

# Wound Repair Part II

Kurt Ortwig NP

NorthShore University Health System

Department of Emergency Medicine

# Other types of wound closure

- Tissue adhesive
- Metal skin staples
- Adhesive strips

# Skin Glue

- Not Superglue: “Honey, I glued the kids”

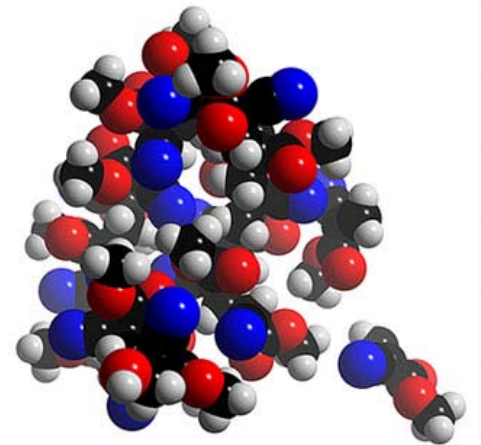


**NO!!**



# Tissue Adhesives: Cyanoacrylate Adhesives

- Synthetic liquid monomers, bond forming
- Clinical trials: No difference in cosmetic scar
- Painless
- Save time
- Comfortable
- No suture removals
- No suture marks, no tissue reaction
- NO dressing
- Antibacterial
  - Singer & Hollander (2003), Trott (2005)



# Cyanoacrylate: Disadvantages

- Not as strong
- Less resistant to moisture
- May delay healing if introduced into wound
- Need to prevent run-off
- Higher cost to hospital (\$5) but lower cost to patient (Man et al, 2009)

# Cyanoacrylate:

## Indications/Contraindications

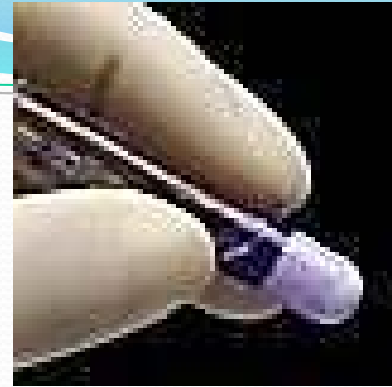
### ● Indications

- New (fresh) laceration
- Easily approximated lacerations
- Laceration with clean edges
- Flap closure
- Lacerations over fragile skin
- Run-off easily avoided
- Attachment of skin grafts

### ● Contraindications

- Heavily contaminated or infected lacerations
- Mucosal surfaces
- Fluid-bathed surfaces
- Hair-bearing areas
- Weight-bearing areas
- High-tension areas
- Areas subjected to friction or tension
- Allergies to cyanoacrylate or formaldehyde

# Skin Glue Procedure



- Wound cleansing as described in Part I
- Bleeding controlled (does not have to be completely dry since polymerization will also occur in the presence of water or blood)
- Wound facing upward, run-off controlled
- Gauze sponge placed near the wound to prevent run-off
- Squeeze out glue
- Approximate wound with fingers or forceps
- Layer the adhesive over the wound, provide for a margin of 5-10 mm
- Maintain wound approximation and apply second coat in 20-30 seconds
- Repeat for 2-3 layers or as per manufacture's recommendations
- Continue to hold wound approximation for 60 seconds

# Glue Tricks and Tips

- May use petroleum based products to divert glue run off.
- Use of cotton tip applicator to “spot weld” wounds or to paint wound in high risk areas (eye lids)
- Opposing hair technique for scalp lacerations
- Use in combination with sutures for wound closure
  - “V” shaped wounds or corners of stellate wounds
- Skin tears





[www.delftoutlook.tudelft.nl](http://www.delftoutlook.tudelft.nl)



[picasaweb.google.com](http://picasaweb.google.com)



[www.todayinsci.com](http://www.todayinsci.com)

# Skin Glue Wound Care Instructions

- Keep wound clean and dry for 24 hours
- After 24 hours, gentle cleansing
- Caution not to disturb closure
- If dehisces, return so delayed primary closure with tape or sutures can be carried out
- Provide S&S of infection hand-out

# Staples



[www.jumpintotomorrow.com](http://www.jumpintotomorrow.com)



[mhe.my](http://mhe.my)



[pregnancy.about.com](http://pregnancy.about.com)

# Staples

- Good wound tensile strength
- Less inflammatory response
- More resistant to infection
- 4-5 X' s faster than sutures
- More discomfort when removing

# Staples: Indications

- Linear, sharp lacerations of
  - Scalp
  - Trunk
  - Extremities
- Temporary Closure of traumatic lacerations requiring surgery
- Avoid on cosmetic areas: increased scarring

# Staples: Technique

- Use forceps to evert wound edges
- Place stapler gently on skin
- Squeeze trigger gently
- Should see a visible space between staple and skin
- Keep in place as with sutures
- Patient aftercare instructions same as sutures

# Staple Tricks and Tips

- Larger more unwieldy lacerations may need assistance to keep wound edges approximated to close wound.
  - May use adhesive strips or tape to hold wound together
- Better to place in clean edges of wound
- Clean hair out of staples and wound after placement
- Can use sterile water based lubricant to mat hair out of way prior to procedure.



