



Hydrogen Peroxide Head Preparation: Enabling Cuttings and Anatomic Studies of Skull Base Dura Mater and Arachnoid Without Use of Drilling

Submitted by Stéphanie Pinot on Tue, 06/04/2019 - 16:00

Titre	Hydrogen Peroxide Head Preparation: Enabling Cuttings and Anatomic Studies of Skull Base Dura Mater and Arachnoid Without Use of Drilling
Type de publication	Article de revue
Auteur	Bernard, Florian [1], Terrier, Louis-Marie [2], Michalak, Sophie [3], Velut, Stéphane [4]
Editeur	Elsevier
Type	Article scientifique dans une revue à comité de lecture
Année	2018
Langue	Anglais
Date	Novembre 2018
Pagination	325-330
Volume	119
Titre de la revue	World Neurosurgery
ISSN	1878-8769
Mots-clés	Arachnoid [5], Cadaver [6], Calcium [7], Craniotomy [8], Dura Mater [9], Female [10], Humans [11], Hydrogen Peroxide [12], Male [13], Skull Base [14], Time Factors [15], Tomography, X-Ray Computed [16]

Résumé en
anglais

INTRODUCTION: Anatomic pieces that are preserved using formaldehyde allow us to undertake high-quality skull base studies. However, extensive drilling is often necessary, which can lead to damages to the dura mater and thus arachnoid. Formaldehyde and hydrogen peroxide can soften the bone, which, in turn, can be easily cut with a scalpel or removed with a curette. After having discovered this technique by chance, our aim was to establish a study protocol of the skull base dura mater without the use of the drill.

METHODS: Ten heads were set with a 10% formalin solution and then injected with colored latex. Five heads were then subsequently bleached with 20% hydrogen peroxide solution (HPS). The following were studied weekly: 1) macroscopic modification of the bone, dura mater, arachnoid and brain; 2) histology; 3) computed tomography scans; and 4) calcium concentration screenings were studied weekly.

RESULTS: After several weeks (mean 6.1, range 5-8 weeks), all HPS specimens were flexible, similar to rubber in consistence. Geometrical bone cuts could be made while preserving all the surrounding anatomic structure (cranial nerves, dura mater, and vascular elements). Histologically, the dural and bone structure are preserved. The HPS cadavers appear to be radiologically demineralized. We note a significant calcium concentration augmentation in HPS solution after 1 month, 6 weeks, and 2 months compared with day 0.

CONCLUSIONS: The softening of the bone, probably caused by decalcification from the use of corrosive chemicals present in hydrogen peroxide solution, can ease the cutting of the skull base geometrically, which is useful for anatomic and workshop studies.

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DOI

10.1016/j.wneu.2018.08.041 [18]

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Titre abrégé World Neurosurg

Identifiant

(ID) 30144618 [20]

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[18] <http://dx.doi.org/10.1016/j.wneu.2018.08.041>

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