

Intranasal Use of Quicklot® in a Patient with Uncontrollable Epistaxis

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Summary

A 60-year-old man who presented with nasopharyngitis developed uncontrollable epistaxis following a punch biopsy of the nasopharynx. QuickClot® was successfully used to arrest the haemorrhage under general anaesthesia after the usual methods employed to secure haemostasis failed. The haemostatic plug was successfully removed a week later after control of the infection. This case represents the first reported intranasal use of QuickClot®. We describe our experience and a literature review on this haemostatic agent.

Key Words: QuickClot®, Epistaxis, Haemostasis

Introduction

Uncontrolled haemorrhage is a major cause of morbidity and mortality encountered by clinicians in most major specialities. The aetiology of haemorrhage can be extrinsic or intrinsic; extrinsic factors causing direct mechanical injury or intrinsic factors resulting in pathophysiological abnormalities of coagulation or vascular permeability.

In traumatic bleeds, quick and effective hemostasis can be life saving. Direct compression, ligation or coagulation is often all that is necessary to control localized bleeding. However, in more extensive and diffuse bleeding these measures may be insufficient. Moreover if there is underlying sepsis mechanical means alone may be inadequate.

QuickClot®, a novel topical hemostatic agent was successfully used as a lifesaving measure to stop uncontrolled epistaxis from an inflamed nasopharynx not amenable to conventional methods of hemostasis.

Case Report

A 60-year-old Chinese man was seen at the ENT clinic

of Hospital Ipoh for recurrent blood stained nasal discharge. Nasal endoscopy showed an inflamed and unhealthy looking nasopharynx. A biopsy was taken to rule out nasopharyngeal carcinoma. The biopsy site started bleeding. Intranasal packing with diluted adrenaline 1 in 100,000 and cocaine 5% was done and the bleeding appeared to stop. The patient returned an hour later complaining of swallowing blood. He was immediately admitted and anterior and posterior nasal packing was done. However, blood continued to trickle posteriorly. Coagulation profiles were within the normal range. It was then decided to put him under general anaesthesia to control the bleeding with endoscopic assistance.

Diffuse bleeding around the biopsy site was noted on endoscopy. Both middle meatuses were congested and upon decongestion pus was noted. Attempts to control the bleeding with diathermy and direct compression failed. The patient was transfused a total of two pints of whole blood.

Finally a decision to use QuickClot® was made as an emergency measure. A modified funnel from a 5cc syringe was used to direct the granules towards the nasopharynx. A blackish hemostatic plug formed and

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the bleeding stopped. The excess granules were washed away. Subsequently bilateral antral washouts were done to clear the maxillary sinuses of pus. Nasal packs were placed which were removed two days later.

The patient was given intravenous antibiotics to control infection. No further bleeding was noted. A week later he was once again examined under general anaesthesia. There was no evidence of infection. The Quick Clot® based hemostatic plug was seen adhered to the nasopharynx. The hemostatic plug was removed. There was minimal oozing of blood that was successfully controlled with diathermy.

The histopathology report returned as inflammation of the nasopharynx. He suffered no further bouts of epistaxis and no other adverse reactions were noted.

Discussion

A variety of topical hemostatic agents have been developed for the purpose of topical hemostasis since the introduction of microfibrillar collagen 25 years ago. Biological agents, which have been in use, include collagen, gelatin, fibrin glue and thrombin spray. These agents have the advantage of low toxicity and absorbability, but the risk of invoking an allergic reaction¹.

QuickClot® is a granular hemostatic agent composed of zeolite. It is a biologically inert and sterile agent that has been approved by the U.S. FDA for external use. It has been shown to be effective in controlling bleeding in swine injury models. The use of QuickClot® 5 minutes after transverse transection of the femoral vessels resulted in 100% survival of the animals².

QuickClot® acts by absorbing water and gas molecules to the surface of the compound, facilitating hemostasis.

This process is exothermic or heat generating. Animal studies conducted by the US Air Force demonstrate the heat generated can exceed surface temperatures of 100°C and internal tissue temperatures exceeding 50°C, 3 mm deep to the bleeding surface¹. Necrosis of fat and muscle, full and partial thickness cutaneous burns as well as micro abscesses were noted. The amount of heat generated appeared to be related to the quantity of blood or other liquid present; larger volumes at a higher risk of thermal injury. In vitro studies have shown that QuickClot® also activates platelets and release platelet-derived growth factor.

Despite issues of exothermic heat production, QuickClot® was approved for external use as it decreases bleeding effectively enough to warrant its usage in life threatening extremity injuries. It is currently used by the US army in battlefield situations.

Successful intracorporeal use has been reported in a patient with a penetrating thoracoabdominal injury and underlying coagulopathy³. Bleeding ceased from all wounds after application of QuickClot® after other measures failed. Two days later when the packs were removed no evidence of thermal injury was found.

Although thermal injury has been documented in animal studies, intracorporeal and intracavitary use in the above and this case report successfully shows arrest of haemorrhage with no obvious adverse effects. The use of concurrent intravenous antibiotics would reduce risks of underlying sepsis and micro abscess formation. Judicious use of QuickClot® and copious saline irrigation would further help to reduce thermal injury. However, at this point further evaluation is still needed on the internal use of QuickClot®. It should only be considered when other measures have failed carefully weighing the risks of thermal injury to the tissue involved and surrounding structures.

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