The Impact of Utilizing Alveolo-Paste on the Healing of Soft Tissue after Dental Extraction

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Abstract

Aim:

The aim of the current research is to evaluate the effectiveness of Local application of alveogyl paste on soft tissue healing after lower molars extraction.

المستخلص

الهدف:

الهدف من البحث الحالي هو تقدير مدى فعالية التطبيق الموضعي لمعجون الفيوجيل على شفاء الأنسجة الرخوة بعد قلع أضراس الفك السفلي.

المواد والطرق:

شمل البحث إجمالي 20 مريضاً أصحاء تتراوح أعمارهم بين 18-35 سنة وكان لديهم أسنان بدون أعراض عند الخلع.

تم تقسيم المرضى بشكل عشوائي إلى مجموعتين. تم تطبيق الفيوباست على مجموعة الفيوجيل. بينما لم يتم تطبيق أي شيء في المجموعة الضابطة. تم تقييم المرضى في

اليوم الأول والسابع بعد العملية الجراحية وسجل على مسبار اللثة العددي.

النتائج:

كان العرض الدهليزي اللساني هو الأعلى في اليوم الأول بعد العملية الجراحية، ثم انخفض تدريجياً في كل من مجموعة السيطرة ومجموعة الفيوجيل وفي اليوم السابع بعد العملية الجراحية. كانت هناك فروق ذات دلالة إحصائية في العرض الشدق اللساني بين مجموعات التحكم ومجموعات الفيوجيل في الأيام السبعة بعد العملية الجراحية

الاستنتاجات:

أظهرت نتائج هذه الدراسة أنه بعد الاستئصال الجراحي للأسنان الفيوجيل يمكن أن يسرع من شفاء الأنسجة الرخوة.

Material and methods:

The research included a total of 40 healthy patients between the ages of 18-35 years. Patients were randomly divided into two groups; alveolopaste was applied to alveogyl group, whereas the control group had no material application. After using a periodontal probe to measure the extraction socket's buccolingual width, use a pair of tweezers to administer 50 grams of alveogyl material using a scale to completely cover the socket's bottom and gently pack it into place. A periodontal probe was used to measure the width after a week.

Results:

Bucco-lingual width of soft tissue margins of the socket, were highest on the first postoperative day and decreased gradually in both control and alveogyl group during the seven days following surgery. There were statistically significant differences in bucco-lingual width between control and alveogyl groups in the seven postoperative days

Conclusions:

After tooth extraction, alveogyl is administered to lessen discomfort and hasten soft tissue healing. Using alveogyl reduces the risk of developing dry socket.

1. Introduction

Exodontia or dental extraction (also referred to as tooth extraction, exodontist, is removal of teeth from dental alveolus (socket) in the alveolar bone [1]. Extractions are performed for a wide variety of reasons, but most commonly to remove teeth which have become un restorable through dental caries, periodontal disease, or dental trauma, especially when they are associated with pulpitis. Sometimes impacted wisdom teeth cause recurrent infections of the gum (pericoronitis), and may be removed when other conservative treatments have failed (cleaning, antibiotics and operculectomy). In orthodontics, if the teeth are crowded, healthy teeth may be extracted (often bicuspids) to create space so the rest of the teeth can be straightened [2].

Simple extractions are performed on teeth that are visible in the mouth, usually with the patient under local anesthetic, and require only the use of instruments to elevate and/or grasp the visible portion of the tooth. Typically the tooth is lifted using an elevator, and using dental forceps, specific tooth

movements are performed expanding the tooth socket. Once the periodontal ligament is broken and the supporting alveolar bone has been adequately widened the tooth can be removed. Typically, when teeth are removed with forceps, slow, steady pressure is applied with controlled force. Surgical extractions involve the removal of teeth that cannot be easily accessed or removed via simple extraction, for example because they have broken under the gum or because they have not erupted fully, such as an impacted wisdom [3]. Tooth Surgical extractions almost always require an incision. In a surgical extraction we may elevate the soft tissues covering the tooth and bone, and may also remove some of the overlying and/or surrounding jaw bone with a drill or, less commonly, an instrument called an osteotome. Frequently, the tooth may be split into multiple pieces aid in removing it from the socket to assist the extraction procedure [3].

