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CLINICAL RECORD

Deliberate self-harming application of superglue in the nose: case report and literature review

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Abstract

Background: Accidental and non-accidental applications of superglue in the ear, nose and oral cavity have been reported previously. Surgical removal of glue from the nose is the current practice.

Case report: This paper reports the case of an 18-year-old female, who presented with complete bilateral nasal occlusion due to deliberate self-application of superglue in both nostrils to avoid nasogastric tube insertion.

Results: Removal of glue was accomplished with a combination of local anaesthetic cream and acetone-soaked cotton buds, which caused only minimal discomfort to the patient. All traces of glue disappeared within 10 days, without causing damage to the nasal mucosa, nasal blockage or pain.

Conclusion: To the best of our knowledge, this is the first case report of deliberate self-application of superglue in the nose. A successful non-surgical management option for the removal of glue from the nose is introduced.

Key words: Glues; Nose; Acetone; Anesthetics, Local; Deliberate Self-Harm

Introduction

Applications of superglue in the ear,[1–9] nose[10,11] and oral cavity[12,13] have been reported previously. To the best of our knowledge, only two cases of superglue application in the nose have been described: one was accidental[10] and one was non-accidental.[11] We report the case of deliberate self-application of superglue to both nostrils and present our method of management.

Case report

The 18-year-old female patient had been undergoing treatment for anorexia nervosa in an eating disorders treatment centre for the previous 3 months. Her weight was 45 kg, with a height of 170 cm. As she was refusing an oral diet, she had been fed via a nasogastric tube for the previous month. The patient was being weaned from the feeding tube, but as she was still refusing oral intake, the insertion of another nasogastric tube was planned. On the morning before the re-insertion of the nasogastric tube, the patient found a tube of superglue in the treatment centre where she was an in-patient. She glued both her nostrils together in an attempt to avoid further attempts at nasogastric tube insertion.

She presented as an ENT emergency with moderate nasal pain, discomfort and nasal blockage. She had no symptoms of respiratory compromise or signs that she had inhaled or ingested the superglue. A thorough nasal examination confirmed complete nasal occlusion, with the nasal alae meeting in the midline, obliterating both nasal vestibules. The patient commented that she had only put the glue into the opening of her nose and not further posteriorly. Because of the complete anterior nasal occlusion, the posterior extent could not be evaluated.

It was decided that an attempt should be made to remove the glue conservatively, thereby avoiding surgical debridement under general anaesthetic. Initially, gauzes soaked in warm water were used to gently rub against the occluded nares. This caused acute anterior nasal bleeding and further pain. The bleeding stopped after direct pressure of the nasal alae for 15 minutes.

Following this failed attempt at removing the glue, the manufacturers of the superglue were contacted. After a detailed discussion with one of their laboratory chemists, we were advised to use a cotton bud soaked with acetone and rub it gently in the opening of the nostrils until they separated, and then perform nasal douching with normal saline to remove the acetone traces.

The application of acetone caused significant discomfort to the patient and increased pain, but there was no further bleeding. Before further attempting to rub the nose, local anaesthetic cream (Emla™) was applied to the nasal alae for 30 minutes, which moisturised the skin and reduced the pain. Further use of acetone-soaked cotton buds resulted in both nostrils opening after 30–40 minutes; nasal douching was then performed. Some remaining glue was still visible on the nasal mucosa and in both nasal alae.

The patient's carer was advised to continue using the acetone-soaked cotton buds on the patient's nose, and following that to perform regular nasal douching 2–3 times per day for 2 days. The patient was followed up in the ENT emergency clinic after 2 days. At that stage, the superglue had been removed. The patient was advised to continue with the nasal douching and to apply Naseptin® nasal cream for one week.

At 10 days following the initial episode, there were no signs of crusting or damage to the nasal mucosa. All traces

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of glue had disappeared, and the patient did not complain of further pain, blockage or nasal discomfort.

Discussion

Superglue (cyanoacrylate glue) is one of the newest and strongest adhesives. It is made from synthetic monomers that attach to form polymers, resulting in strong molecular bonds.[14,15] It is used widely for domestic purposes. However, it also has surgical applications,[16–18] especially in otology.[19–21]

Two case reports of self-inflicted application of glue in the nose have been described in the literature. Specifically, one paper reported the non-accidental application of superglue in the nose of a nine-year-old by another minor[11] and another reported the accidental application of superglue in the nose by the patient, who mistook the bottle for steroid nasal drops.[10] In both cases, the glue was removed by surgical debridement under general anaesthesia in light of patient discomfort.[10,11]

Acetone has been used successfully to remove superglue from the ear in three cases,[1,6,7] while Persaud used hydrogen peroxide successfully to remove glue from the ear.[2] The glue was surgically removed in the remaining cases. Other solvents, such as xylene, nitro methane, dichloromethane and toluene, have been suggested as being effective in removing superglue. However, they are known to cause significant irritation to skin and mucosa and are therefore avoided.[22]

Acetone is a colourless chemical that can be found naturally or can be produced. Low levels of acetone are normally found in the body and metabolised in the liver. Exposure to acetone in small amounts is harmless.[23] This is explained by the ability of the body to produce and metabolise acetone.[24,25] In the document on acetone issued by the European Commission, acetone is reported as being only a mild sensory irritant to nasal mucosa, and there is no mention of any damage to skin or nasal mucosa when used in an acute setting.[26] Acetone is a weak sensory nasal mucosa irritant as a result of sensory adaptation.[27] The nasal cavity retains only 18 per cent of inspired acetone; in contrast, the lungs, trachea and mouth retain 55 per cent. This indicates that nasal mucosa absorbs less acetone than the rest of the respiratory system.[28]

- **Accidental and non-accidental applications of glue in the ear, nose and oral cavity have been described previously**
- **Superglue in the nose is currently removed surgically**
- **This paper describes the first case of deliberate self-harming application of superglue in the nasal cavity**
- **Successful non-surgical removal of superglue was performed using local anaesthetic cream and acetone**

Nevertheless, acetone solvent must be used with caution. Thorough sterile water irrigation is recommended after its application, as acetone ingestion or inhalation in high concentrations can cause headaches, nausea, sore throat and drowsiness, which can result in loss of consciousness if the exposure continues.[23] Ingestion can lead to erosion of the soft palate.[29] If applied directly to the eyes, it can result in ocular irritation, which resolves after the irritant is withdrawn.[23,30,31]

We believe that the application of Emla cream for 30 minutes helped in moisturising the nose, and significantly eased and expedited removal of the glue.

The patient was very keen to avoid a general anaesthetic, hence the focus on removing the glue under local anaesthetic. In addition, the patient was Caucasian and had relatively thin skin, and the team were concerned about the effect of debridement on the nasal skin.

Conclusion

Non-surgical removal of superglue with a combination of local anaesthetic such as Emla cream and a low dose of dissolvent such as acetone is a reasonable alternative to surgical debridement. It is simple, cost-effective and safe if performed by trained medical personnel, and should be considered as a first-line management option.

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