UDK: 616.314-089.87-085.273.53.03:615.212.3

DOI: 10.62636/JMAI8692

VLERËSIMI KLINIK I ACIDIT TRANEKSAMIK TOPIKAL TE PACIENTËT NËN TERAPINË ME ASPIRINË QË I NËNSHTROHEN NXJERRJES SË DHËMBËVE: KONTROLLI I GJAKDERDHJES, CILËSIA E SHËRIMIT DHE KOMPLIKIMET POSTOPERATIVE

Anita Ismaili Bimbashi[1], Biljana Evrosimovska[2], Gordana Apostolova[2], Edvard Janev[3], Daniela Veleska Stevkovska[3], Tatjana Matlioska Kocevska[4], Spiro Spasovski[5], Irena Stojanova[6], Bekim Ademi[7]

[1]PhD candidate at the Department of Oral surgery, Faculty of Dentistry in Skopje, University Ss.Cyril and Methodius
[2]Department of Oral Surgery, Faculty of Dentistry in Skopje, University Ss.Cyril and Methodius
[3]Department of Implantology, Faculty of Dentistry in Skopje, University Ss.Cyril and Methodius
[4]PhD candidate at the Department of Endodontics, Faculty of Dentistry in Skopje, University Ss.Cyril and Methodius
5 PhD candidate at the Department of Oral surgery, Faculty of Dentistry in Skopje, University Ss.Cyril and Methodius
6 Irena Stojanova Department of Oral Surgery, Faculty of Dentistry in Skopje
7 PhD candidate at the Department of Vascular surgery, Faculty

ABSTRAKT

Nxjerrja e dhëmbëve te pacientët që marrin terapi të vazhdueshme antitrombocitare paraqet një sfidë klinike për shkak të rrezikut të gjakderdhjes postoperative. Studimet e fundit tregojnë se ndërprerja e terapisë me aspirinë mund t'i ekspozojë pacientët ndaj ngjarjeve serioze tromboembolike, pa ulur ndjeshëm rrezikun e gjakderdhjes. Acidi traneksamik (TXA), si agjent antifibrinolitik, është propozuar si një metodë lokale e sigurt dhe efektive për kontrollin e gjakderdhjes.

Qëllimi: Qëllimi i këtij studimi ishte të vlerësohej efektiviteti i aplikimit lokal të acidit traneksamik 5% në kontrollin e gjakderdhjes pas nxjerrjes të dhëmbëve te pacientët që vazhdojnë terapinë me aspirinë, si dhe të vlerësohen shërimi i plagës, dhimbja postoperative, alveoliti dhe reaksionet inflamatore lokale.

Materialet dhe Metodat: Njëzet (20) pacientë nën terapi të vazhdueshme me aspirinë iu nënshtruan nxjerrjeve të thjeshta dentare. Pas nxjerrjes, u aplikua lokalisht solucion TXA 5% për 30 minuta. Pacientët

CLINICAL EVALUATION OF TOPICAL TRANEXAMIC ACID IN ASPIRIN TREATED PATIENTS UNDERGOING TOOTH EXTRACTION: BLEEDING CONTROL, HEALING QUALITY, AND POSTOPERATIVE COMPLICATIONS

Anita Ismaili Bimbashi[1], Biljana Evrosimovska[2], Gordana Apostolova[2], Edvard Janev[3], Daniela Veleska Stevkovska[3], Tatjana Matlioska Kocevska[4], Spiro Spasovski[5], Irena Stojanova[6], Bekim Ademi[7]

