Wellbeing Of Histoacryl Glue Used For Mesh Fixation In Laparoscopic Inguinal Hernia Repair Is Superior To Tracker Fixation

Hassan A. Saad, MD assistant professor zagagic university
Ahmen M. Yehia, MD assistant professor zagagic university
Gamal Osman, MD assistant professor zagagic university

Background : Inguinal hernias has large transfiguration over the last 40 years. There is controversial between disadvantages of open method as compared with laparoscopic mesh repair. Many inguinal hernias in adults are treated by mesh fixation that had different methods and procedure Adhesive fixation is becoming famous nowday because less tissue damage, less time and less pain. We used the glue cyanoacrylate which is recycled in numerous medical suggestions due to its fast act, admirable attachment power and low expense.

Aim: Our interest is to focus the rationale for using glue that non-fibrin based compared to penetrating methods (tacker) in laparoscopic inguinal hernia mesh fixing.

Patients and Methods: Between May 2019 and May 2021 in zagagic university we has 50 cases. each group 25 patients: in (A) group the histoacryl glue used to fix the prosthetic meshes in 25 laparoscopic transabdominal preiperitoneal approach (TAPP) repairs, but in (B) group 25 cases transabdominal perioeritoneal approach(TAPP) with tacker fixation. Follow-up was 6 months later.

Results: The glue group has revealed the shorter operation time , mild postoperative pain, no infection rate, without recurrence rate and short hospital time. and no chronic pain were recorded.

Conclusion: Histoacryl compared with other methods of mesh fixation is superior to other method if mesh fixation.

Keywords: Laparoscopic hernia repair, Mesh fixation, Histoacryl,Tacker,Pain, Quality of life

Introduction:

Beta Cyanoacrylate one of fast-acting glues in acrylic resin that polymerized rapidly in water media , that union the bonded sides in 5 sec and getting the final stage in one minute. It make body tissue adhere very excellent also had bacteriostatic effects (Fig. 1&2) [1-4].

Hydrolytic analysis eradicate the glue so, it is used in suture less operations since 1970s. that used frequently [3-5].

Fig.(1): histoacryl ampoules.

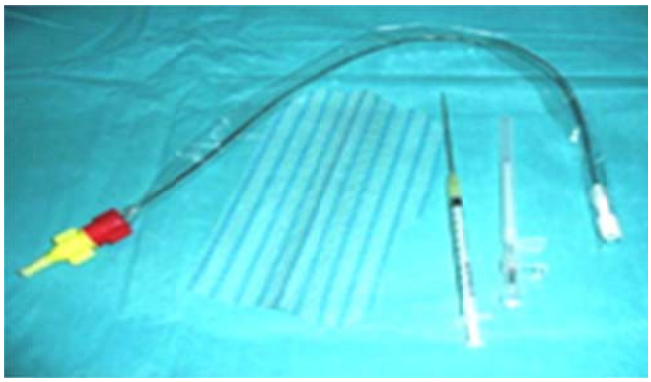

Fig.(2): equipments.

A great care has been used to avoid mobility of the mesh before its fixation its original position (after the use of meshes in the 1960s)[4-7

Abdominal pressure force the mesh in place until it is finally fixed by scar tissue. In the early 1990s, laparo-endoscopic surgeons started similar the successful Stoppa procedure in the form of TEP and TAPP.

mesh dislodgment can be occurred with glue being one of the most common causes of reappearance of hernia. many methods as stapler suturing and tacking tools were used to avoid this problem.
The triangle of pain and the triangle of doom are two anatomical zone important land marking during lap.

hernia procedure for mesh fixation as vascular hidden injury or painful conditions were common during mesh fixation by stapler or suturing (Fig. 3 a & b) [8-10].

