

# Ekstrakcije zuba kod pacijenata na antikoagulantnoj terapiji

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**Ekstrakcije zuba kod pacijenata na antikoagulantnoj terapiji**Eva Klarić<sup>1</sup>, Irina Filipović Zore<sup>2</sup>, Petar Gaćina<sup>3</sup>, Ivan Galić<sup>4</sup>

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Bolesnici koji imaju određenu oralnu antikoagulantnu terapiju zbog prevencije ili liječenja kardiovaskularnih bolesti, česti su pacijenti u stomatološkim ambulantama te se uglavnom neodgovarajuće tretiraju ili čak upućuju oralnom kirurgu i za jednostavne zahvate. Nakon ekstrakcije teoretski postoji minimalan rizik od produljenog krvarenja, no prekidom terapije rizik može biti znatno veći zbog moguće tromboembolije. Vađenje zuba može se obaviti bez prekida protuzgrušavajuće terapije, ako se primijene lokalne mjere hemostaze pomoću želatinoznih spužvi, šavovima i/ili ispiranjem usne šupljine traneksamičnom kiselinom, što sprječava produženo krvarenje. U istraživanju je sudjelovalo 16 pacijenata na oralnoj kumarinskoj antikoagulantnoj terapiji kod kojih je bilo potrebno obaviti ekstrakciju zuba i zaostalih korijenova. Bili su raspoređeni u tri skupine prema vrijednosti protrombinskog vremena (PV-a) izraženog kao INR (International Normalized Ratio). Produljeno postekstrakcijsko krvarenje spriječeno je želatinoznom spužvom (Gelatamp®) i 4,8-postotnom vodenom otopinom traneksamične kiseline (Cyklokapron®) koja se koristila za ispiranje usne šupljine. Od ukupno 16 ispitanika s prosječnim vremenom krvarenja od  $3,75 \pm 1,05$  min i terapijskim vrijednostima INR-a ( $\leq 3,0$ ), te primjenom mjera lokalne hemostaze, samo je dvoje naknadno krvarilo, što je zaustavljeno postavljanjem šavova. Zaključak: hematološki ugroženi pacijenti pod stalnom terapijom oralnim antikoagulantima (Marivarin®) čiju bolest regulira liječnik specijalist, uz zadovoljavajuće vrijednosti laboratorijskih nalaza, u prvom redu protrombinskog vremena (PV-a) izraženog u INR-u, te broju trombocita i vremenu krvarenja, mogu pristupiti ekstrakciji zuba. Kontrola krvarenja provedena je obvezatnom primjenom mjera lokalne hemostaze bez opasnosti od mogućih popratnih pojava, ponajprije produljenog postekstrakcijskog krvarenja.

**Dental extractions in patients taking anticoagulant therapy**Eva Klarić<sup>1</sup>, Irina Filipović Zore<sup>2</sup>, Petar Gaćina<sup>3</sup>, Ivan Galić<sup>4</sup>

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Patients who are taking oral anticoagulation therapy to prevent or treat their cardiovascular diseases, are often patients in dental offices. Usually, there are incongruously treated, or sent for simple interventions or dental procedures to oral surgeon. There is a theoretical risk of bleeding after dental surgery in patients at therapeutic levels of anticoagulation, however it is minimal, and may be greatly outweighed by the risk of thromboembolism upon anticoagulant therapy withdrawal. Thus, dental extractions can be performed without modification or interruption of oral anticoagulant therapy. In most patients local hemostasis with gelatin sponge, sutures and/or mouthwash with tranexamic acid is sufficient to prevent postoperative bleeding. Sixteen patients taking oral coumarin anticoagulant therapy and undergoing dental extractions took part in this study. Three groups of patients were performed according to therapeutic prothrombin time which was declared as International Normalization Ratio (INR). Extensively postoperative bleeding was prevented with gelatine sponge (Gelatamp®) and 4.8 % tranexamic acid mouthwash (Cyklokapron®). Among sixteen patients with average bleeding time of  $3.75 \pm 1.05$  minutes and INR values inside therapeutic range ( $<3.0$ ), only two of them had short episodes of delayed bleeding. It was stopped by placing a suture over extraction wound. Conclusion: Anticoagulant patients who have been receiving lifelong therapy (Marivarin®) for prevention and curing cardiovascular diseases, in consultation with the relevant specialist, and who are inside therapeutic range of prothrombin time (declared as INR), suitable thrombocyte range and bleeding time, can be accepted for tooth extraction without stopping or reducing warfarin therapy. Bleeding control was promoted locally without risk of any side effects primarily postoperative bleeding.

