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Whitehead's varnish nasal pack

M LIM, S LEW-GOR, G SANDHU, D HOWARD, V J LUND

Abstract

Whitehead's varnish is a little known but excellent nasal packing agent. We review available literature on the historical aspects and clinical use of Whitehead's varnish. Our personal experience with Whitehead's varnish is described, and we strongly recommend its use.

Key words: Cavity Varnishes; Nasal Cavity; Iodoform

Introduction

The ideal material for emergency nasal or paranasal sinus cavity packing for epistaxis, or in the post-surgical context, should fulfil several criteria. It should aid healing, be analgesic, and have haemostatic and antiseptic properties. It should also be cheap, with few undesirable side effects. Various packing material have been used, including Rapid Rhino[®] Riemann, Telfa[®] and Merogel[®] (hyaluronic acid pack). When bleeding is more likely (e.g. excision of a sinonasal tumour), other packing agents such as Meroce[®] and bismuth subnitrate–iodoform paste have been employed.

We describe the clinical use and explore the historical background of Whitehead's varnish pack – forgotten in many parts of the country but, in our experience, a packing agent of tremendous value.

The life of Walter Whitehead

Walter Whitehead was born at Haslam Hey, Bury, on 12 October 1840. He came from an illustrious family of inventors, including Robert Kay (his maternal great great grandfather and inventor of the drop-box used in weaving), John Kay (his maternal great great great grandfather and inventor of the fly-shuttle) and Robert Whitehead (his uncle and inventor of the torpedo).

Whitehead attended Making Place School at Ripponden, Halifax, where he did well. At the age of 16 years, he entered his father's bleaching business. However, he often found more pleasure in the company of medical students at the Manchester Royal Infirmary, and soon enrolled into the Chatham Street School of Medicine, Manchester. He qualified in 1864, and in 1866 became a Fellow of the Royal College of Surgeons of Edinburgh. In 1873, he was appointed honorary assistant surgeon to the Manchester Royal Infirmary, and became honorary surgeon there in 1879. He served in the same hospital until 1900, when he retired at the age of 60. He died 13 years later (19 August 1913).

In 1894, Walter Whitehead was appointed professor of clinical surgery in Owen's College, Victoria University, Manchester. Although he certainly commanded the respect of his pupils, it is said that he did very little

teaching. However, when he did conduct bedside teaching, his ward classes were always well attended. In 1902, he was elected president of the British Medical Association, which in the same year held its annual meeting in Manchester. The success of this meeting was largely attributed to Whitehead's organisational skills and social spirit.

During his career, Whitehead published nearly 50 articles. In 1870, he established, together with a friend, the publication *Manchester Medical and Surgical Reports*. One of his most important early papers (on colitis) was published in this journal in 1870.

Whitehead was a pioneer of several surgical procedures. The three most important of these include a modification of a method for tracheostomy, removal of haemorrhoids and excision of the tongue. In modifying the method for tracheostomy, he described the use of a raspator to get down to the trachea following incision through skin and fascia. He felt that this method was easier, caused less haemorrhage and required fewer instruments.¹ With regards to haemorrhoid excision, he wrote the original paper in 1882 describing in great detail his surgical methodology.² In 1887, he published a further paper reporting a series of 300 cases, in which he proudly professed that 'to the best of my knowledge, every patient has been completely and permanently cured'.³

In 1891, Whitehead published a paper, in both the *British Medical Journal* and the *Lancet*,^{4,5} reporting 100 cases of excision of the entire tongue. It was in this paper that he described what we now know as Whitehead's ointment.

Whitehead's varnish

History

In his original 1891 article on excision of the tongue, Whitehead carefully described the treatment of the floor of the mouth after the tongue had been removed.^{4,5} First, he used a mercurial solution of biniodide to swab the raw surface. After this had dried, he reported 'finally painting the surface with the iodoform styptic varnish which I introduced in 1881'. He goes on to describe the preparation of this iodoform varnish, which consists of Friar's balsam without its original spirit, a saturated ethereal solution of

iodoform and, mixing with the ether, one volume in 10 of turpentine. Whitehead wrote that this preparation had antiseptic and anaesthetic properties, the anaesthetic properties such that 'it enables the patient to take food in the ordinary manner almost immediately after the operation'. The addition of turpentine also had a 'very marked influence in promptly checking the capillary oozing'.

