

Postoperative Pain Comparison between Sutures and Cyanoacrylate Glue for Mesh Fixation in Inguinal Hernia Repair

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Abstract

Inguinal hernia repair is the most frequently performed operation in any general surgical unit [3]. Hernioplasty is most commonly performed surgery for hernia. Mesh fixation is a major step in hernioplasty regularly mesh is fixed with non-absorbable prolene sutures as there is longer operative time, more pain during post-operative period and foreign body sensation, sutures are replaced by n-butyl-2-cyanoacrylate glue mesh fixation in Lichtenstein hernia repair. To study the outcome of n-butyl-2-cyanoacrylate glue versus sutured mesh fixation in Lichtenstein hernia repair with respect to postoperative pain. *Materials and Method:* 50 cases in each group is considered who are presenting to surgical opd in B.L.D.E.U's Shri B.M. Patil Medical College Hospital in the period of June 2014 to May 2015. *Results:* The number of patients with chronic pain who underwent hernioplasty with glue fixation is less (10%) when compared to number of patients with chronic pain who underwent Lichtenstein's hernioplasty with sutures (26%). This association is found to be statistically significant in our study as compared to other studies in which there was no significant change in pain with glue and suture fixation of mesh. Use of N butyl cyanoacrylate glue for Lichtenstein hernia repair is more efficacious than regular prolene suture mesh fixation and also has the potential to reduce the incidence of chronic inguinodynia and foreign body sensation. There is less chronic pain after 12 months in n butyl cyanoacrylate group mesh fixation.

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Introduction

A hernia is a protrusion of a viscus or part of a viscus through an abnormal opening in the walls of its containing cavity [1]. A hernia is the bulging of part of contents of the abdominal cavity through a weakness in the abdominal wall. Inguinal hernia repair is the most frequently performed operation in any general surgical unit [3]. Hernioplasty is most commonly performed surgery for hernia. Mesh fixation is a major step in hernioplasty regularly mesh is fixed with non-absorbable prolene sutures as there is longer operative time, more pain during post-operative period and foreign body sensation, sutures are replaced by n-butyl-2-cyanoacrylate glue mesh fixation in Lichtenstein hernia repair. Study was conducted to compare the outcome of n-butyl-2-cyanoacrylate glue versus sutured mesh fixation in Lichtenstein hernia repair with respect to pain, seroma within 12 month of follow-up and chronic pain using visual analogue scale 12 months.

Methodology

Source of data

All patients presenting to B.L.D.E.U's Shri B.M. Patil Medical College Hospital and Research Centre Bijapur and admitted patients in whom the diagnosis of primary inguinal hernia is considered from June 2014 to May 2015

Method of Collection of Data

- This is a randomized controlled trial study in

which patients presenting with unilateral primary uncomplicated indirect and direct inguinal hernias in B.L.D.E.U's Shri B.M. Patil Medical College Hospital will be taken up into study.

- Two groups are made, standard suture fixation for one group and glue fixation to another group.
- Minimum of 50 cases with permissible error in each group was taken up for the study.
- The period of study is from June 2014 to May 2015.
- Diagnosis of unilateral primary uncomplicated indirect and direct inguinal hernia was made on the basis of thorough clinical examination [4], appropriate laboratory and radiological investigations.
- A pretested structural proforma was used to collect relevant information for each individual patient selected.
- Cases was selected consequently with following inclusion and exclusion criteria.

Inclusion Criteria

- Men 20 years of age or older with unilateral/ bilateral primary inguinal hernia.

Exclusion Criteria

- Any recurrent hernias.
- Presence of bowel obstruction, strangulation, peritonitis or perforation.
- Associated femoral hernia.
- Patients undergoing orchidectomy in the same procedure.

Follow up

- Early complications (within 1 month): Pain, seroma formation, hematoma, wound infection rate.
- Late complications: Chronic pain using visual analogue scale {12mths}, foreign body sensation.

All the patients admitted during this period, who fulfil the inclusion criteria, will be included in this study. For control group mesh was fixed to the pubic

tubercle, inguinal ligament and conjoint tendon by standard prolene 2-0.

For case group mesh was fixed to the pubic tubercle, inguinal ligament and conjoint tendon by (ENDOCRYL) that is N butyl cyanoacrylate glue [5]. A single dose of Inj.Ceftriaxone + Sulbactam 1.5 gm was given intravenously immediately before the surgery. The note was taken of the contents of the sac, and any technical difficulty encountered during the surgery.

