

Charcoal: The Magical Powder in Wound Healing

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Abstract: *Facial edema following oral surgeries is inevitable. It disfigures the person physically, emotionally and socially during the initial post-operative period. Anti-inflammatory drugs, though reducing the swelling, are usually accompanied by side effects. Activated charcoal is a locally applied medication with no side effects, which can reduce post-operative edema significantly. This article focuses on the effects of activated charcoal on post-operative edema of the face and neck.*

Keywords: edema, activated charcoal, wound, nursing care

1. Introduction

In a world being engulfed by scientific technology and advancements, God has provided man with a magical, microscopic powder to save us from physical ailments and pain, which medicines cannot do!

From the dawn of civilization, man has had an intimate relationship with charcoal. The first recorded use of charcoal for medicinal purposes comes from Egyptian papyri, around 1500 B.C.¹. The principal use appears to have been to adsorb the unpleasant odors from putrefying wounds and from within the intestinal tract. Later, in 1800 AD, charcoal mixed with bread crumbs or yeast, has been a material for forming poultices – natural medicines, among army and navy surgeons. The charcoal poultice was used in hospitals to treat ulcers and gangrenous sores, to causing sloughing of the dead tissues. Recently, this substance has been found to provide relief in numerous cases of open cancer, by easing pain, reducing foul smell, and facilitating the separation of the affected area from its surroundings. Charcoal is now admitted into the London Pharmacopoeia, and it is in general use in all naval, military, and civil hospitals².

Presently, as is described in this article, this activated powder has been found to reduce post-operative edema following surgery for oral cancer. The use of this compound has been found to be clinically effective, although further research is required to prove its efficacy scientifically. This article elaborates the application of activated charcoal in nursing care to provide relief from post-operative edema of the face and neck.

2. Functions of Activated Charcoal

Inflammation and accumulation of fluid at the post-operative site is part of the initial phase of wound healing after any surgical procedure. In patients undergoing surgery for oral cancer, because of the extensive resection, neck dissection and reconstructive procedures performed, lymphatic drainage is often interrupted, and hence, edema fluid tends to accumulate in the subcutaneous tissues of the face and

neck during the first few days after surgery. In a few patients, this edema may persist for a few weeks thereafter. This obvious, although partly expected, consequence of surgery can be worrisome for the patient and the relatives.

The nature and composition of the powder results in a “back diffusion” process, by which it is able to interact with fluids. Owing to this property of charcoal, which can be enhanced by using a hygroscopic powder like ispaggol husk, it can be used to reduce post-operative inflammation and edema at the surgical site. It has also been described that the purifying properties of charcoal not only heal the inflamed area inside-out, but also heals the skin when applied topically³.

Activated charcoal reduces the risk of surgical site infection and wound odour; reduction in odour minimises potential patient distress and embarrassment. It is safe to use and may be combined with an antimicrobial to enhance odour control⁴.

3. Application of Activated Charcoal

A scoop of activated charcoal is mixed with a scoop of sugar-free ispaggol husk powder (commercially available as Naturolax powder) in a 1:1 ratio. 50ml of normal saline is added to the mixture and stirred continuously to make a paste which is free of lumps. A sterile gauze is dipped into the mixture and applied over the inflamed area, then covered with a dry gauze to preserve moisture, and the dressing is secured in place with porous plaster or tape. Multiple charcoal-soaked gauzes can be applied to cover larger areas. The dressing is left undisturbed for 24 hours to be effective. The effectiveness of charcoal dressings can be clearly understood by comparing the edema before and after treatment. Activated charcoal dressing was tried on 28 patients and was found to be effective. The effectiveness of the dressing was assessed using nursing outcomes such as pain, skin integrity, perception of body image, and nutritional intake. The case study discussed below describes the usefulness of the activated charcoal dressing.

4. Nursing Care of Patient Treated with Activated Charcoal Dressing

The nursing care of a patient treated with activated charcoal dressing is described here. Mr. X presented with an ulceroproliferative lesion of the right buccal mucosa for 6 months, associated with foul smell and pain. He was diagnosed to have cancer of the buccal mucosa, and underwent wide local excision, hemi-mandibulectomy and modified radical neck dissection, with reconstruction using a pectoralis major myocutaneous flap. His immediate post-operative period was uneventful. On the second post-operative day, he was noted to have swelling of the face and neck, which was painful and progressive, and involved the periorbital region by the fourth post-operative day. Anti-inflammatory drugs (including Tab. Chymoral Forte) were started to counteract the inflammatory edema. In view of persistent edema not relieved by physiotherapy measures, it was decided to apply activated charcoal and Isapgol husk powder dressing. The dressing was continued for three days thereafter, and there was considerable reduction in the swelling. The patient also reported a reduction in pain after the dressings.

The effectiveness of the activated charcoal dressing can be demonstrated by assessing the patient's pain, skin integrity, perception of body image, and nutritional intake.

1) Reduction in pain

As tissue edema is reduced due to the effect of charcoal, there is improved perfusion of the tissues and thereby pain due to ischemia subsides. The patient can be assessed periodically for the intensity of pain, its frequency before and after the dressings. Use of appropriate analgesics and anti-inflammatory agents can continue along with the charcoal dressings, without fear of drug interactions or overdosing.

2) Improved skin integrity

Charcoal adsorbs the edema fluid from the subcutaneous tissues, which improves circulation to the overlying skin, maintains epithelial integrity and enhances wound healing. The skin overlying the edema can be observed for changes after application of charcoal dressings. Adjunctive measures like facial massage and physiotherapy to improve lymphatic drainage can continue without interfering with the action of charcoal.

3) Improved self- image

Presence of facial edema after curative surgery for cancer can be distressing for the patient and can adversely affect self-image and morale. The patient must be encouraged to verbalize his/her feelings and adequate emotional support, especially from the family, must be provided to prevent a feeling of isolation and rejection. Reduction in the facial swelling improves the appearance. Use of charcoal dressings to accelerate recovery from post-operative facial edema can improve the patient's confidence.

4) Enhanced nutrition

Post-operative edema of the cheeks and lips might occasionally be severe enough to cause discomfort during food intake, reduced mouth-opening and an overall decrease in nutrition. Periodic nutritional intake assessment and

appropriate counselling, along with anti-edema measures like charcoal dressings can provide symptomatic relief, optimal oral intake, which translates to a better nutritional status and a faster road to recovery.

5. Conclusion

In spite of numerous pharmacological advances, the adverse effects of drug intake cannot be avoided. The preference for painless interventions to promote wound healing without any side-effects is universal among post-operative patients – this can be achieved through activated charcoal dressings. Although further studies are required to understand how this substance acts, use of these dressings is a highly effective alternative to prolonged anti-inflammatory drug therapy.

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