Review question
What is the effect of tissue adhesives on the healing of surgical incisions compared with conventional skin closure techniques?

Nursing implications
Tissue adhesives (glues) have been used for wound closure in various forms since the first cyanoacrylate adhesives were synthesised in 1949.

They may result in equivalent tensile strength, better cosmetic appearance of the scar and lower infection rates than sutures, staples and adhesive tapes.

The adhesives are without many of the risks and disadvantages of alternative methods, such as the need for suture removal and needlestick injury.

Tissue adhesives are primarily used in A&E departments. However, they have also been used in operating theatres for the closure of surgical skin incisions, although there are few clinical trials to support this. A Cochrane review was therefore warranted to investigate the use of tissue adhesives for the closure of surgical skin incisions.

Study characteristics
This review identified 14 randomised controlled trials with 1,152 participants. Participants could be of any age and from any setting and required closure of a surgical skin incision of any length.

All studies excluded patients who had poor general health with the potential to impair wound healing, and surgical procedures on high-tension sites such as the elbow and knee.

The intervention of interest was any tissue adhesive and this was compared with sutures, adhesive tapes, staples and other techniques.

Eleven studies compared tissue adhesive with suture and two compared tissue adhesive with adhesive tape – one of these also compared tissue adhesive with suture. One trial compared adhesives with staples and one compared tissue adhesives with any other commercially available technique. This last study also compared one high-viscosity tissue adhesive with one of low viscosity.

The primary outcome was wound dehiscence, while the secondary outcomes were wound infection, cosmetic appearance, patient or parent satisfaction, surgeon satisfaction, cost and time to closure.

Overall, reviewers judged the quality of studies as “moderate”. Half of the included trials were inadequate or unclear in the method of randomisation and allocation concealment.

Summary of key evidence
Eight trials found no evidence of a difference in rates of wound infection after surgical incision closure between tissue adhesives, sutures, tapes, staples or different tissue adhesives.

For eight comparisons, excepting sutures, there was no difference in dehiscence rates between adhesives and comparators. Five of the 10 trials comparing tissue adhesives with sutures reported a significant difference in favour of sutures regarding dehiscence.

There was no statistically significant difference detected between adhesives and tapes for the patients’ assessments of cosmetic appearance, and patient or parent or surgeon satisfaction with treatment. However, in the same two trials, there was a significantly higher score for surgeons’ assessment of cosmetic appearance that favoured closure by adhesive tape over tissue adhesive.

Four analyses demonstrated comparators to be less time consuming than tissue adhesive, but one large good-quality study comparing high viscosity adhesive with any other commercially available devices produced a significant difference in favour of this adhesive regarding time taken to administer.

Best practice recommendations
Results from this review suggest sutures are significantly better than tissue adhesives for minimising dehiscence and are faster to use.

Adhesives may take more time to apply and, if higher tension is needed upon an incision, sutures may minimise dehiscence. NT

The full text of this review can be found at tinyurl.com/coch-tissue-adhesives

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Reference

The Cochrane Nursing Care Field writes exclusively for Nursing Times readers

Scalp laceration closed with tissue adhesive - such adhesives are mainly used in A&E