Postoperatively patient was put on Inj.Ceftriaxone + Sulbactam 1.5 gm BD intravenously for five days and injection Dynaparaqiv BD for 2 days. The patients were followed up for postoperative pain which was evaluated using visual analogue scale, wound hematoma, wound seroma, wound infection.

Sutures were removed on the 7th postoperative day and the patients discharged if there was no wound infection, were ambulatory, were taking orally and felt comfortable. Patients were called to the outpatient department and follow up was done at 1 and 3 months for complications like chronic groin pain (inguinodynia), foreign body sensation. Patients were assessed for postoperative pain using visual analogue scale after 1 & 3 months after surgery. Visual analogue scale consists of a 10 cm line anchored at one end by a label as no pain and at the other end by a label such a severest pain patient experienced in his life time. We translated this for documentation as a 1-3 mild pain, 3-7 moderate pain, 7-10 severe pain.

Statistical Analysis

Data was be entered on master chart for analysis. The data was analyzed by using student t- test, Chi square test, Mann Whitty test & Fischer exact tests wherever needed respectively.

Results

The number of patients with chronic pain who underwent hernioplasty with glue fixation is less (10%) when compared to number of patients with chronic pain who underwent Lichtenstin's hernioplasty with sutures (26%). This association is found to be statistically significant

Table 1: Comparison of chronic pain

Chronic pain	Cases - Hernioplasty with glue fixation N (%)	Control - Lichtenstin's hernioplasty with sutures N (%)	Total N (%)	χ ² value and p value
Present	5 [10]	13 [26]	18 [18]	χ ² = 4.336 p = 0.037*
Absent	45 [90]	37 [74]	82 [82]	
Total	50 [100]	50 [100]	100 [100]	

*result is Significant with p<0.05. Number in parenthesis indicates percentages

Table 2: Comparison of grades pain

Grades of pain	Cases -n (%)	Control - n (%)	Total -n (%)	χ ² value and Pvalue
No pain	3 (6)	1 (2)	4 (4)	χ ² = 41.38 P= 0.001*
Mild pain	46 (92)	18 (36)	64 (64)	
Moderate pain	1 (2)	31 (62)	32 (32)	
Severe pain	0 (0)	0 (0)	0 (0)	
Total	50 (100)	50 (100)	100 (100)	

* Result is significant with p<0.05. Number in parenthesis indicates percentages

Table 3: Comparison of visual analog scale

Categories of pain	Cases - n (%)	Control - n (%)	Total n (%)	χ ² value and P value
Very happy, no hurt	3 (6)	1 (2)	4 (4)	χ ² = 36.15 P= 0.001*
Hurts just a little bit	36 (72)	8 (16)	44 (64)	
Hurts a little more	10 (20)	38 (76)	48 (32)	
Hurts even more	1 (2)	3 (6)	4 (4)	
Total	50 (100)	50 (100)	100 (100)	

* Result is significant with p<0.05. Number in parenthesis indicates percentages

Table 4: Comparison of chronic pain with other studies

Cases	Ref A		Ref B		Ref C		Present study*	
	Cases	Controls	Cases	Controls	Cases	Controls	Cases	Controls
0 (0)		2 (4)	0 (0)	2 (10)	13 (10.1)	21 (16%)	5 (10)	13 (26)
	Not significant		Not significant		Not significant		Significantly less pain among the cases	

The case group has lesser number of patients suffering from moderate pain (2%) compared to control group (62%) and this association is found to be statistically significant.

The case group has lesser number of patients suffering from moderate pain (2%) compared to control group (62%).

Discussion

Ref A: Mariotestina et al [6], Ref B: Louise and Wendall et al [7], Ref C: Palanivelu et al [8]. The number of patients with chronic pain who underwent hernioplasty with glue fixation is less (10%) when compared to number of patients with chronic pain who underwent Lichtenstein’s hernioplasty with sutures (26%). This association is found to be statistically significant in our study as compared to other studies in which there was no significant change in pain with glue and suture fixation of mesh.

Conclusion

Use of N butyl cyanoacrylate glue for Lichtenstein hernia repair is more efficacious than regular prolene

suture mesh fixation and also has the potential to reduce the incidence of chronic inguinodynia and foreign body sensation. There is less chronic pain after 12 months in n butyl cyanoacrylate group mesh fixation.

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