

Recurrent Cranial Bone and Scalp Defect : A Case Report

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Background : Partial defect of the cranial bone and scalp remains a difficult problem for surgeons. Long-term morbidity is due to difficulty in finding the right material for closure and the resulting repeated surgery. This paper discusses the effectiveness of honey application as a simple and effective method for scalp defect treatment.

Method : One case of a patient with partial and cranium defect was referred to Cipto Mangunkusumo hospital with several prior attempt to close the defect with an acrylic implant. The cultured swab on patient revealed MRSA.

Result : Application of honey to the raw surface on the cranial defect shows resulting spontaneous epithelialization without clinical evidence of local infection.

Summary : The use of honey as a topical treatment for cranial and scalp defect provide a safe and effective alternative method for closing the wound secondarily.

Keywords : *cranial defect, scalp defect, honey*

Latar Belakang: Defek parsial pada tulang kranium dan scalp hingga saat ini masih menjadi masalah untuk ahli bedah. Morbiditas jangka panjang terutama terjadi karena kesulitan dalam menentukan material untuk menutup defek dan pembedahan berulang karena luka kronik. Makalah ini membahas mengenai penggunaan madu sebagai alternatif pengobatan defek tersebut.

Metodologi : Laporan kasus mengenai pasien dengan defek pada kranium dan scalp yang dirujuk ke Rumah Sakit Cipto Mangunkusumo dengan riwayat penutupan luka menggunakan implan akrilik. Hasil kultur pada pasien menunjukkan adanya MRSA.

Hasil : Pemberian madu pada defek menunjukkan terbentuknya epitelisasi spontan tanpa adanya tanda infeksi lokal.

Ringkasan : Penggunaan madu sebagai terapi topical untuk defek pada kranium dan scalp merupakan alternatif teknik pengobatan yang aman dan efektif untuk penyembuhan luka secara sekunder.

Kata kunci : *defek kranial, defek scalp, madu*

Defect on the scalp and cranial bones usually resulted from trauma or neurosurgery procedures. One of the key elements for scalp reconstruction is the use of alloplastic material and bone replacement material. Other important points to consider are the application of basic wound management that include adequate debridement, removal of dead space, non-tension closure and good vascularization¹.

Failure to close cranial defect primarily may cause complicated chronic defect. Difficulty to close the wound may be caused by failure of previous attempts to close the wound.

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This paper will review a case in which simple basic management of wound is adequate to close a chronic scalp defect.

PATIENT AND METHODS

The patient was a male, 40 years old, who had suffered partial loss of cranial bone due to a traffic accident 17 years ago. Previous attempt to close the wound were using a methyl-methacrylate implant and primary closure. This effort did not give satisfying wound closure, resulting in seven operations and three implant removal. Patient now came with infected cranial wound (Figure 1). Swab and culture evaluation shows the patient had MRSA.

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Figure 1. (Left) Shows defect in the temporoparietal region with exposed implant (Right) Post operative appearance after implant removal and primary closure. A 0.5 cm gap remains as a drainage.



Figure 2. The scalp wound after two months treatment with honey, the gap shows complete epithelialization and no signs of infection.

A joint operation with the neurosurgery department was performed for this patient, the infected implant was removed and the remaining wound sutured primarily. With the implant removed, most of the remaining wound can be closed primarily but a 0.5 cm gap remained. This gap was used as a drainage because there was still evidence of infection in the patient.

The remaining defect or gap, was treated using honey covered gauze without the use of topical or systemic antibiotic. The closure of the gap was intentionally delayed to wait until inflammation and infection has ceased, therefore making it safe for closure.

RESULT

After two months of wound treatment using topical application of honey, without the use of systemic or topical antibiotics, the 0.5 cm

gap on the patient's scalp underwent complete epithelialization. The patient showed no evidence of local or systemic infection during the treatment (Figure 2).

DISCUSSION

Chronic wounds are wounds that last more than four to six weeks to months or even years. One of the causes of chronic wound was bacterial infection and the formation of biofilm^{2,3,4,5}. The patient in this case shows evident signs of infection on admission including odor and MRSA as the result of cultured swab.

The patient had underwent three implant removal surgery. The use of methyl-methacrylate (acrylic) implant is associated with infection, expulsion, palpable implant and migration. Bacterial adhesion to this type of implants is high, which make it difficult to overcome infection⁶. Even though many



problems remain, the use of acrylic implant is high among surgeons and dentist. Plastic surgery uses acrylic implant to close large scalp defect^{7,8,9}.

In this case, the use of implant and primary closure in the first attempt to close the defect is inappropriate due to the resulting tension. Wound edge tension cause dehiscence that leads to infection. The adhesive nature of the implant leads to further complicating the infection.

Another reason to avoid acrylic implant in this case is no evidence of exposed dura with no neurological disturbance. The intact dura is adequate to protect the intracranial content, as described by Hubel (1959) and Jaster, et.al (1960)¹⁰.

As an alternative method for treatment, honey has the ability to give a moist environment for wound, reduce inflammation, increase epithelialization rate and function as an enzymatic debridement (effective against *Pseudomonas Sp. Methycillin Resistant Staphylococcus aureus*) and reduce odor.

SUMMARY

Chronic defect of the scalp should be treated using appropriate understanding of wound healing process and priority for treating the defect. Three points to consider are tension free closure, avoiding unnecessary use of alloplastic implant and delayed closure of the wound when there is inflammation or infection.

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