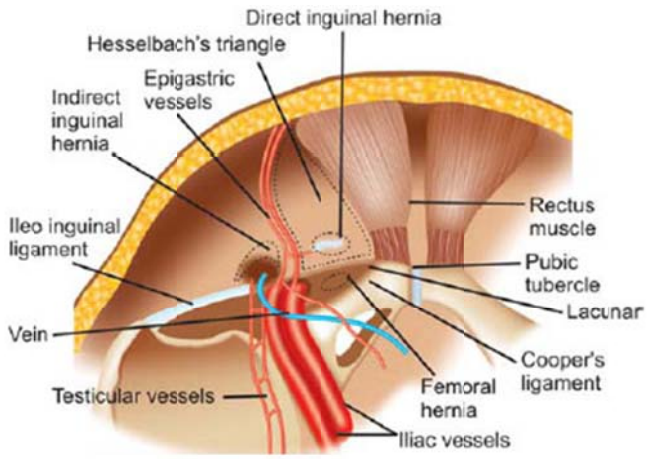

Fig. (3-a): laparoscopic anatomy of the inguinal region.

Fig. (3-b): antomical view of inguinal region by laparoscopy

Patients and methods: between May 2019 and May 2021 in zagagic university we has on 50 cases. in **(A)** group we used the glue to fix the prosthetic meshes in 25 laparoscopic TAPP inguinal hernia , other **(B)** group 25 cases TAPP with tacker fixation. Follow-up time was 6 months.

In group (**A**)we fixed meshes with in four quadrant be few drops of histoacrylonl. the peritoneal flaps adapted by remaining glue in order to facilitate final peritoneal closure,in , But we use the tacker to fix the mesh in group (**B),**.

Inclusion criteria:

1-Patients are between 18-60 years old .
2- All Patients fit for surgery
3-All patients are mentally oriented
4- All patients were consented .

Exclusion criteria;

1-Recurrent inguina hernia
2- Any metabolic disease
3-Patients of chronic diseases need anticiagulant.

Preoperative care:

Complete laboratory investigations .
Full antiembolic precautions were taken according to anticoagulant chart.
Antibiotics prophylaxis . Covid 19 excluded in elective cases

Technique:

All procedures were done under general anaethesia with endotracheal intubation.
Supine positioning and general anesthesia , dissection of the pre-peritoneal space , and all hernia sacs appear and pre-peritoneal fat presented are reduced, now the mesh fixation and secured to the abdominal wall internal opening of internal defect. by skin incision thought (para-rectal right). Application of the glue can be done by suitable catheter that passed through the skin incision, keep the area dry as possible all time to allow the glue to be polymerized to the exact points we need not away or polymerized to another unneeded humid tissue. By using insulin syringe (1cm3) is used for distribution of the glue drop in suitable sites or position

5mm graspers can be used to control the glue application. We can apply over 15-20 ‘‘drops’’ from a 1 ml glue of our content; by expelling the air in the syring the glue come out and settled on the mesh points, against the under tissue, direct on the pubic arch and direct on the symphysis pubis, medial to femoral vein, the glue must be alonge the Doom triangleand above the triangle of pain medial and lateral of the inferior epigastric vessels, and (Fig. 4). (level of the superior iliac spine)

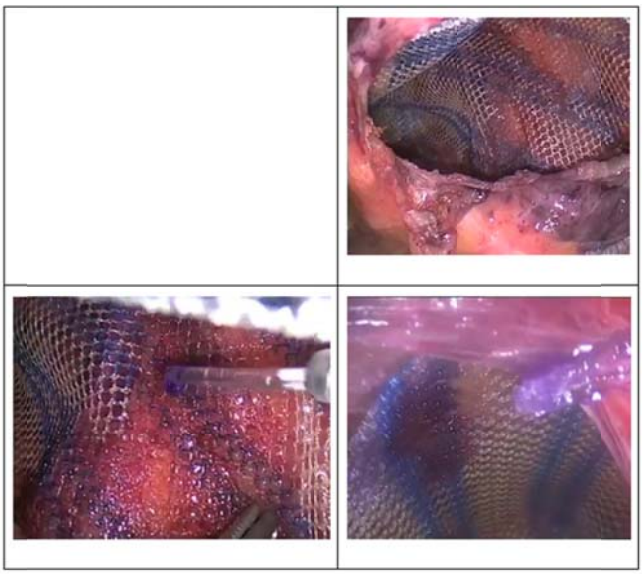

Fig. (4): A: Port sites and technique. B: Mesh in place. C&D: Histoacryl use.