[1]PhD candidate at the Department of Oral surgery, Faculty of Dentistry in Skopje, University Ss.Cyril and Methodius
[2]Department of Oral Surgery, Faculty of Dentistry in Skopje, University Ss.Cyril and Methodius
[3]Department of Implantology, Faculty of Dentistry in Skopje, University Ss.Cyril and Methodius
[4]PhD candidate at the Department of Endodontics, Faculty of Dentistry in Skopje, University Ss.Cyril and Methodius
5 PhD candidate at the Department of Oral surgery, Faculty of Dentistry in Skopje, University Ss.Cyril and Methodius
6 Irena Stojanova Department of Oral Surgery, Faculty of Dentistry in Skopje
7 PhD candidate at the Department of Vascular surgery, Faculty

ABSTRACT

Dental extractions in patients receiving continuous antiplatelet therapy presents a clinical challenge due to the perceived increased risk of postoperative bleeding. Current evidence suggests that interruption of antiplatelet agents may expose patients to serious thromboembolic events without providing significant reduction in bleeding complications. Tranexamic acid (TXA), an antifibrinolytic agent, has been proposed as a safe and effective local hemostatic measure. However, limited data exist regarding its impact on postoperative bleeding control, wound healing, and infection rates among patients who remain on antiplatelet therapy.

Objective: This study aimed to evaluate the effectiveness of topical TXA (5%) in controlling bleeding following simple tooth extractions in patients maintained on aspirin therapy, as well as to assess postoperative wound healing, pain incidence, alveolitis occurrence, and local inflammatory reactions.

Materials and Methods: Twenty patients on continuous aspirin therapy underwent simple dental

u monitoruan për gjakderdhje, dhimbje, inflamacion dhe shenja të alveolitit gjatë një periudhe ndjekjeje 7 ditore.

Rezultatet: Të gjitha nxjerrjet u kryen brenda një kohe mesatare prej 2 minutash dhe u arrit hemostazë e menjëhershme pa gjakderdhje postoperative. Dymbëdhjetë pacientë raportuan dhimbje të lehta deri në mesatare. Alveolit u shfaq në 3 pacientë me intensitet mesatar, ndërsa 5 pacientë zhvilluan inflamacion lokal që u zhduk brenda 7 ditëve. Nuk u vërejtën komplikime sistemike.

Përfundimi: Aplikimi lokal i acidit traneksamik 5% është një metodë shumë efektive për kontrollin e gjakderdhjes pas nxjerrjes së dhëmbëve te pacientët që vazhdojnë terapinë me aspirinë. Vazhdimi i terapisë antitrombocitare nuk rrit rrezikun e gjakderdhjes kur përdoret TXA, dhe shërimi i plagës mbetet i favorshëm.

Fjalët kyçe: acidi traneksamik, aspirina, terapi antitrombocitare, nxjerrja e dhëmbëve, hemostaza, shërimi i plagës.

HYRJE

Menaxhimi i pacientët që marrin terapi afatgjatë antitrombocitare mbetet një çështje me rëndësi të veçantë në praktikën e përditshme stomatologjike dhe kirurgjinë orale. Aspirina është një nga barnat më të përdorura globalisht për parandalimin primar dhe sekondar të sëmundjeve kardiovaskulare. Mekanizmi i saj veprimit konsiston në inhibimin e pakthyeshëm të ciklooksigjenazës-1 (COX-1) në trombocite, duke reduktuar sintezën e tromboksanit A2 dhe, për rrjedhojë, agregimin trombocitar për gjithë jetëgjatësinë e trombociteve (7–10 ditë).

Për shkak të këtij efekti, dentistët tradicionalisht kanë qenë të shqetësuar për rritjen e rrezikut të gjakderdhjes peri dhe postoperatore gjatë nxjerrjes së dhëmbëve.

Për shumë vite, ndërprerja e përkohshme e aspirinës para procedurave dentare ishte praktikë e zakonshme. Megjithatë, evidenca shkencore e dekadës së fundit ka treguar se kjo qasje mund të jetë e rrezikshme, pasi rrit ndjeshëm rrezikun e infarktit të miokardit, insultit cerebral dhe trombozës akute, pa përfituar

extractions. A 5% TXA solution was applied locally for 30 minutes immediately after extraction. Bleeding time, postoperative complications, and healing outcomes were recorded over a 7-day follow-up period.

