

## Use of Indermil tissue adhesive for closure of superficial skin lacerations in children

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**Background.** The aim of this study was to assess the use of tissue adhesive for paediatric wound closure in a minor injuries environment.

**Methods.** A n-butyl 2-cyanoacrylate adhesive formulation was used for the closure of traumatic skin lacerations in 56 children.

**Results.** Tissue adhesive succeeded in approximating skin margins in all cases. No episodes of wound dehiscence were experienced. There were no incidences of wound infection.

**Conclusions.** This study indicates that this form of tissue adhesive can safely and effectively be utilised for traumatic superficial skin closure in children.

**Key words:** Cyanoacrylates - Skin, injuries - Tissue adhesives, therapeutic use - Child, pre-school - Child.

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and Emergency departments Steri-strips (3M, HealthCare, Borken, Germany) are the preferred method of skin closure for facial lacerations in children.

We present the experience at the Queen Victoria Hospital Minor Injuries Unit with the use of a n-butyl 2-cyanoacrylate adhesive formulation for the repair of paediatric skin lacerations in various parts of the body.

### Materials and methods

N-butyl 2 cyanoacrylate (Indermil, Loctite, Dublin, Ireland) is presented as a topical solution of low viscosity in a 5 g polyethylene bottle. This polyethylene bottle is packaged within a sealed foil pouch before being terminally sterilised by gamma radiation.

From January 1999 to December 1999, 56 patients were treated for superficial skin lacerations with the formulation of tissue adhesive at the Minor Injuries Unit of the Queen Victoria Hospital. The children ranged from 1 to 13 years (mean 5.7 years). Twelve lacerations were located on the scalp and 31 on

The use of tissue adhesive has been described for skin laceration closure,<sup>1</sup> for skin closure of abdominal wounds,<sup>2</sup> in inguinal hernia repair,<sup>3</sup> in otorhinolaryngology and head and neck surgery<sup>4</sup> and also for fixation of mesh skin grafts.<sup>5</sup> All of these papers however refer to the adult population.

It is accepted practice to use tissue adhesives for paediatric scalp lacerations, but their use for closure of wounds in other areas in children is still doubtful.<sup>6</sup> In most Accident

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TABLE I.—*Distributions of lesions.*

| Sites of laceration | No. |
|---------------------|-----|
| Scalp               | 12  |
| Forehead            | 13  |
| Eyebrow             | 5   |
| Eyelid              | 2   |
| External ear        | 3   |
| Cheek               | 7   |
| Chin                | 1   |
| Chest               | 1   |
| Dorsum of hand      | 1   |
| Fingers             | 8   |
| Lower limbs         | 3   |

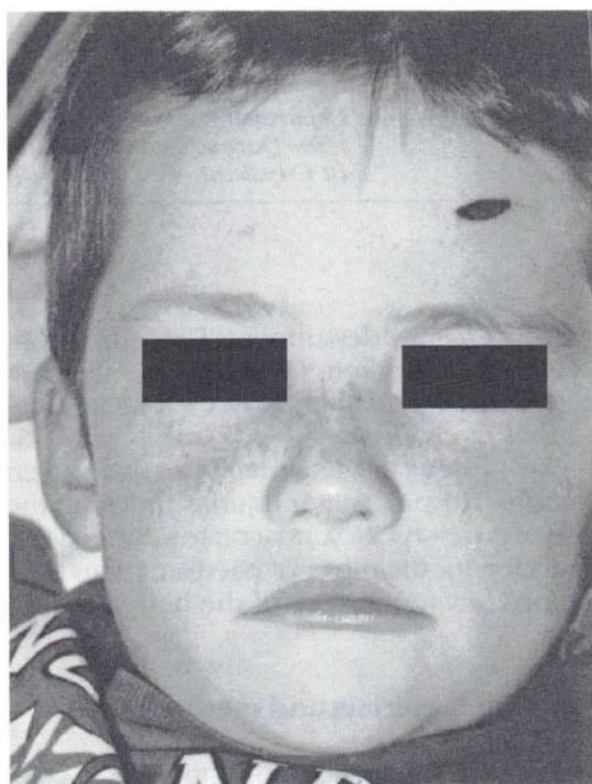


Fig. 1.—Forehead skin laceration.

the face, of which two were on the eyebrow and one on the eyelid. The wound lacerations are summarised in Table I. Patients were treated either by a Plastic Surgeon or a Senior Nurse Practitioner. Children were considered suitable for tissue adhesive treatment if: they were co-operative; the skin edges were clean; alignment of the wound edges was satisfactory.