Fig.(5):tacker fixation

The peritoneal edges are then approximated and adhere by the glue, the CO2 is evacuated, and any trocar incision bigger than 5 mm is closed in layers.

In group (**B),** we used tacker device to fix the mesh and approximate the peritoneal edges shown in figure (5). by simple measures. during the procedure, the tip of the catheter may gradually closed, causing complete obstruction. so, catheter patency can be ensured

At the end we inflate the wound with long-acting local anesthetic.

Statistical analysis:

Data were analyzed using SPSS ,the version was 16. the data was by mean ± SD for quantitative and frequency. Student t-test used to compare quantitative data (mean ± SD) between both groups.

P values less than 0.05 were considered significant.

Results:

The group A 25 patients and the group B 25 patients. The mean ± SD of age was 38.10 ± 5.35 years in the group A, but 39.94 ± 4.89 years into the group B. The length of operative time was in Group B were 59.6 ± 6.27 minutes and in Group A were 45.89 ± 5.71 minutes . All patients were discharged after 8 hours of surgery and no patients need readmission. Follow up after 6 months later, without recurrence rate, without complications and without chronic pain. (Table 1)

first telephonic feedback was obtained from 100% of patients. 7 days 99% were examined then 2 weeks 97% were examined after surgical clinical control by the operating team. Visual Analog Scale for Pain(VAS) scores used in the postoperative follow-up, to assess pain management in all patients. diagram

Table (1): Results.

	Group(A)	Group(B	P value
Total patients numbers	25	25	-
Age /years, (mean ± SD)	38.10 ± 5.35	39.94 ± 4.89	-
Direct	2	4	-
Indirect inguinal	23	21	-
Male	20	23	-
Female	5	3	-
Recurrence	0	0	-

By using the visual analogue scale (VAS); to asses the postoperative pain this system scoring .

graduated from 0 to 10,

0 = no any pain, VAS 1–3 = just mild pain, VAS 4–6 = moderate pain , and VAS 7–10 = severe pain.

.

Discussion:

When we use the Histoacryl, it is safe and effective in our clinical studies. Many studyes improve as a excellent safe tissue glue [8].

In 2001, Katkhouda et al., use sealants to fix the mesh but complicated by acute or chronic pain , coast coeffective and some recurrence rate occured [12]. when we compare the glue fixation with suture fixation or other methods in TAPP repair Lovisetto, reports less postoperative pain and neuralgia and good physical and social activities [10].

In our study by using the glue in mesh fixation, we had less postoperative stay, less pain and little analgesia and reduced postoperative pain expressed in VAS scores, so, to avoid more tissue damage by tracker and then little pain and less operative stay we used the glue that had no any tissue damage, no penetration, no vascular injury and no nerve injury or damage. So we not had any patients with chronic pain, with better information,. The overall patient satisfaction with immediate unrestricted if physical activity with shorter sick leave period .[11-15].

Conclusion:

To fix the prosthetic meshes glue is superior to tacker fixation to be used to avoid any vascular or nerve damage and chronic pain in laparoscopic hernia repair tha is very attractive than other methods but if it is used spot-wise .

REFERENCES

1. Suguita FY, Essu FF, Oliveira LT, Iuamoto LR, Kato JM, Torsani MB, Franco AS, Meyer A, Andraus W. Learning curve takes 65 repetitions of totally extraperitoneal laparoscopy on inguinal hernias for reduction of operating time and complications. Surg Endosc. 2017 Oct;31(10):3939-3945.