Results: All extractions were completed within an average of 2 minutes and achieved immediate hemostasis without postoperative bleeding. Twelve patients reported mild-to-moderate pain within the first 24 hours. Alveolitis occurred in 3 patients, classified as moderate in severity. Five patients developed localized inflammation, resolving spontaneously within 7 days. No systemic complications or bleeding-related events were observed.

Conclusion: Local application of 5% TXA is a highly effective hemostatic strategy for simple extractions in patients maintained on antiplatelet therapy. Maintaining aspirin therapy does not increase the risk of postoperative bleeding when TXA is used, and wound healing outcomes remain favorable. TXA may serve as a valuable adjunct in optimizing postoperative recovery and minimizing complications in this patient population.

Keywords: tranexamic acid; antiplatelet therapy; aspirin; tooth extraction; postoperative bleeding; wound healing.

INTRODUCTION

Management of dental extractions in patients receiving long-term antiplatelet therapy remains a common clinical challenge in oral surgery. Aspirin, one of the most widely prescribed drugs worldwide, exerts an irreversible inhibitory effect on platelet cyclooxygenase-1, reducing thromboxane A2 synthesis and impairing platelet aggregation for the lifespan of the platelet (7–10 days) (5). Consequently, patients taking daily low-dose aspirin have a prolonged bleeding time, raising concerns regarding the risk of perioperative hemorrhage during oral procedures (1,5). Traditionally, clinicians often advised temporary discontinuation of aspirin prior to dental extractions. However, a substantial body of evidence has demonstrated that interrupting aspirin therapy significantly increases the risk of severe cardiovascular complications, including myocardial

ulje të konsiderueshme të gjakderdhjes lokale.

Udhëzimet ndërkombëtare aktuale rekomandojnë vazhdimin e terapisë me aspirinë për procedura të vogla kirurgjikale orale, përfshirë nxjerrjen e thjeshtë të dhëmbëve, me kusht që të përdoren masa lokale adekuate hemostatike.

Acidi traneksamik është një derivat sintetik i lizinës që vepron si antifibrinolitik duke bllokuar aktivizimin e plazminogjenit në plazminë. Ky mekanizëm stabilizon koagulumin dhe parandalon shpërbërjen e parakohshme të mpiksjes. TXA është përdorur gjerësisht në traumatologji, kirurgji kardiake, ortopedi, obstetrikë dhe kirurgji orale.

Në stomatologji, aplikimi lokal i TXA-së në formë shpëlarjeje ose garze të impregnuar ka treguar efikasitet të lartë në parandalimin e gjakderdhjes postekstraktive te pacientët që marrin terapi antikoagulante ose antitrombocitare.

Megjithatë, të dhënat për ndikimin e TXA-së në shërimin e plagës, inflamacionin dhe infeksionet lokale te pacientët nën terapi vetëm me aspirinë mbeten të kufizuara.

Për këtë arsye, ky studim synon të vlerësojë efektivitetin e TXA-së topikale në kontrollin e gjakderdhjes dhe ndikimin e saj në shërimin postoperativ te pacientët që vazhdojnë terapinë me aspirinë.

MATERIALET DHE METODAT

Ky studim klinik prospektiv u zhvillua në Departamentin e Kirurgjisë Orale dhe Implantologjisë, Qendra Klinike Universitare "Shën Pantelejmon", Shkup", gjatë periudhës janar–nëntor 2025. Në studim u përfshinë pacientë që merrnin terapi antitrombocitare kronike me aspirin dhe kishin nevojë për nxjerrje të dhëmbëve. Miratimi etik u sigurua përpara fillimit të mbledhjes së të dhënave dhe të gjithë pjesëmarrësit dhanë pëlqimin e informuar.

