Review: tissue adhesives are as effective as standard wound closure for cosmetic outcomes of traumatic lacerations


QUESTION: Are tissue adhesives (TAs) as effective as standard wound closure (SWC) for traumatic lacerations in children and adults? Are some TAs better than others?

Data sources
Published and unpublished studies in any language were identified by searching the Cochrane Controlled Trials Register (CD ROM 2001 Issue 4), the Cochrane Wounds Group Specialized Trials Register (November 2001), Medline (1966 to October 1, 2001), and EMBASE/Excerpta Medica (1988 to September 1, 2001); reviewing the bibliographies of retrieved articles; and by contacting study authors and manufacturers of TAs.

Study selection
Randomised controlled trials were included if they compared TAs with SWC (ie, sutures, staples, or adhesive strips) or compared 2 different TAs for acute, linear lacerations that were < 12 hours old resulting from blunt or sharp trauma in patients seen in an emergency department (ED) or primary care setting. Exclusion criteria were stellate lacerations, puncture wounds, or mammalian bites; wounds that were infected, heavily contaminated, or devitalised; wounds crossing joints or mucocutaneous junctions, or in hair bearing areas; or wounds in patients with keloid formation or chronic illness that could impair healing.

Data extraction
One reviewer extracted data on study design, randomisation method, withdrawals/dropouts, funding source, participant age, wound characteristics, type of adhesive, wound preparation and dressing, comparison intervention, outcome measures, and results. Study quality was assessed using the 5 point Jadad scale. Main outcome was cosmetic appearance, primarily assessed using the Cosmetic Visual Analogue Scale (CVAS) or the Wound Evaluation Score (WES). Other outcomes included pain during the procedure, procedure time, and complications (infection, dehiscence, erythema, and discharge).

Main results
9 trials met the selection criteria. 8 trials compared a TA (butylcyanoacrylate or octylcyanoacrylate) with SWC, and 1 trial compared 2 different TAs. TAs did not differ from SWC for cosmetic appearance at 1–3 months or 9–12 months assessed using the CVAS (weighted mean difference [WMD] 0.6, 95% CI –5.0 to 6.3, 6 trials; and 4.3, CI –5.8 to 14, 2 trials, respectively) or WES (odds ratio 0.97, CI 0.58 to 1.62, 4 trials; and 1.36, CI 0.62 to 2.95, 2 trials, respectively). Patients who were treated with TAs had lower pain scores reported by patients, parents, physicians, or nurses (range of WMDs in scores –15.7 to –10.8). Procedure time was 5.7 minutes shorter with TAs (CI 3.1 to 8.2, 5 trials). TAs were associated with higher rates of dehiscence than SWC, but lower rates of erythema (table). The groups did not differ for infections, delayed closure, or discharge. One study compared butylcyanoacrylate with octylcyanoacrylate and found no differences in cosmetic appearance, pain, procedure time, dehiscence, or infection.

Conclusion
In adults and children with traumatic lacerations, tissue adhesives are as effective as standard wound closure for cosmetic appearance and reduce procedural pain, but increase dehiscence rates.

Tissue adhesives (TAs) v standard wound closure (SWC) for traumatic lacerations in adults and children

<table>
<thead>
<tr>
<th>Complications</th>
<th>Number of trials (n)</th>
<th>TAs</th>
<th>SWC</th>
<th>RRI (95% CI)</th>
<th>NNH (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dehiscence</td>
<td>7 trials (n=650)</td>
<td>6.6%</td>
<td>2.8%</td>
<td>125% (8 to 365)</td>
<td>27 (15 to 200)</td>
</tr>
<tr>
<td>Erythema</td>
<td>2 trials (n=186)</td>
<td>14%</td>
<td>25%</td>
<td>44% (2 to 69)</td>
<td>9 (5 to 200)</td>
</tr>
</tbody>
</table>

*Abbreviations defined in glossary; RRI, RRR, NNH, NNT, and CI calculated from data in article.