EMERGENCY CASEBOOK

Case of the month: Honey I glued the kids: tissue adhesives are not the same as ''superglue''

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A case of a father who treated his child's facial laceration with the home supply of ''superglue'' having been previously misinformed that superglue is used to treat lacerations is presented. The differences between tissue adhesive and superglue are described and suggest that emergency staff should be careful to avoid using the term ''superglue'' when using tissue adhesives.

An 8-year-old boy was referred to the maxillofacial team. He had presented to the emergency department the day before with a laceration to the right brow, which had been glued by his father that day with his own ''superglue''. The boy's father had himself attended the emergency department earlier that year with a forearm laceration, which had been glued with what he was told was superglue. As this had been effective, he had decided to use his own superglue to fix his son's laceration to save them from the bother of going to the emergency department.

On examination, the wound edges were not satisfactorily opposed, and there appeared to be glue within the wound (fig 1). It was, therefore, decided that the wound would have to be explored under a general anaesthetic.

Figure 1 The right brow showing the glued wound.

It was found that the wound extended to the periosteum, and the glue was present throughout the wound. There was evidence of active inflammation in the wound.

The wound was cleaned, irrigated and sutured in layers. The child made an uneventful recovery. The father was informed of the differences between superglue and tissue adhesives.

DISCUSSION

Cyanoacrylate adhesives were invented by Dr Harry Coover of Kodak Laboratories when he was trying to make clear plastic suitable for gunsights.[1] These were methyl-2-cyanoacrylate and were found to be tremendously strong. These and similar short chain cyanoacrylates experienced commercial success and became generally known as ''superglues''. In the 1950s and 60s, methyl-2-cyanoacrylate adhesive was used to bond skin and control bleeding in open wounds. Disposable cyanoacrylate sprays were used to control haemorrhage in the Vietnam War. However, it became apparent that methyl-2-cyanoacrylate provokes acute and chronic tissue reaction. They also cause histotoxicity because of the exothermic nature of the polymerisation reaction of these short chain cyanoacrylates. Furthermore, they generate local high concentrations of breakdown products, which include formaldehyde and alkylcyanoacetate.[2] As a result, compounds were developed that were more compatible with human tissue. These used monomers with longer alkyl chains, which owing to their slower degradation, cause less histotoxicity. These are used for wound closure and embolisation. They can also be used as dressings for burns, minor cuts, abrasions and mouth ulcers. They have been shown to provide a waterproof antimicrobial barrier and improve epithelialisation and wound healing.[3]

They are, therefore, quite different from superglues and much more expensive to produce.

Proper use of cyanoacrylate tissue adhesives for wound closure:

- 1 Wound should be in horizontal plane to prevent run-off.
- 2 Wound should be clean and dry, haemostasis essential.
- 3 Wound edges opposed with only minimal tension.
- 4 Deep dermal sutures may be necessary to take tension off wound edges.
- 5 Adhesive applied to opposed edges to act as bridge across wound.
- 6 Do not get adhesive into wound.
- 7 Do not tell patient you are using superglue.

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IMAGES IN EMERGENCY MEDICINE

An unusual presentation of foreign-body ingestion at the emergency department

Figure 1 Direct *x* ray showing several foreign bodies in the stomach and subdiaphragmatic free gas.

A 30-year-old man presented to the emergency department with exhaustion, weight loss and abdominal pain. He had been having pain in the stomach, nausea and vomiting for the previous 2 days. The patient had received psychiatric treatment and treatment for alcoholism for the previous 3–4 years, and started to experience weight loss and exhaustion 3–4 months previously. No conclusions could be drawn from physical examination for abdominal tenderness and defence. Direct *x* ray showed an appearance conforming to a large number of foreign bodies in the stomach and subdiaphragmatic free gas (fig 1). The patient was sent for emergency surgery, with a diagnosis of gastric perforation and foreign-body ingestion.

Most of the ingested foreign bodies that reach the stomach pass through the alimentary tract without complication. Perforation occurs in <1% of all cases of foreign-body ingestion, usually in the oesophagus. Other sites where perforation can occur are the pylorus, the duodenum, the duodenojejunal flexure, the ileocaecal region and any site of congenital anomalies.[1] Long, thin or sharp objects, as seen in our case as well as in those causing gastric perforation, are less likely to negotiate the pylorus or duodenum.[2] Foreign-body ingestion is a possibility to be borne in mind at presentations to the emergency department, especially those with symptoms described in psychiatric cases.

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Emergency casebook

Please visit the *Emergency Medicine Journal* website (http://emj.bmj.com/) for links to the full text of these emergency casebooks.

Bradycardia in minor trauma: don't be slow on the uptake! ► We report the case of a 13-year-old boy presenting with profound bradycardia following minor trauma. Our patient had gastroschisis at birth and has moderate learning difficulties but is otherwise fit and well. Whilst playing at home he fell sustaining a minor cervical hyperextension injury. He immediately complained of tetraplegia and hyposensibility. The ambulance crew noted profound bradycardia with normotension and he was transported to hospital with full spinal immobilisation precautions. Over the subsequent 2 h he made a full neurological recovery. Bradycardia persisted with a beat-to-beat variation of 30–60bpm. ECG showed sinus bradycardia with atrial ectopics and he remained haemodynamically normal. Neuroimaging studies revealed hypoplasia of the odontoid peg with a relative narrowing of the spinal canal at this level. There was no evidence of spinal cord contusion or compression. His bradycardia resolved over 36 h without further intervention. On discharge the