Në studim u përfshinë gjithsej 20 pacientë. Kriteret e përfshirjes ishin mosha ≥18 vjeç, përdorimi i vazhdueshëm i aspirinës 100 mg/ditë, indikacioni për nxjerrje të dhëmbëve dhe mundësia për

infarction and stroke, without offering a meaningful reduction in post-extraction bleeding (6). Current international guidelines therefore recommend that **aspirin therapy should not be stopped** for minor oral surgery, provided that adequate local hemostatic measures are implemented (5,6).

Tranexamic acid (TXA) is a synthetic derivative of the amino acid lysine, functioning as a potent antifibrinolytic agent by competitively inhibiting the activation of plasminogen to plasmin. This stabilizes the fibrin matrix of the developing clot and prevents premature clot dissolution (2). TXA has been shown to reduce surgical bleeding in diverse medical fields, including trauma management, orthopedics, cardiac surgery, obstetrics, and oral/maxillofacial surgery (2,4). In dental practice, both TXA mouthwash and TXA-impregnated gauze have been successfully used to prevent postoperative bleeding in patients taking anticoagulants or antiplatelet therapy (1,3). The landmark study by Sindet-Pedersen demonstrated that topical TXA significantly reduces bleeding without systemic effects, making it particularly suitable for outpatient oral surgery (3). Additionally, Carter and Goss confirmed that even short regimens of TXA (2 days vs. 5 days) effectively control postoperative bleeding after dental extraction (1).

Despite numerous studies involving anticoagulated patients, there is comparatively limited research specifically examining **aspirin-treated patients** and evaluating broader postoperative outcomes, such as **pain, inflammation, and wound-healing quality**. Since stable clot formation is essential for alveolar healing, enhancement of clot integrity by TXA may theoretically improve early healing parameters and reduce complications such as alveolitis. Given these gaps in the literature, the aim of this study is to assess the hemostatic effectiveness of **topical 4.8% TXA** in aspirin-treated patients undergoing simple tooth extraction and to evaluate early wound-healing outcomes, including postoperative pain, inflammation, and incidence of alveolitis.

MATERIALS AND METHODS

This prospective clinical study was conducted in Department of Oral Surgery and Implantology, St.

të ndjekur kontrollin pas 7 ditësh. Kriteret e përjashtimit përfshinin përdorimin e njëkohshëm të medikamenteve antikoagulante, alergji të njohur ndaj acidit traneksamik dhe prani të gjendjeve sistemike që dëmtojnë shërimin e plagëve, si diabeti i pakontrolluar apo imunosupresioni.

Të gjitha nxjerrjet e dhëmbëve u kryen nga i njëjti klinicist për të siguruar konsistencë procedurale. Në të gjitha rastet u përdor teknikë atraumatike. Anestezia lokale u realizua me lidokainë 2% me epinefrinë 1:100.000. Nuk u kryen flapa kirurgjikale, heqje kockore apo suturim.

Menjëherë pas nxjerrjes, alveola u kompresua lehtë me garzë sterile të njomur me acid traneksamik (TXA) 5%, e cila u mbajt në vend për 30 minuta. Nuk u administrua TXA sistemik dhe pacientët u udhëzuan të mos ndërprisnin terapinë me aspirin as para dhe as pas procedurës.

Koha e nevojshme për arritjen e hemostazës së plotë u regjistrua me kronometër, duke filluar nga momenti i vendosjes së garzës deri në ndalimin e dukshëm të gjakderdhjes. Gjakderdhja postoperatore u vlerësua si çdo episod gjakderdhjeje që ndodhte brenda 24 orëve dhe kërkonte masa shtesë hemostatike.

Dhimbja u regjistrua bazuar në raportimin subjektiv të pacientëve gjatë 48 orëve të para pas nxjerrjes. Prania e inflamacionit u vlerësua nëpërmjet ekzaminimit klinik në ditën e shtatë, duke përfshirë ënjtjen lokale, eritemën ose parehatinë.