# Staples



[flickr.com](https://www.flickr.com/photos/14811110@N00/10111111111/)



[zachsbrainsurgery.wordpress.com](https://zachsbrainsurgery.wordpress.com/)



# Adhesive strips



[atripthroughaclreconstruction.blogspot.com](http://atripthroughaclreconstruction.blogspot.com)

Superior Resistance  
to Infection



[blogs.brocknet.net](http://blogs.brocknet.net)

# Adhesive Strips

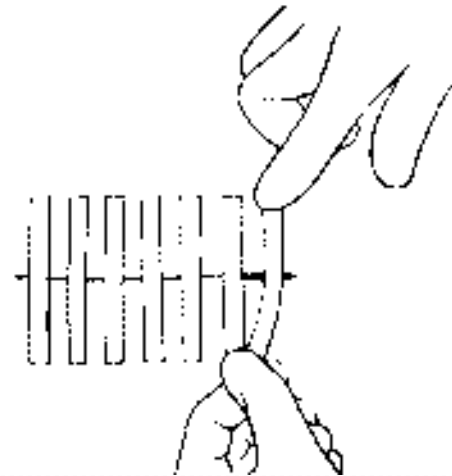
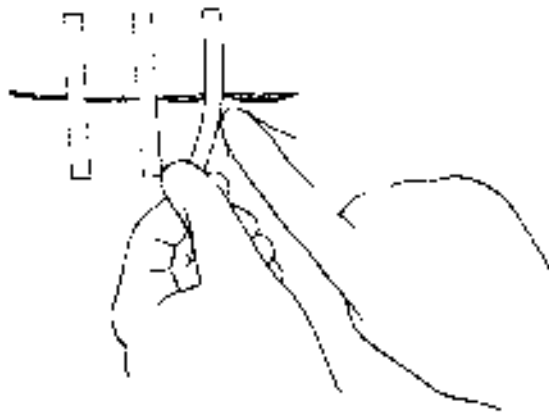
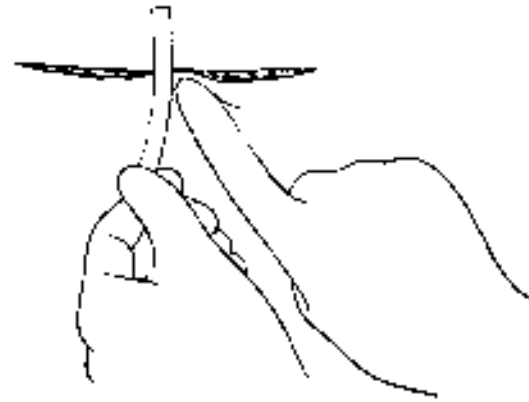
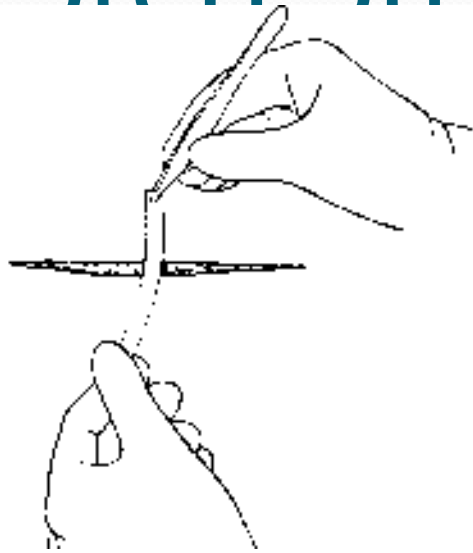
- Indications
  - Superficial, straight lacerations
  - Low tension
  - Flaps
  - Lacerations w/great potential for infection
  - Elderly or thin tissue
  - Support after suture removal



# Adhesive strips: Application

- Clean wound
- Apply Benzoin to surrounding skin
- Cut so that 2-3 cm overlap
- Remove each tape with forceps
- Place  $\frac{1}{2}$  of tape to mid-portion of wound and bring to opposite edge to approximate wound
- Secure and continue with adjacent tapes
- End by placing cross-tapes over ends
- Keep in place as long as sutures
- NEVER Place in circumferential manner (i.e. around digits)
  - Trott (2005)

# Use of Steri-Strins



# Instructions to the Patient

- Wound Care
- Elevate injured limb
- Keep wound clean and dry
- Discourage occlusive dressing which will encourage infection
- Number of sutures
- Signs of infection
- Who to contact with problems
- When the sutures will be removed

# Suture Removal

<u>Suture Removal Guide</u>	<u>Adult</u>	<u>Child</u>
Facial Wounds	5 days	5 days
Scalp wounds	7-10 days	7-10 days
Arm/hand wounds	7-10 days	6-8 days
Lower limb or joint wounds	10-14 days	7-10 days

# Documentation

- Date, time and name of NP performing suturing
- Details of the history: How old is the wound, associated symptoms
- Description of injury
- PMH
  - Patient medical problems: DM, CV, Vascular, Scarring
  - Allergies to anesthetics
  - Tetanus Hx
  - Rx
  - Righty or Lefty???
- Use of drawings useful
- Local anesthesia, amount given, strength
- Strength, size and number of sutures
- Aftercare advice