2. Testini M, etal, A single-surgeon randomized trial comparing sutures, N-butyl-2-cyanoacrylate and human fibrin glue for mesh fixation during primary inguinal hernia repair. Can J Surg. 2010;53:155e60.

3. Wong JU, Leung TH, and Huang CC, etal Comparing chronic pain between fibrin sealant and suture fixation for bilayer polypropylene mesh inguinal hernioplasty: a randomized clinical trial. Am J Surg. 2011;202:34e8.

4. Campanelli G, Pascual MH, , et al. Randomized, controlled, blinded trial of Tisseel/Tissucol for mesh fixation in patients undergoing Lichtenstein technique for primary inguinal hernia repair: results of the TIMELI trial. Ann Surg. 2012; 255(4):650e7.

5. Miyano G, Yamataka A, Kato Y, Tei E, Lane GJ, Kobayashi H, Sueyoshi N, Miyano T. Laparoscopic injection of dermabond tissue adhesive for the repair of inguinal hernia: short- and long-term follow-up. J Pediatr Surg.2004; 39(12):1867–1870.

6. Neumayer L, Giobbie-Hurder A, Jonasson O, Fitzgibbons R, Dunlop D, Gibbs J, Reda D, Henderson W., Veterans Affairs Cooperative Studies Program 456 Investigators. Open mesh versus laparoscopic mesh repair of inguinal hernia. N Engl J Med. 2004 Apr 29;350(18):1819-27.

7. Stoppa R, Henry X, etal, Dacron tulle prosthesis and biological glue in the surgical treatment of incisional hernias (author's translation). Nouv Presse Med.1980; 9(46):3541–3545.

8. Barnett P and Jarman FC etal,. Randomized trial of histoacryl blue tissue adhesive glue versus suturing in the repair of paediatric lacerations. J Paediatr Child Health,1998; 34(6):548-50**.**

9. Jourdan IC and Bailey ME etal,. Initial experience with the use of N-butyl 2-cyanoacrylate glue for the fixation of polypropylene mesh in laparoscopic hernia repair. Surg Laparosc Endosc.1998; 8:291–293.

10. Lovisetto F, Zonta S, Rota E, Mazzilli M, Bardone M, Bottero L, Longoni M. Use of human fibrin glue (Tissucol) versus staples for mesh fixation in laparoscopic transabdominal preperitoneal hernioplasty: a prospective, randomized study. Ann Surg.2007; 245(2):222–231.

11. Jain SK, Vindal A. Gelatin-resorcin-formalin (GRF) tissue glue as a novel technique for fixing prosthetic mesh in open hernia repair. Hernia 2009; 13(3):299–304.

12. Katkhouda N, Mavor E, Friedlander MH, Mason RJ, Kiyabu M, Grant SW, Narayanan K, Essani R. Use of fibrin sealant for prosthetic mesh fixation in laparoscopic extraperitoneal inguinal hernia repair. Ann Surg. 2001; 233:18–25.

13. Moreno-Egea A, Torralba Morales Cuenca G, Aguayo Albasini JL. Randomized clinical trial of fixation vs nonfixation of mesh in total extraperitoneal inguinal hernioplasty. Arch Surg.2004; 139(12):1376–1379.

14. Ellner S and Daoud I, Gulleth Y. Over five hundred laparoscopic totally extraperitoneal hernia repairs using mesh without fixation. Oral presentation (S061) at society of American gastrointestinal and endoscopic surgeons annual meeting Dallas,Texas, 26–29 April 2006.

15. Bittner R, Sauerland S, Comparison of endoscopic techniques vs Shouldice and other open non-mesh techniques for inguinal hernia repair: a meta-analysis of randomized controlled trials. Surg Endosc. 2005; 19(5):605–615.