Alveoliti u diagnostikua klinikisht në bazë të ekspozimit të kockës, dhimbjes persistente dhe erës së pakëndshme. Shërimi i përgjithshëm i plagës në ditën e shtatë u klasifikua si i mirë, i moderuar ose i vonuar.

Të gjithë pacientët u vlerësuan në ditën e shtatë pas nxjerrjes dhe gjetjet u regjistruan në mënyrë sistematike duke përdorur kritere klinike të standardizuara. Për shkak të madhësisë së mostrës, u përdorën statistika përshkruese. Koha e hemostazës u raportua si vlerë mesatare, ndërsa incidenca e gjakderdhjes postoperatore, dhimbjes, inflamacionit dhe alveolitit u shpreh në frekuenca dhe përqindje.

Pantelejmon University Dental Clinical Center, Skopje between January and November 2025. The study included patients receiving chronic antiplatelet therapy with aspirin who required multiple tooth extractions. Ethical approval was obtained prior to data collection, and all participants provided informed consent. A total of 20 patients were enrolled in the study. Inclusion criteria were: Age ≥18 years,continuous use of aspirin 100 mg/day, indication for tooth extraction, ability to attend follow up after 7 days. Exclusion criteria included: Concurrent anticoagulant medication, known allergy to tranexamic acid, systemic conditions impairing wound healing (uncontrolled diabetes, immunosuppression). Extraction Procedure : All tooth extractions were performed by the same clinician to ensure procedural consistency. Atraumatic technique was used in all cases. Local anesthesia was provided using 2% lidocaine with 1:100.000 epinephrine. No surgical flaps, bone removal, or suturing were performed.

Hemostatic Protocol (Intervention) Immediately after extraction, the socket was gently compressed with sterile gauze soaked in 5% tranexamic acid (TXA). The gauze was kept in place for 30 minutes. No systemic TXA was administered. Patients were instructed not to interrupt aspirin therapy before or after the procedure.

Outcome Measurements:

Primary Outcome: Hemostasis Time The time required to achieve complete hemostasis was recorded using a stopwatch from the moment gauze was applied until visible cessation of bleeding.

Secondary Outcomes: Postoperative bleeding: Any bleeding occurring within 24 hours requiring additional hemostatic measures. Pain incidence: Recorded based on patient self-report within the first 48 hours. **Inflammation:** Presence of localized swelling, erythema, or discomfort on clinical examination at day 7.

- **Alveolitis (dry socket):** Diagnosed clinically by exposed bone, persistent pain, and malodor.
- **Overall wound healing at day 7:** Classified as good, moderate, or delayed.

Follow-up: All patients were evaluated on **day 7** post-extraction. Findings were recorded systematically using standardized clinical criteria.

REZULTATET

Tabela 1. Karakteristikat e pacientëve dhe protokolli i trajtimit

Parametri	Vlera
Numri i pacientëve	20
Doza e aspirinës	100 mg/ditë
Lloji i nxjerrjes	E thjeshtë
Përqendrimi i TXA	5%
Koha e aplikimit	30 minuta
Sutura	Asnjë

Tabela 2. Rezultatet postoperatore

Rezultati	Pacientë (n)	Përqindja
Gjakderdhje postoperatore	0	0%
Dhimbje	12	60%
Inflamacion	5	25%
Alveolit	3	15%
Shërim i kënaqshëm	20	100%

Figura 1. *Pamja klinike para nxjerrjes e kreshtës alveolare te një pacient nën terapi me aspirin.*

Figura 2. *Alveolat menjëherë pas nxjerrjes së dhëmbëve, para aplikimit të acidit traneksamik (TXA).*

Statistical Analysis: Descriptive statistics were used due to the sample size. Hemostasis time was reported as mean values. Incidence of postoperative bleeding, pain, inflammation, and alveolitis was expressed as frequencies and percentages.

