blinding of any sort was done
15. In the post operative all patients were given injectable diclofenac on day 1 regardless of the pain status
16. Pain was calculated by asking patients on the evening of the operation to grade their pain on a scale of 0 to 10 with 10 being the worst pain, alternatively they were asked to tell in the form of how many paise in 1 rupee with 1 rupee being the worst and depicting 100 paise. This was then converted to the scale of 0-10.
17. Unpaired t- test was used with a confidence interval of 95% to assess if difference of pain felt in the 2 groups was statistically significant.
18. The wound site was assessed on post operative day 1 mainly for dehiscence.
19. Small dressing was done before discharging the patients and all advised to continue normal activity including bathing after removal of dressing every alternate day followed by redressing.
20. Follow up on day 10-14 was done so that the wound may be assessed, biopsy checked and stitches removed.


supporting the syringe
on left hand, oppsition
maintained

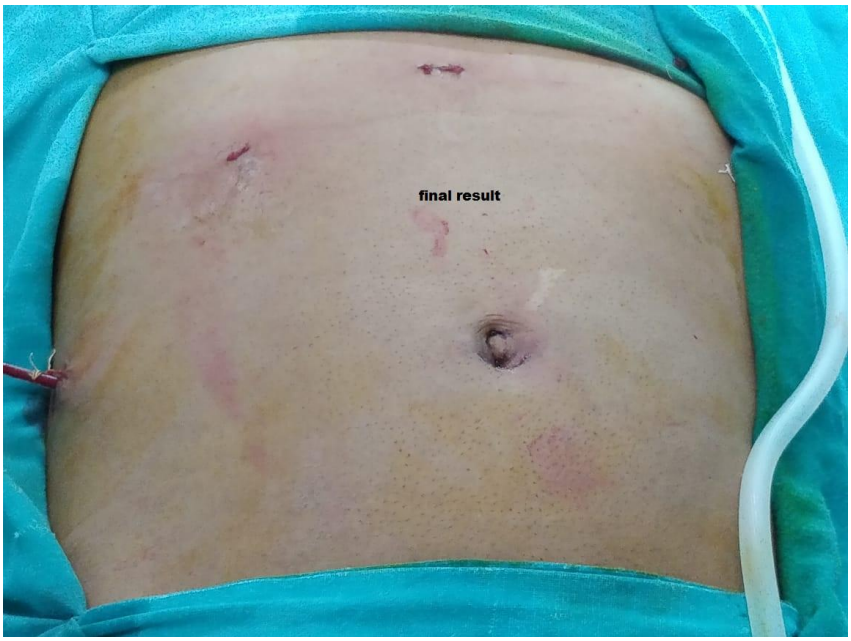

dropping adhesive on wound,
maintaining opposition


epigastric port after 30 sec seen
in background.
action continuing on next port


dropping adhesive on port, assisstant
appling constant pressure on
umblical port to achieve hemostasis,
epigastric port completed in
background


dropping on umblical port


maintaining position for
30 seconds minimum,


final result

III. Result

1. The results were statistically significant in the favour that immediate post operative pain was lesser with the use of Cyanoacrylate ($p<0.001$)
2. Time taken was approximately 5 minutes more (4.62minutes) in patients of veribond group.
3. Learning curve for use of cyanoacrylate was more
4. 6 patients out of 50 patients of veribond group had port site skin dehiscence noted on day 1 that was managed by reapplication of the bio adhesive. On the other hand in some patients of the Nylon group wound site redness was noted.
5. The scar of cyanoacrylate was very similar to a subcuticular stitch scar but as full maturation of scar takes almost 2 years the time period of the study was very less.
6. Cyanoacrylates was used in other cases of open surgery with satisfactory results but were not included in the study.
7. The patients of veribond group were happier and sometimes pleasantly surprised in the follow-up because they were told of the new technique was used on them and some of veribond patients were even expecting stitch removal (although they were informed at the start that the technique was suture-less). Some of the patients even referred other patients specifically to get operation done by suture-less technique.

IV. Discussion

1. Pain in the Veribond group was lesser than the Nylon group possibly because of the absence of trauma and wound tension of the polyamide suture. As blinding was not done psychological effect on the patient may also have reduced the pain.

S.No.	Group name	Number of patients (n)	Mean	Standard deviation	Standard Error
1	Veribond	50	0.90	1.359	0.192
2	Nylon	50	3.62	1.369	0.194

The p value was <0.001 at confidence interval of 95% that shows that the data was significant
In both the groups average pain in females was more than the average pain in males.

S.No.	Group name	Number of Female patients	Average pain	Number of male patients	Average pain
1	Veribond	46	0.95	4	0.25
2	Nylon	36	3.83	14	3.07

2. Time taken in the veribond group was more (average 6.58 minutes) than the Nylon group (1.96 minutes). It was mainly because

a. stitching technique was already known to the authors
b. Veribond could not be applied without perfect hemostasis.
c. Veribond required 30-60 sec to dry and form a strong bond. Till then the next site could not be started

Achieving hemostasis was of utmost importance and the adhesive reacted with blood to turn into a red solid with no adhesive strength.

It was however observed that this time reduced by the end of the study as the experience of the authors increased with the new material.

3. The process of applying Veribond required time to master as controlling of the syringe and pushing the plunger to form a drop was difficult. Initially overshooting the adhesive liquid and applying inadequate quantity of the adhesive was common.
4. Wound dehiscence was seen in the Veribond in 6 patients, 3 of which was in the epigastric and 3 in the umbilical port. This occurred in the initial period of the study only and was mainly because of the faulty technique of the authors. As the experience increased and the correct time and amount to be used was known the complication was not seen. Even in patients where it occurred the wound was reclosed bedside with more veribond.

2 patients of nylon group there was redness seen at the epigastric port at the epigastric port at the suture entry site that relieved without any intervention.

No other complication related to the wounds was seen

5. The scars of both the groups were equal in strength at 10^{th}-14^{th} postoperative day. Obviously the scar of the veribond group was better as there was no cross hatching.
6. There was a positive psychological advantage seen that may have also played its part in the reduction of pain in the post operative period.

V. Conclusion

1. Cyanoacrylate can provide a good alternative to skin closure in laparoscopic cholecystectomy.
2. More time was required and time was required to learn the technique used.
3. There was a statistically significant reduction of post operative pain with its use and initial results showed improved scar formation.
4. The patients had a positive psychological impact with the use of suture less method thus provided.

Dr Sanjay Pandey. "Skin Closure With Cyanoacrylate In Laparoscopic Cholecystectomy ""." IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), vol. 17, no. 10, 2018, pp 01-07.