BSAWS

MESH 2015

Fixation des protheses avec de la colle dans les hernies ventrales

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DIFFERENT TYPES OF GLUE

1. Biologic Fibrin glue : Tisseel®Tissucol®Vivostat®Biocol®Beriplast® Quixil®,Avitene®,Advasael®,TachoComb®

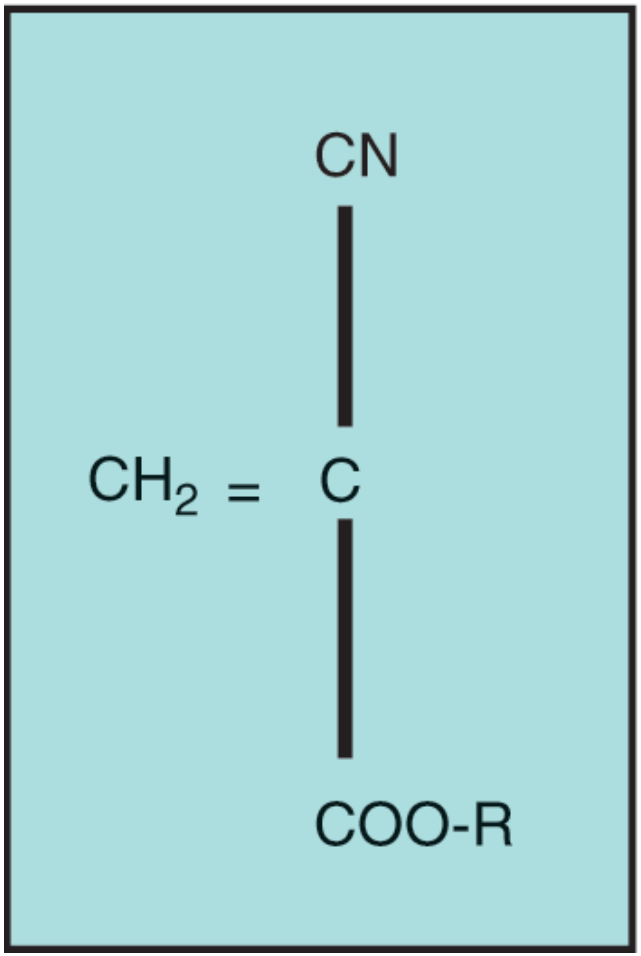
2. Semi-synthetic glue : formaldehyde :Bioglue®

3. Synthetic glue :
   Long-chain acrylates like
   a.n-butyl -cyanoacrylate :
   Histoacryl®,Indermil®,Dermabond®, Glubran®, Liquibandfix8®

   b. n-hexyl-α-cyanoacrylate:
   Ifabond®

Short- chain acrylates removed from med use(toxic)

General structure of cyanoacrylates



R =

CH_3	Methyl
C_2H_5	Ethyl
C_4H_9	Butyl
C_8H_{17}	Octhyl
$C_{10}H_{15}$	Hexyl

Properties cyanoacrylates in surgery (Europe)

	Ifabond®	Glubran ®	Histoacryl®
Compound	a-hexyl	n-butyl	n-butyl
Company	Fimed (Fr.)	GEM (It)	B.Braun(Germ.)
Temp °C	+2	45	45
Time(sec)	1-30	1-90	5-7
Degradation In months	3-9	more then12	12

Long-chain (butyl-, hexyl- and octyl-). Less cytotoxic, as their degradation is much slower , and concentrations of formaldehyde greater than those habitually present in the blood are not reached and, therefore, they can be used safely in multiple medical applications, both externally and internally.

Review of literature clinical studies

Hernia August 2011, Volume 15, Issue 4, pp 361-369

Systematic review of the use of fibrin sealant in abdominal-wall repair surgery

S. Morales-Conde, et al

Articles were RCT and non-RCT only few ventral hernia repair : 10 studies , only open

The fibrin sealant was shown to be biocompatible with the surrounding tissue. In patients treated with fibrin sealant, **less pain and less hemorrhagic complications** occurred. Efficiency in experimental models was similar to that observed for mechanical methods of fixation. Also, **adhesions** with fibrin sealant were less than that for mechanical methods.

Conclusions

Compared with mechanical methods, fibrin sealant is an good alternative for mesh fixation

Surg Endosc. 2012 Jul;26(7):1803-12

Use of fibrin sealant (Tisseel®/Tissucol®) in hernia repair: a systematic review.

Fortelny RH, et al

There were 36 Tisseel/Tissucol studies included in this review involving 5,993 patients undergoing surgery for hernia (mainly inguinal open or laparoscopic; some open ventral hernia repairs)

Conclusion:

Clinical evidence published to date supports the use of Tisseel®/ Tissucol® as an **option for mesh fixation in open and laparoscopic repair of inguinal and incisional hernias**. When used in the repair of incisional hernias, Tisseel/Tissucol significantly decreased both postoperative morbidity and duration of hospital stay.