Wound healing, is a normal biological process in the human body, wound-healing process consists of four highly integrated and overlapping phases: hemostasis, inflammation, proliferation, and tissue remodeling. For a wound to heal successfully, all four phases must occur in the proper sequence and time frame. Many factors can interfere with one or more phases of this process [4].

Multiple factors can lead to impaired wound healing. In general terms, the factors that influence repair can be categorized into local and systemic. Local factors are those that directly influence the characteristics of the wound itself, while systemic factors are the overall health or disease state of the individual that affect his or her ability to heal, Many of these factors are related, and the systemic factors act through the local effects affecting wound healing [5].

The process of the wound being closed by clotting. Happens very quickly. Starts when blood leaks out of the body then blood vessels constrict to restrict the blood flow. The platelets aggregate and adhere to the sub-endothelium surface within seconds of the rupture of a blood vessel's epithelial wall [6, 7].

After that, the first fibrin strands begin to adhere in about sixty seconds. As the fibrin mesh begins, the blood is transformed from liquid to gel through pro-coagulants and the release of prothrombin. The formation of a thrombus or clot keeps the platelets and blood cells trapped in the wound area [8, 9]. The thrombus is generally important in the stages of wound healing but becomes a problem if it detaches from the vessel wall and goes [10, 11].

Dry socket" refers to a post-extraction socket where some or all of the bone within the socket, or around the occlusal perimeter of the socket, is exposed in the days following the extraction, due to the bone not having been covered by an initial and persistent blood clot or not having been covered by a layer of vital, persistent, healing epithelium [12]. The patient may not be able to prevent food particles or the tongue from mechanically stimulating the exposed bone, which is acutely painful to touch, resulting in frequent acute pain [13]. All parts of a dry socket lesion, except the exposed bone, can be gently touched with a periodontal probe or an irrigation needle tip without causing acute pain. Dry socket lesions occur in approximately 1% to 5% of all extractions and in up to 38% of mandibular third molar extractions [14].

A dry socket lesion may show exposed bone located superior to the projected location of the occlusal surface of the socket after the socket heals. This bone may be a protruding septum of bone or may be located on the socket occlusal perimeter. This superiorly-located exposed bone would be the last aspect of the socket to be covered by epithelium [15].

Since the bone, protruding superiorly to the projected occlusal surface of the healed socket, would be exposed to food particles or mechanical trauma that may erode epithelium growing over that bone. This bone, if mechanically stimulated, would be a source of acute pain until the end of the healing period [16].

The dentist may anesthetize the patient and use a football diamond bur with copious irrigation to trim this bone to approximately (1mm) inferior to the projected occlusal surface of the healed extraction socket. Such trimming can result in the bone becoming immediately coverable by a blood clot or medicament, thereby reducing the total number of days that this hyper-sensitive bone is exposed and helping to ensure that epithelium will systematically grow over the remaining exposed bone of the dry socket [17].

If the protruding bone is located on the socket occlusal perimeter, the dentist can reduce the bone to a level that is inferior to the occlusal aspect of the gingival tissue located just lateral to the protruding bone. If the gingiva on the socket occlusal perimeter is superior to all of the socket bone, a socket blood clot or dry socket medicament is more likely to cover the bone [13, 15, 17].

Alveogyl is a dry-socket treatment and post-extraction dressing which every dental office should have on hand. Alveogyl is a one-step, self-eliminating treatment which rapidly alleviates pain and provides a soothing effect throughout the healing process. Its fibrous consistency allows for easy filling of the socket and good adherence during the entire healing process [11].

Indications:

– Dry socket treatment

– Post Extraction Dressing

Analgesic action due the soothing effect of eugenol on the alveolar tissues. Very easy to apply because of its fibrous consistency. Easily maintained in the alveolus. There is no need for Suturing or special attention.

2. Materials and Methods

Forty medically healthy patients were randomly assigned and agreed to participate in the study, their ages ranged from 18 to 35 years and included males only.

The diagnosis of the tooth was based on clinical examination and standard intraoral periapical radiographs [18].