Chemical properties

Whitehead's varnish is also known as Whitehead's ointment, iodoform varnish and compound iodoform paint (Figure 1). The active ingredient in Whitehead's varnish is iodoform, or tri-iodomethane. This consists of a central carbon atom with one hydrogen and three iodine atoms (CHI_3). Iodoform exists as shining yellow crystals or powder at room temperature and is practically insoluble in water. Thus, it is prepared in topical form as ether, in which it is soluble one in eight.⁶ Other excipients include benzoin (British preparation), storax (British preparation) and tolu balsam (British preparation), all constituents of Friar's balsam (tincture of benzoin).

Pharmacodynamic and pharmacokinetic properties

Iodoform releases elemental iodine when applied to tissues. Systemic absorption of iodine can occur on prolonged or extensive application to open wounds. This may cause adverse effects, including sensitivity reactions, systemic toxicity and aggravation of thyroid disorders. As a precaution, not more than 2 g (or 20 ml of Whitehead's ointment) should be administered to a wound.

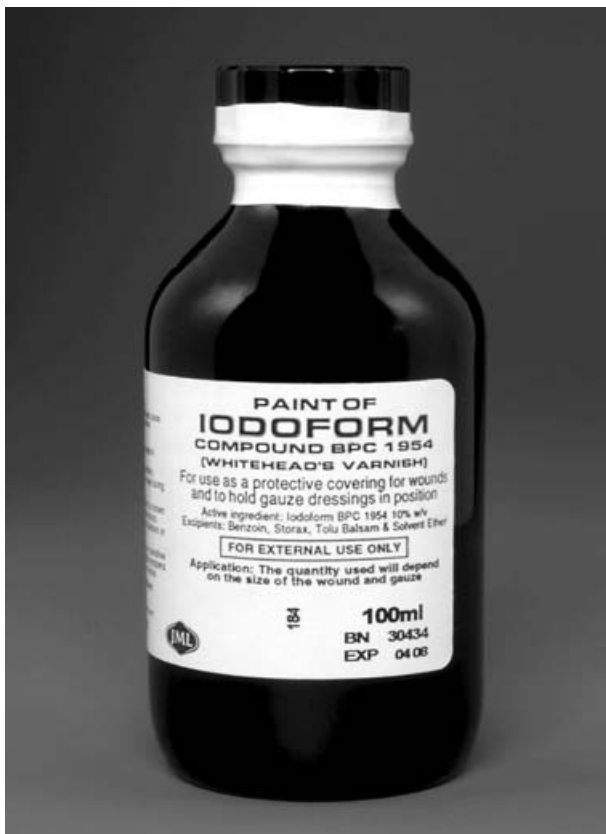


FIG. 1
Whitehead's varnish

Clinical use

Whitehead's varnish forms a protective 'skin' covering for wounds and thus may be directly applied to wounds as a dressing. Due to its adhesive properties, Whitehead's varnish will also help in holding gauze dressings in position. The iodoform released has a marked anaesthetic action when applied to mucosal membranes.⁶

In a randomised, controlled trial on skin autograft donor site management, subjects were randomised into two groups: one group receiving Jelonet[®] to the donor site and the other group being dressed with both Jelonet and Whitehead's varnish.⁷ Whitehead's varnish significantly reduced donor site pain compared with the standard dressing ($p = 0.0006$). Although overall healing time was not statistically different in the two groups, larger donor sites treated with Jelonet and Whitehead's varnish healed more quickly than those treated with the standard dressing alone. Interestingly, because of its anaesthetic action, it has been reported that Whitehead's varnish may affect peripheral nerve function and may be responsible for post-operative sensory disturbances,⁸ although we have had no cases with this problem in our experience.

In our practice, we use 2.5 cm wide ribbon gauze soaked in Whitehead's varnish to pack nasal cavities and neck wounds after surgery (Figure 2). A practical point to note is that, once soaked in Whitehead's varnish, the ribbon gauze must be packed immediately, as the ether in the ointment evaporates quite quickly. In addition, the presence of ether in the varnish means that diathermy should not be used after the pack has been inserted.