BSAWS

Surgical Endoscopy March 2007, Volume 21, Issue 3, pp 409-413

Use of fibrin glue (Tissucol®) in laparoscopic repair of abdominal wall defects: preliminary experience

S. Olmi, et al,

40 patients small , mediumsized
Parietex®
Mean follow-up 16 months

Conclusions:
The use of fibrin glue in the present study provided stable and uniform fixation of the prosthesis and minimized intraoperative and postoperative complications.Low incidence of pain, ,hemorrhage ,seromaformation and recurrence . "….is our therapeutic option of choice".

J.of the Society of Laparoendoscopic Surgeons 2010 Apr-Jun; 14(2): 240-245.
Laparoscopic Incisional Hernia Repair With Fibrin Glue in Select Patients S.Olmi et al.

Laparoscopic repair of incisional hernias by using Hi-tex mesh fixed to the parietal wall with fibrin glue was feasible and easy in patients with parietal defects <6cm in diameter. Mean operating time was 30 minutes. Mean hospital stay was 1.5 days. Almost no postoperative pain, major surgical complications, seroma formation, relapses, or prosthesis infection occurred during a mean follow-up of 20 months.
19pts!

British Journal of Surgery 2011; 98: 1537–1545

Randomized clinical trial of fibrin sealant versus titanium tacks for mesh fixation in laparoscopic umbilical hernia repair
J. R. Eriksen et al

38 pt ;Small defects between 1,5 and 5 cm;FU 1 month 3 Danish hernia centers

Conclusion:

Mesh fixation with FS in LVHR was associated with less acute postoperative pain, discomfort and a shorter convalescence than tack fixation. Long-term follow-up is needed to show whether the effect of FS fixation persists in terms of chronic pain and recurrence

Hernia. 2013 Aug;17(4):511-4.

Fibrine sealant for mesh fixation in laparoscopic umbilical hernia repair: 1-year results of a randomized controlled double-blinded study.
Eriksen et al

34patients with umbilical hernia defects from 1.5 to 5 cm at three Danish hernia centres with follow-up 1 year ; titanium versus fibrin sealing (Tisseel®)

Five patients (26 %) in the fibrin sealant group and one (6 %) in the tack group were diagnosed with a recurrence at the 1-year follow-up ($p = 0.182$)

Patients with larger hernia defects and fibrin sealant mesh fixation had higher recurrence rates than expected, although the study was not powered for assessment of recurrence. There was no significant difference between groups in any parameters after the 1-year follow-up.

Fibrin sealing can not be recommended routinely for intraperitoneal mesh fixation

Surgical technology int. 12/2012

Mesh Fixation Alternatives in Laparoscopic Ventral Hernia Repair. Muyssoms , Berrevoet et al

"The continuously increasing multitude of marketed meshes and fixating devices leads to unlimited options in mesh fixation combination and geometry. Therefore, we will never be able to get a clear view on the benefits and pitfalls of every specific combination"

Belgian study (not published) M. Van De Moortel Belgian Surgical Week 2015

- **Intramesh T1 study Belgium: safety and efficacy in (L)VHR**

Prospective multicenter (7) study
96 pts 90 LVHR and 6 OVHR
19 pts , fixation only ifabond ®
  mean hernia size 1,71 cm
  12 cm round mesh repair
Nl discharge
No perop/postop complications
1 mth FU: seroma/hematoma/pain tack fixation/ileus
12 mth FU: no recurrences (95% show-up)

Retrospective analysis 75 pts not published ,one center

- 38 only cyanoacrylate 37 all others
- 36% overall comp 53%
- laparosc for subobstruction lap for peritonitis
- No recurrence
- less pain

Conclusion glue fixation

- Good results in inguinal hernia surgery
  - ⇒ feasible and safe (good fixation strength)
  - ⇒ less pain

  Gaining popularity

  BUT

- Not enough information in laparoscopic ventral hernia repair

BUT 

- Toxicity esp.synthetic glue? heat-induced inflammation and necrosis of nerves and blood vessels
- Genotoxicity long term?
- Many glues , many prosthesis
  - ⇒ incompatibility ?
  - ⇒ impared mesh integration?

BUT 

better and easier application device

glues may obliterate the laparoscopic instruments

glue application intraperitoneally is still challenging and a barrier on the visceral side of the mesh is necessary to prevent leakage onto intra-abdominal content.

BUT 

- Cost effectiveness ? Comparing with other fixationdevices
- Few clinical reports in ventral hernia , long term follow-up? Large RCTs are required
- No studies glues/self-gripping prosthesis


Thank you for your attention!


Questions ?