RESULTS

Table 1. Patient Characteristics and Treatment Protocol

Parameter	Value
Number of patients	20
Aspirin dosage	100 mg/day
Type of extraction	Simple
TXA concentration	5%
Application time	30 minutes
Sutura	Asnjë

Table 2. Postoperative Outcomes

Outcome	Patients (n)	Percentage
Postoperative bleeding	0	0%
Pain	12	60%
Inflammation	5	25%
Alveolitis	3	15%
Satisfactory healing	20	100%

Figure 1. *Pre-extraction clinical appearance of the alveolar ridge in a patient under aspirin therapy.*

Figure 2. *Immediate post-extraction sockets prior to TXA application.*

Figura 3. *Vendnxjerrjet pas aplikimit topikal të acidit traneksamik (TXA) 5%, duke treguar formim të qëndrueshëm të koagulIT.*

Figure 3. *Extraction sites after topical application of 4.8% TXA showing stable clot formation.*

DISKUTIM

Rezultatet e këtij studimi mbështesin fuqishëm qasjen bashkëkohore për mosndërprerjen e terapisë me aspirinë gjatë nxjerrjeve të thjeshta dentare. Në të gjithë pacientët e përfshirë në studim u arrit hemostazë e menjëhershme pas aplikimit lokal të TXA-së, pa asnjë rast gjakderdhjeje postoperative, çka konfirmon efikasitetin e lartë të kësaj metode.

Gjetjet tona janë në përputhje me studime të mëparshme që kanë demonstruar se TXA stabilizon koagulumin lokal pa shkaktuar efekte sistemike. Krahasuar me ndërprerjen e aspirinës, e cila mbart rrezik serioz tromboembolik, përdorimi i TXA-së ofron një alternativë të sigurt dhe efektive.

Dhimbja postoperative, e raportuar nga 60% e pacientëve, ishte e lehtë deri në mesatare dhe përputhet me incidencën e pritur pas nxjerrjes së dhëmbëve. Prania e alveolitit në 15% të rasteve mbetet brenda kufijve të raportuar në literaturë dhe thekson natyrën multifaktoriale të kësaj ndërlikimi, e cila nuk mund t'i atribuohet drejtpërdrejt përdorimit të TXA-së.

Inflamacioni lokal i vërejtur te disa pacientë ishte kalimtar dhe u zhduk spontanisht brenda 7 ditëve, duke treguar se TXA nuk pengon procesin normal të shërimit të indeve të buta.

DISCUSSION

The management of dental extractions in patients receiving continuous antiplatelet therapy remains a topic of clinical relevance and ongoing debate. Traditionally, clinicians expressed concern that antiplatelet agents particularly aspirin could increase the risk of perioperative and postoperative bleeding, prompting many practitioners to recommend temporary discontinuation before dental procedures. However, accumulating evidence over the past decade strongly supports the continuation of antiplatelet therapy, as interruption poses a substantially greater risk of thromboembolic complications, including myocardial infarction and ischemic stroke, which may outweigh the modest risk of bleeding associated with dental extractions. The present study further reinforces this approach by demonstrating that simple extractions can be safely performed without discontinuing aspirin in combination with local antifibrinolytic therapy using tranexamic acid (TXA).

Our findings showed that topical application of 5% TXA for 30 minutes provided immediate and effective hemostasis in all 20 patients, with no cases of postoperative bleeding. This result aligns with previous studies suggesting that TXA significantly enhances clot stability by inhibiting plasminogen activation and reducing fibrinolysis at the surgical site. Several authors have emphasized that local

PËRFUNDIM

Aplikimi lokal i acidit traneksamik 5% pas nxjerrjes së thjeshtë të dhëmbëve është një metodë shumë efektive dhe e sigurt për kontrollin e gjakderdhjes te pacientët që vazhdojnë terapinë me aspirinë. Kjo qasje eliminon nevojën për ndërprerjen e terapisë antitrombocitare dhe redukton rrezikun e komplikimeve serioze sistemike, duke siguruar një shërim postoperativ të favorshëm.

