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Effect of St. John's wort oil and olive oil on the postoperative complications after third molar surgery: randomized, double-blind clinical trial

NCT Number: NCT04373421

Study Protocol, and Statistical Analysis Plan

Study Protocol

This randomized double-blind clinical trial will be conducted in Ankara Yıldırım Beyazıt University Oral and Maxillofacial Surgery Clinic and Van Yüzüncü Yıl University. Ethical approval of the study was obtained from Van Yüzüncü Yıl University Faculty of Medicine Clinical Research Ethics Committee in accordance with the Declaration of Helsinki (Decision Date and Number: 01.08.2018-08). Signed informed consent will be obtained from all patients.

90 healthy individuals who need third molar surgery will be included in this study. Inclusion criteria: Between 18-40 years of age, having asymptomatic unilateral mandibular impacted third molars (mesioangular) with similar angular positions according to the Winter classification and a similar degree of impaction according to Pell and Gregory's classification (class II, level B). Patients with a history of smoking, drug use, and pericoronitis associated with the lower third molar will be excluded. Pregnant and lactating women, patients with periodontal problems in the adjacent second molars (ie, increased periodontal depth, gingival recession), or patients without adjacent second molars on the operative side will also be excluded.

The predictive variable will be the type of mouthwash used in the study (St. John's wort oil and olive oil) and the control (chlorhexidine gluconate + benzydamine hydrochloride) groups. The outcome variable will be patient-reported pain and difficulty in jaw function, trismus, facial swelling, the number of analgesics used in the first postoperative week, and postoperative periodontal status.

All patients included will be randomly divided into 3 groups. St. John's wort oil will be given; Extra virgin olive oil will be given to the patients in the second group, and the mouthwash containing chlorhexidine gluconate and benzydamine hydrochloride will be given to the patients in the third group. Randomization will be performed by permutation method in MedCalc 11.5.1 software (MedCalc Software Inc, Ostend, Belgium). Three types of mouthwash will be given to the clinicians without notifying the surgical procedure or

postoperative controls, which are individually placed in boxes by the assistant personnel categorized as group 1, group 2 and group 3.

All procedures will be performed by the same surgeons in each center, using a standard protocol in each medical center. Local anesthesia will be administered using 0.01 mg / ml epinephrine and 2 ml articaine hydrochloride 40 mg / ml (Maxicaine Fort, VEM Drug, Istanbul, Turkey). Horizontal incision no. 15 scalpel blades and full thickness mucoperiosteal flaps will be removed. In all surgical procedures, bone removal and / or tooth cutting will be performed under copious irrigation. Following extraction, the granulation tissues will be removed and the post-extraction cavity washed with sterile 0.9% saline solution. After the bleeding is controlled, the mucoperiosteal flap will be repositioned with a 3.0 silk suture. Paracetamol (Parol® 500 mg, Atabay Kimya Sanayi, Istanbul, Turkey) was prescribed to the patients to use when necessary, with a maximum of 4 doses per day after surgery. Patients will be instructed to maintain a gentle diet for the first 24 hours and to avoid mouthwashing, brushing, and flossing. In addition, they will be asked to rinse their mouths with 15 ml of mouthwash 3 times a day for 30 seconds and continue until the 7th day after surgery.

The maximum mouth opening (MMO) will be measured in millimeters with a caliper from the incisal edge of the right upper and lower incisors. To evaluate the trismus, the percentage difference in MMO at the postoperative period (B), subtract the preoperative measurement (A) from the postoperative measurement, and then divide the preoperative measurement (A) and multiply by 100 (percentage difference = [B - A] / B × 100) . Facial swelling will be assessed using a thread and a millimeter ruler and five additional measurements will be made: distance I (from mandible to labial commissure); distance II (from angle of mandible to nose border) distance III (from the angle of the mandible to the outer corner of the eye); distance IV (from angle of mandible to tragus) and distance V (from mandible to soft pogonion). To evaluate the changes in the above distances in the postoperative period, the percentage of facial swelling will be calculated by subtracting the preoperative measurement from the postoperative measurement and then dividing it by the preoperative measurement and multiplying by 100.

A 7-day planned pain diary will be given to patients to evaluate postoperative pain and jaw function. To record the level of pain, patients will be instructed to grades on 100 mm visual analog scales (VAS) where 0 indicates no pain and 100 indicates the worst pain imaginable. To assess the difficulty in jaw function, patients will be asked to rate it at 100 mm VAS, where 0 indicates no limitation and 100 indicates severe limitation. They will also be asked to note how many painkillers they take per day. Patients will be evaluated for facial

swelling and trismus on postoperative 1st, 3rd and 7th days. In addition, complications such as alveolitis and infection will be recorded observationally.

All clinical periodontal assessments were to be measured by a blind examiner and mesio-buccal, mid-buccal, disto-buccal and disto-lingual were selected around adjacent second molar measurements for four regions. The plaque index defined by Silness and Loe will be used to evaluate patients' dental plaque status. Plaque thickness on the third gum of the teeth will be evaluated. The scores for each unit will then be summed up and divided by the total number of areas evaluated to arrive at the plaque index. The gingival bleeding index, introduced by Ainamo and Bay, will be used in the assessment of patients' gingivitis. The second molar will be probed gently with a periodontal probe (Williams probe, Hu-Friedy, Chicago, IL, USA) and then if bleeding occurs within 10 seconds, the bleeding sites will be noted as "positive". The number of positive bleeding zones will be divided by the total number of zones present and multiplied by 100 to express the gingival bleeding index as a percentage. Both the plaque index and the gingival bleeding index will be recorded preoperatively and on the 7th and 14th days and 1 month after surgery. The probing pocket depth will be measured by inserting a periodontal probe into the gingival groove until resistance is felt, and the measurements will be recorded to the nearest millimeter. Probing depths will be evaluated for the second molar tooth before surgery and 1 month after surgery. If there is gingival recession in the second molars, the distance between the cement-enamel junction and the free gingival border will be measured at the last follow-up visit.

Statistical Analysis Plan

Based on previous trial studies, a power analysis was performed using the Power Analysis of Sample Size (PASS) software program, showing that the Standard deviation (σ) for pain ranged from 4.87 to 5.07. For this reason, the standard deviation was accepted as 5. The effect size was accepted as (d) 2 by the researcher for the 95% confidence coefficient and approximately 80% power value, and the Z value was used as 1.96 for 0.05. type I error rate. Using the sample size calculation equation, the sample size was found to be 24 ($n = Z2\sigma2 / d2$). Descriptive statistics (frequency, mean and standard deviation) were determined for each variable. Kruskal-Wallis H test will be used for comparisons between groups, and Wilcoxon signed rank test will be used for in-group comparisons. All analyzes will be performed using SPSS Version 21.0 (SPSS, Inc., Chicago, IL). A value of $p < 0.05$ will be considered statistically significant for all analyzes.