2.1 Inclusion criteria included:

1. Free of inflammation and infection of tissue at the time of the surgical procedure.
2. Medically fit, not allergic, not taking any medication that could interfere with the study drugs.

2.2 Exclusion criteria included:

1. History of compromised medical health, history of allergic reactions, or hypersensitivity to the medications used in the operative work.
2. Patients receiving chemotherapy or radiation therapy.
3. Patients needing total extraction or with severe periodontitis, and patients who had any other oral pathology.
4. Patients' rejection of being involved in the research or those who could not commit to follow-up visits or those who used other drugs during the research period.

The patients were arbitrarily allocated to one of the two treatment groups: Group I included 20 patients allocated to alveogyl paste

Group II included 20 patients without alveogyl paste

Indicated teeth lower first and second molars were extracted under local anesthesia gained by inferior alveolar nerve, lingual and long buccal nerve block injections using 1.8ml of 2% lidocaine with 1:80,000 adrenaline.

All patients were instructed to:

1. Eat soft and cold diet for the first 24 hours after operation
2. Do not rinse for 24 hours.
3. Do not smoke for 72 hours.

After measuring the buccolingual width of the extraction socket using periodontal probe (Figure 1), using a pair of tweezers apply Alveogyl material of about 50 grams using scale to adequately cover the bottom of the socket and pack gently into place. After 1 week, the width was measured utilizing periodontal probe as in (Figure 2).

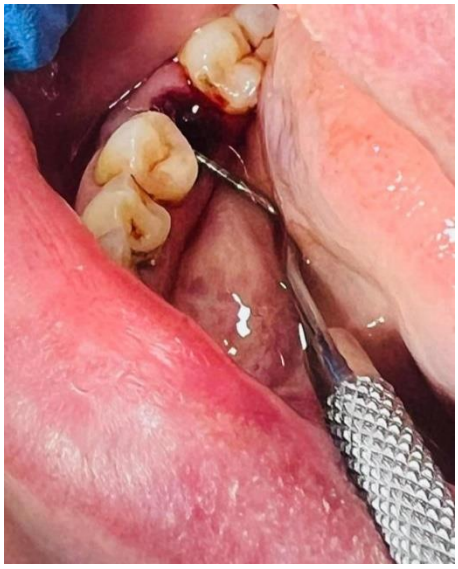

Figure 1: Buccolingual width of the socket measurement

Figure 2: Healing after 1 week.

3. Results

The sample sizes (N), means, standard deviations (StDev), and standard errors (SE Mean) for the group after "Alveogyl Group." and the group “after without Alveogyl "are compiled in the first table. With a T-Value of -2.51 and a statistically significant P-Value of 0.018, the second table displays the results of the two-sample t-test, which demonstrates a significant difference in means between the two groups.

Table 1: Comparing After Alveogyl Group. Vs. After Without Alveogyl Group.

Group	N	Mean	StDev	SE Mean
After Alveogyl .Group.	20	3.975	0.993	0.22
Without. Alveogyl .Group.	20	4.600	0.503	0.11

Statistic	Value
T-Value	-2.51
P-Value	0.018
Hypothesis Tested	Difference = 0 (vs ≠)

The table 2 summarizes the sample sizes, means, standard deviations, and standard errors for the groups "Before Alveogyl Group." and "After Alveogyl Group." With a T-Value of 14.32 and a highly significant P-Value of 0.0006. This indicates a substantial decrease in the measured outcome after the intervention involving "Alveogyl Group."

Table 2: Descriptive Statistics for Before Alveogyl Group and After Alveogyl Group

Group	N	Mean	StDev	SE Mean
Before Alveogyl Group.	20	7.550	0.510	0.11
After Alveogyl Group.	20	3.975	0.993	0.22

Two-Sample T-Test Results for Before Alveogyl Group vs. After Alveogyl Group.

Statistic	Value
T-Value	14.32

	Value
Statistic	
P-Value	0.0006

Hypothesis Tested Difference = 0 (vs ≠)

In figure 3 implies if the "Alveogyl Group" is present or not. Impacts the measured outcome.