REFERENCAT

1. **Carter G, Goss A.** Tranexamic acid mouthwash—A prospective randomized study of a 2-day regimen vs 5-day regimen to prevent postoperative bleeding in oral surgery patients taking warfarin. Int J Oral Maxillofac Surg. 2003;32(5):504–507.
2. **Sindet-Pedersen S, Ramström G, Bernvil S, Blombäck M.** Hemostatic effect of tranexamic acid mouthwash in anticoagulant-treated patients undergoing oral surgery. N Engl J Med. 1989;320(13):840–843.
3. **Bajkin BV, Popović SL, Selaković SD.** Randomized, prospective trial comparing bridging therapy using low-molecular-weight heparin with continuation of oral anticoagulant therapy during tooth extractions. J Oral Maxillofac Surg. 2009;67(5):990–995.
4. **Bajkin BV, Selaković SD, Mirković SM, Saracević ZR.** Use of tranexamic acid mouthwash in dental patients receiving antiplatelet therapy. J Oral Maxillofac Surg. 2012;70(2):e58–e63.
5. **Napenas JJ, Oost FC, DeGroot A, et al.** Review of postoperative bleeding risk in dental patients on antiplatelet therapy. Oral Surg Oral Med Oral Pathol Oral Radiol. 2013;115(4):491–499.
6. **Ferraris VA, Saha SP, Oestreich JH, et al.** 2012 update to the Society of Thoracic Surgeons guideline on use of antiplatelet drugs in patients having cardiac and noncardiac operations. Ann Thorac Surg. 2012;94(5):1761–1781.
7. **Lockhart PB, Brennan MT, Sasser HC, Fox PC, Paster BJ, Bahrani-Mougeot FK.** Bacteremia associated with tooth brushing and dental extraction. Circulation. 2008;117(24):3118–3125.
8. **Anderson JL, Morrow DA.** Acute myocardial infarction. N Engl J Med. 2017;376(21):2053–2064.

TXA application is superior to systemic interruption of antiplatelet therapy, as it controls bleeding without exposing patients to systemic cardiovascular risks. The absence of postoperative bleeding in the present study supports the conclusion that TXA is a reliable hemostatic adjunct for simple dental extractions in medically compromised populations.

Pain incidence was relatively common in our cohort, reported by 12 (60%) of participants, but was generally mild to moderate and effectively managed with standard analgesics. This level of discomfort is consistent with previous literature describing postoperative pain as an expected outcome following dental extraction, independent of antiplatelet therapy. Importantly, the reported pain did not correlate with prolonged bleeding or delayed wound healing.

Three patients (15%) developed moderate alveolitis, a complication that falls within the commonly reported prevalence range of 1–5% for simple extractions but may be slightly higher in certain clinical contexts. Although TXA contributes to clot stabilization, alveolitis remains a multifactorial condition influenced by local trauma, oral hygiene status, smoking, and individual healing response. The relatively low number of alveolitis cases in our study suggests that TXA did not adversely affect normal clot maturation.

Localized inflammation was observed in five patients (25%), resolving spontaneously within seven days. The inflammatory response may be attributed to the normal healing process rather than a direct consequence of TXA use. Current evidence suggests that TXA does not impair wound healing; in fact, some studies propose that by stabilizing the fibrin matrix, TXA may support an environment conducive to soft-tissue repair. Our outcomes further support this perspective, as none of the patients exhibited delayed healing, infection requiring systemic antibiotics, or adverse tissue reactions to TXA.

