



Republic of Iraq  
Ministry of Higher Education  
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College of Dentistry



## **EVALUATION OF BUFFERED LOCAL ANESTHESIA IN DENTAL EXTRACTION: A RANDOMIZED CONTROLLED STUDY**

A thesis submitted to the council of the College of Dentistry/ University  
of Baghdad in partial fulfillment of the requirements for the degree of  
Master of Science in Oral and Maxillofacial Surgery

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## ABSTRACT

**Introduction:** Buffering of Local anesthesia has been suggested as a mechanism to improve injection comfort and hasten the onset of anesthesia. So, this study aimed to evaluate the effectiveness of buffered LA in extraction of maxillary posterior teeth.

**Materials and methods:** This randomized controlled study included 100 patients who were indicated for extraction of maxillary posterior teeth, they were randomly divided into 2 groups; a study group that received infiltration of buffered 2% lidocaine hydrochloride with 1:80,000 epinephrine LA, and a control group that received non-buffered LA. The buffering was performed using the Onset® LA buffering system (Onpharma®, U.S.A). The outcome variables included the pain during injection buccally and palatally assessed by pain numerical rating scale, the onset of anesthesia, the volume of LA used and the patient satisfaction for the whole procedure.

**Results:** There was a statistically significant differences in pain during injection buccally and palatally in favor of the study group ( $P < 0.0001$ ) with large effect size for the palatal injection and moderate effect size for the buccal injection. The onset of anesthesia on the buccal and palatal sides was significantly faster in the study group (p values 0.0225 and 0.0057). There was non-significant difference between the groups with respect to the volume of anesthesia ( $P=0.0692$ ). The patients in the study group reported a significantly higher satisfaction score ( $P < 0.0001$ ).

**Conclusions:** Buffered LA significantly reduced the onset of anesthesia and pain during injection, especially on the palatal side and resulted in better satisfaction for the patients.

## الخلاصة

المقدمة: تم اقتراح معادلة حامضية التخدير الموضعي كألية لتحسين راحة الحقن وتسريع بدء التخدير. في هذا الدراسة تم معادلة حامضية المخدر الموضعي وتقييمه من حيث الالم المصاحب عند الحقن وسرعة بدء التخدير وحجم المحلول المستخدم في عملية التخدير وكذلك ارضاء المريض في قلع الاسنان الخلفية للفك العلوي.

المواد والطرق: شارك 100 مريض في هذه الدراسة و تم توزيعهم عشوائيا على مجموعتين، كل مجموعة 50 مريض. المجموعة الضابطة اعطيت المخدر الموضعي الاعتيادي ومجموعة الدراسة اعطيت المخدر الموضعي متعادل الحامضية بواسطة بيكاربونات الصوديوم 8.4%. النتائج: اظهرت نتائج الدراسة فرق ملحوظ فيما يخص الالم المصاحب عند الحقن وكذلك سرعة التخدير لمجموعة الدراسة بأستخدام التخدير الموضعي متعادل الحامضية وكذلك اظهر المرضى درجة رضا اعلى ولم يكن هناك فرق ملحوظ فيما يخص حجم محلول التخدير الموضعي المستخدم بين المجموعتين.

الاستنتاجات: يقلل التخدير الموضعي متعادل الحامضية بشكل ملحوظ الالم المصاحب عند الحقن وكذلك يزيد من سرعة بدء التخدير الموضعي ودرجة رضا اعلى للمرضى.



جمهورية العراق  
وزارة التعليم العالي والبحث العلمي  
جامعة بغداد  
كلية طب الاسنان



## تقييم التخدير الموضعي متعادل الحامضية في قلع الأسنان: دراسة عشوائية محكمة

رسالة مقدمة الى مجلس كلية طب الأسنان في جامعة بغداد كجزء من متطلبات نيل شهادة  
الماجستير في جراحة الفم والوجه والفكين

قدمت من قبل الطالب  
داني بنيامين بولص  
بكالوريوس طب وجراحة الفم والاسنان

اشراف  
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بورد جراحة الوجه والفكين