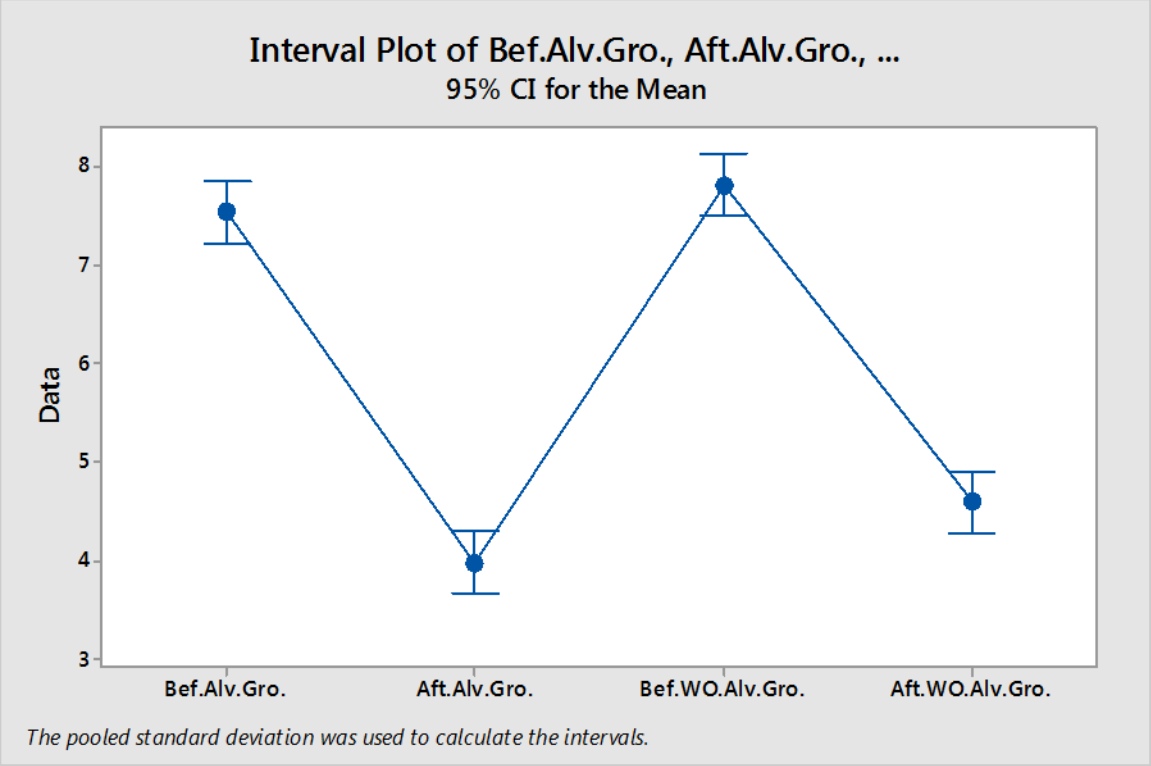

Figure 3: Blot between the groups.

4. Discussion

The purpose of this study to measure the efficacy of alveogyl paste on the wound after tooth extraction, alveogyl paste can reduce the probability of dry socket and accelerate the healing process, we aimed to measure the effects of alveogyl paste on soft tissue healing after tooth extraction [16].

There were many obstacles we had to overcome in this study, including the patients don't commit to the follow up date.

Dry sockets are more common after surgical or traumatic extraction. Similarly traumatic extraction can also lead to traumatic thrombosis of vessels in socket resulting in delayed healing and wound infection [12, 19]. The main aim in the treatment of dry sockets is to relieve pain. Various materials have been placed in extraction sockets for this purpose [15]. Alveogyl was the one of the most commonly used materials. Alveogyl contains eugenol which has a soothing effect and relieves the pain, these properties are often desirable in the presence of inflammation to reduce postoperative pain [20].

The results of our study come in acceptance with result by previous studies done by Ahmed salem et al. who concluded that Alvogyl showing higher pain relief and healing capability, as evidenced by clinical signs of improvement attributed to its components [21].

5. Conclusions

Alveogyl administration after tooth extraction reduce pain and accelerate socket healing and soft tissue closure. Alveogyl use decrease the probability of dry socket.

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