Following excision of sinonasal tumours, we routinely pack patients' postsurgical nasal or paranasal cavities to secure haemostasis. The pack is left in situ for five to seven days on average, but larger cavities (e.g. after

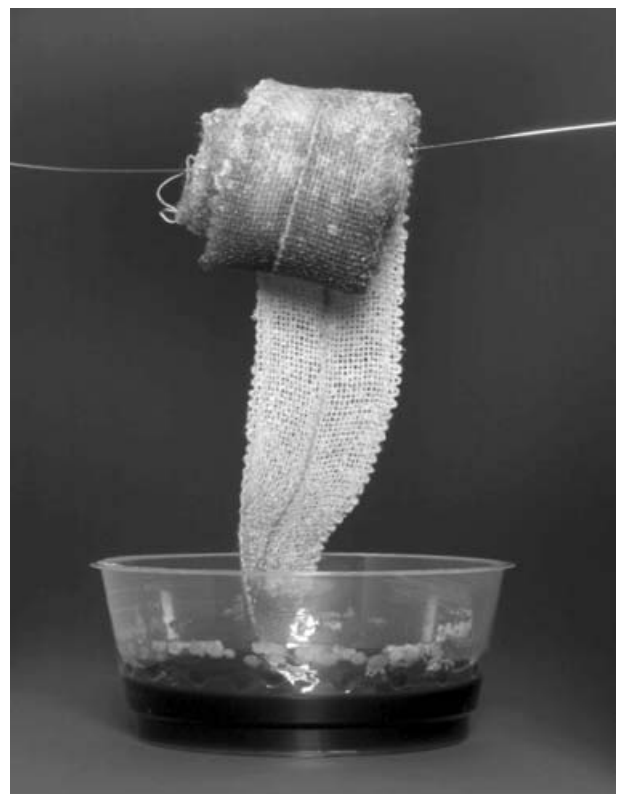


FIG. 2
2.5 cm ribbon gauze soaked in whitehead's varnish



FIG. 3
Removal of whitehead's pack

craniofacial resection) may be packed for 10 days. Although Whitehead's varnish has an antiseptic effect, antibiotics are prescribed for the duration of the pack, as the ribbon gauze still represents a foreign body in the nasal cavity. Removal of the pack (Figure 3) should be performed under a general anaesthetic as it can be quite painful.

We reviewed all our cases receiving Whitehead's varnish pack insertion over the previous four and a half years. There were 421 cases in total over this period. No adverse effects were reported in any of the cases.

The same soaked ribbon gauze can be used as emergency nasal packing in patients with epistaxis. In contrast to the commonly used bismuth nitrate-iodoform paste, which also contains iodoform, Whitehead's varnish on ribbon gauze has the important advantage of being minimally irritative to the mucosal lining of the nose. Additionally, iodoform toxicity has been reported following use of bismuth nitrate-iodoform paste packing in large cavities, and it has been suggested that Whitehead's varnish is a safer alternative in this instance.⁹

The compressive effect of a Whitehead's varnish pack not only secures haemostasis but may also be used to apply pressure on a skin/fascia graft used in cerebrospinal fluid (CSF) leak repair or septodermatoplasty. In these cases, we first glue the graft into place with biogluce and

then interpose a layer of Gelfoam[®] between the graft and the Whitehead's pack to prevent adherence between the two.

Conclusion

The use of Whitehead's varnish in nasal or paranasal cavity packing is safe and effective. It is especially useful for packing following excision of sinonasal tumours, which tend to bleed. It may also be employed in cases in which a skin or fascia graft is used (e.g. septodermatoplasty or CSF leak repair), to aid in holding the graft in place whilst concomitantly securing haemostasis. The advantage of the Whitehead's pack in these instances is that it provides firm compression without chemically damaging the nasal mucosa. It further provides an anaesthetic effect and may aid in the wound healing process. It is safe and relatively inexpensive. We would strongly recommend its use in these instances. Indeed, it is pack worthy of the name by which it has been called.

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