**Laser doppler-flowmetar i njegova uporaba u stomatologiji**Ivan Zajc<sup>1</sup>, Darko Macan<sup>1</sup>, Davor Brajdić<sup>2</sup>, Bjorn Bakken<sup>3</sup>, Kjell Bakken<sup>3</sup>

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Laser doppler-flowmetar (LDF) služi za mjerenje dinamičkog protoka krvi u tijelu tako što bilježi kretanje eritrocita u tkivu. Lasersku zraku određene valne duljine emitira uređaj, a prenosi se pomoću optičkog kabela te udara u putujući eritrocit što stvara dopplerski pomak frekvencije odbijenog svjetla koji registrira receptor. Taj dio odbijenog svjetla vraća se aferentnim optičkim vlaknima natrag u uređaj. LDF se u orofacijalnoj regiji koristi za mjerenje perfuzije zuba, gingive, sluznice usne šupljine, kosti i žvačnih mišića. Obavljena su istraživanja LDF-om kako bi se odredio vitalitet zuba nakon njihove traume ili autotransplantacije; proučio se utjecaj lokalnih i sistemskih lijekova; vidio pulpni odgovor na ortodontske i ortognatske zahvate; proučavale promjene u krvnom protoku sluznice ispod mobilnih protetskih radova; gledala vaskularizacija koštanih transplantata tijekom podizanja dna maksilarnog sinusa. Prikazan je slučaj koji pokazuje kliničku primjenu i vrijednost LDF-a (PeriFlux System 5000, Perimed AB, Stockholm, Švedska) kao ključne metode u dijagnostiranju vitalnosti zuba nakon frakture alveolarnog nastavka čeljusti i traume pripadajućih zuba. Procjena vitalnosti zuba LDF-om osjetljivija je i pacijentu bezbolna, za razliku od dostupnih metoda električnog ili toplinskog ispitivanja senzibiliteta zuba. Naime, zubi koji ne reagiraju na električni ili termički podražaj smatraju se avitalnim a te se često nepotrebno endodontske liječe. Senzibilitet pulpe ne odražava uvijek i vitalitet pulpe - on uvijek pokazuje samo očuvanost senzoričkih živaca. Zato se pojmovi vitalitet i senzibilitet ne bi smjeli koristiti kao istoznačnice.

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**Laser Doppler Flowmetry and its Application in Dentistry**Ivan Zajc<sup>1</sup>, Darko Macan<sup>1</sup>, Davor Brajdić<sup>2</sup>, Bjorn Bakken<sup>3</sup>, Kjell Bakken<sup>3</sup>

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Laser doppler flowmetry (LDF) is a method for measuring dynamic blood flow in the body by detecting blood cell movement in a small volume of tissue. Laser within the apparatus emits light of distinct wave length along an efferent fiber-optic conductor within a probe that hits the moving blood cells in the investigated tissue, what creates a Doppler frequency shift of the back-scattered light, which is detected by the photo collector. That fraction of backscattered light from the investigated tissue returns to the flowmeter along a pair of afferent optical fibres within the same probe. LDF in the orofacial region has been used to monitor the perfusion of teeth, gingiva, oral mucosa, bone and masticatory muscles. So far in vivo studies were conducted in order to estimate pulp vitality; monitor the pulp vitality following dental trauma or transplantation; note reactions to local and systemic pharmacological agents; monitor the pulpal and gingival reactions to orthodontic and orthognathic procedures; record the changes of blood flow in the mucosa underlying removable dentures; estimate the vascularization of sinus bone grafts and to assess periodontal health in teeth retaining fixed partial dentures. We present a case that shows the value of LDF (PeriFlux System 5000, Perimed AB, Stockholm, Sweden) as a crucial method in diagnosing teeth vitality after fracture of the mandibular alveolar process and adjacent teeth injury. Measuring pulpal blood flow using LDF has been described as being more sensitive and noninvasive technique for evaluating tooth vitality, than using conventional methods such as electrical or thermal pulp testing. Commonly, the teeth that lack pulpal sensibility are concerned nonvital, and in many of such „non-vital“ teeth root canal treatment is unnecessary performed. However, pulpal sensibility doesn't always reflect the vitality of dental pulp, it always reflects only the state of sensory nerves of the pulp. Therefore terms vitality and sensibility can not always correspond.

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