Contra-indications included: fractious chil-



Fig. 2.—Same patient after tissue adhesive repair.

dren; dirty wounds requiring debridement; wounds with soft tissue loss. All patients were given printed information regarding wound care and advised to return to the unit if they had any problems.

All staff involved stated the adhesive was simple and easy to use. No anaesthetic agents were used topically or locally and no sedation was utilised in any of these cases.

## Results

Forty-one lacerations were closed just with adhesive, the other 15 with adhesive and Steristrips. In no case were sutures used to improve skin edge approximation. In two cases a course of prophylactic antibiotic was prescribed, as the mechanism of injury indicated the potential for infection.

No episodes of wound dehiscence were experienced. There were no incidences of wound infection (Figs. 1-3).

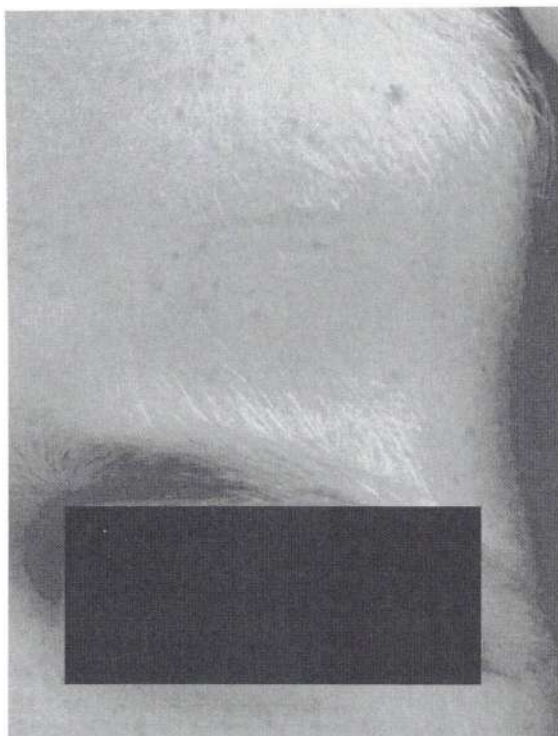


Fig. 3.—One year follow-up.

### Discussion and conclusions

In our experience tissue adhesive in children has shown to be a reliable, atraumatic and fast method of skin edge apposition in small to moderate size lacerations. The risk of needle-stick injury to staff is obviated.

There is no need for the child to return for the removal of sutures which may cause further anxiety to the child, and further work for the nursing staff.

A further point is that conventional suture of the skin can cause the "zipper" effect, due to the needle puncture pattern on either side of the wound, leaving poor aesthetic results.

This effect is absent when adhesive closure is used, which is obviously important in facial lacerations.

The results of this study therefore indicate that this n-butyl cyanoacrylate adhesive formulation (Indermil\*; Loctite, Ireland) can

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be used as a reliable and safe method of traumatic superficial wound closure in selected paediatric lacerations.

This method should be subjected to the rigors of a randomised controlled trial in order to compare its performance against the more traditional methods of wound closure, sutures and Steri-strips, and against other tissue adhesives available for medical use.

### Riassunto

*Uso dell'adesivo tissutale Indermil per la chiusura di ferite cutanee in età pediatrica*

**Obiettivo.** Lo scopo di questo studio è stato di valutare l'uso di un adesivo tissutale per la chiusura di ferite cutanee in età pediatrica in ambiente di primo soccorso.

**Metodi.** In 56 bambini è stato usato un adesivo a base di n-butyl 2-cianoacrilato per la chiusura di lacerazioni cutanee traumatiche.

**Risultati.** L'adesivo tissutale è risultato efficace nell'approssimazione dei margini cutanei in tutti i casi trattati. Non è stato riscontrato nessun episodio di deiscenza della ferita. Non c'è stata alcuna infezione della ferita.

**Conclusioni.** Lo studio indica che questa formulazione di adesivo tissutale può essere utilizzata con sicurezza ed efficacia per la chiusura di lesioni traumatiche superficiali nei bambini.

**Parole chiave:** Adesivo tissutale - Cianoacrilato - Ferite cutanee, terapia - Età pediatrica.

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