A case of paediatric nasal avulsion replanted using microsurgery

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Case report

A 19-month-old boy was bitten by a bull terrier, sustaining complete avulsion of his nose (Figs. 1 and 2). He was taken immediately to the local accident and emergency unit with his avulsed nose retrieved on ice. He was initially managed by oro-tracheal intubation to protect his airway from bleeding, before transfer to the Regional Plastic Surgery Centre, arriving 3 h after the injury.

The avulsed nose and facial wounds were explored in theatre. The “amputate”, comprising the entire nasal skeleton and soft tissues, measured about 3 cm × 3.5 cm and the only vessel identifiable within it was the right lateral nasal vein (0.6 mm external diameter).

The right facial artery (0.7 mm external diameter) was mobilised and reflected caudally. A microvascular artery-to-vein anastomosis was performed with 10/0 Ethilon\textsuperscript{TM} (Ethicon Ltd., Edinburgh, UK) and the replanted segment immediately turned pink from the tip of the nose, radiating to the periphery. The nasal cartilage and mucosa were repaired and skin lacerations were closed.

Because venous drainage could not be restored, medicinal leeches (\textit{Hirudo medicinalis}) were applied intra-operatively, with marked reduction in venous congestion noted. Total nasal ischaemic time was about 4 h.

The child remained sedated and ventilated post-operatively to facilitate intermittent leeching. He was kept warm, nourished and well hydrated. Increased venous congestion was noted in the replanted nose on day three which resolved with increased frequency of leeching. Due to blood loss from the leeches, blood transfusion was required until leeching was stopped on day six. Intravenous antibiotics were continued until extubation on day eight. Throughout the hospital admission, capillary refill time of the replanted nose was less than 2 s. The patient was discharged home 15 days after the injury.

One year after replantation, all scars were maturing satisfactorily and nasal function and circulation appeared normal (Fig. 3).

Discussion

Different methods of managing complete nasal avulsion injuries have been described including primary repair by replacing the amputated tissue as a composite graft with\textsuperscript{10} or without\textsuperscript{1,2} hyperbaric oxygen...
therapy or replantation with microvascular anastomosis.

Microvascular replantation, if successful is the optimal method of managing avulsed facial structures, restoring like-with-like. James first carried it out for a dog-bite avulsion of the nose and upper lip in 1976.\textsuperscript{5} To date, eight cases of traumatic isolated nasal avulsions treated with this technique have been reported.\textsuperscript{3,4,6–9,11–13}

In four of these cases,\textsuperscript{7–9,11} venous outflow could not be reconstructed for the replanted segment, as in our case. All previous cases described the use of artery-to-artery anastomosis to provide the inflow of arterial blood to the replant. Our case is the first to report successfully using reverse-flow in a nasal vein as the conduit for arterial blood into the replanted nose.

Specialist plastic surgery centres have particular expertise to treat complete avulsion injuries. Such devastating injuries should be discussed promptly with the regional plastic surgical service for consideration of microsurgical replantation, particularly in children.

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References