Taken together, the results of this study substantiate the growing consensus that dental practitioners can safely perform simple tooth extractions in patients under continuous aspirin therapy when using TXA as a local hemostatic measure. By eliminating the need for antiplatelet discontinuation, clinicians

9. **Patel JP, Woolcombe SA, Patel RK, et al.** Managing direct oral anticoagulants and antiplatelet agents in patients undergoing dental surgery. Br Dent J. 2017;222(4):245–249.

10. **Sacco R, Sacco M, Carpenedo M, Moia M.** Oral surgery in patients on oral anticoagulant therapy: A randomized comparison of different hemostatic agents. J Oral Maxillofac Surg. 2006;64(5):843–847.

reduce the risk of life-threatening thromboembolic events while maintaining effective postoperative bleeding control. Furthermore, the positive healing outcomes observed suggest that topical TXA is not only safe but also potentially beneficial in supporting uneventful postoperative recovery.

CONCLUSION

Topical application of 5% tranexamic acid (TXA) following simple tooth extractions in patients maintained on aspirin therapy is highly effective in achieving rapid hemostasis and minimizing postoperative bleeding. In this study, all 20 patients achieved hemostasis within 2 minutes, and no postoperative bleeding occurred. Mild postoperative pain, localized inflammation, and moderate alveolitis were observed in a small proportion of patients, indicating that TXA does not adversely affect wound healing.

These findings reinforce the clinical recommendation to continue aspirin therapy during simple dental extractions, using TXA as a local hemostatic adjunct. Its ease of application, safety profile, and efficacy make it a valuable tool in dental practice for medically compromised patients. Further studies with larger sample sizes or more complex extractions are warranted to expand these findings.

REFERENCES

1. **Carter G, Goss A.** Tranexamic acid mouthwash—A prospective randomized study of a 2-day regimen vs 5-day regimen to prevent postoperative bleeding in oral surgery patients taking warfarin. Int J Oral Maxillofac Surg. 2003;32(5):504–507.

2. **Sindet-Pedersen S, Ramström G, Bernvil S, Blombäck M.** Hemostatic effect of tranexamic acid mouthwash in anticoagulant-treated patients undergoing oral surgery. N Engl J Med. 1989;320(13):840–843.

3. **Bajkin BV, Popović SL, Selaković SD.** Randomized, prospective trial comparing bridging therapy using low-molecular-weight heparin with continuation of oral anticoagulant therapy during tooth extractions. J Oral Maxillofac Surg. 2009;67(5):990–995.

4. **Bajkin BV, Selaković SD, Mirković SM, Saracević ZR.** Use of tranexamic acid mouthwash in dental patients receiving antiplatelet therapy. J Oral Maxillofac Surg. 2012;70(2):e58–e63.
5. **Napenas JJ, Oost FC, DeGroot A, et al.** Review of postoperative bleeding risk in dental patients on antiplatelet therapy. Oral Surg Oral Med Oral Pathol Oral Radiol. 2013;115(4):491–499.
6. **Ferraris VA, Saha SP, Oestreich JH, et al.** 2012 update to the Society of Thoracic Surgeons guideline on use of antiplatelet drugs in patients having cardiac and noncardiac operations. Ann Thorac Surg. 2012;94(5):1761–1781.
7. **Lockhart PB, Brennan MT, Sasser HC, Fox PC, Paster BJ, Bahrani-Mougeot FK.** Bacteremia associated with tooth brushing and dental extraction. Circulation. 2008;117(24):3118–3125.
8. **Anderson JL, Morrow DA.** Acute myocardial infarction. N Engl J Med. 2017;376(21):2053–2064.
9. **Patel JP, Woolcombe SA, Patel RK, et al.** Managing direct oral anticoagulants and antiplatelet agents in patients undergoing dental surgery. Br Dent J. 2017;222(4):245–249.
10. **Sacco R, Sacco M, Carpenedo M, Moia M.** Oral surgery in patients on oral anticoagulant therapy: A randomized comparison of different hemostatic agents. J Oral Maxillofac Surg. 2006;64(5):843–847.