

# Current Guidance for Postextractional Hemorrhagic Prophylaxis and Treatment

CRISTIAN CONSTANTIN BUDACU<sup>1</sup>, GHEORGHE RAFTU<sup>2</sup>, MIHAELA DEBITA<sup>3</sup>, OANA CIURCANU<sup>1\*</sup>, CONSTANTIN MIHAI<sup>1</sup>

<sup>1</sup>Grigore T. Popa University of Medicine and Pharmacy, Faculty of Dental Medicine, 16 Universitatii Str., 700115, Iasi, Romania

<sup>2</sup>University of Medicine and Pharmacy Ovidius, 1 Universitatii Alley, 900470, Constanta, Romania

<sup>3</sup>Dunarea de Jos University of Galati, Faculty of Medicine and Pharmacy, 47 Domneasca Str., 800008, Galati, Romania

*Post-operative bleeding is a topical issue in dental practice, fact reflected by the etiopathogenic, morpho pathological and therapeutic aspects; may occur at any time as a complication of dental extraction, due to local factors or general factors. The peculiarity of the dental extraction complication lies in the fact that the physician must immediately resort to firm measures leading to its solving in the shortest while, the most prolonged bleeding can put the patient's life at risk. Therefore surgery must be justified and applied only when the noticing methods are not effective. Knowing the pathology of the patient and its medication are of major importance in order to prevent post-operative hemorrhage complications. Dental extraction is the most frequent intervention of oral surgery that is addressed to both the dentist and the dento-alveolar surgeon, and is performed almost daily in the surgery. One of the local complications of dental extraction is post-surgical hemorrhage. Establishing a therapeutic, prophylactic and curative plan for this complication by conducting a good history of the patient accompanied by paraclinical examinations, the use of a well-established surgical technique can prevent post-operative hemorrhagic complications. The statistical survey was conducted between 2015 -2017; performed on a group of 225 patients. Knowing the methods of prophylaxis and treatment for post-operative bleeding, as well as the correct diagnosis of its causes are mandatory for every practitioner. Post-operative hemorrhage is a complication that can be prevented by making a correct and complete anamnesis, having as its etiology local causes (the most common) or general causes.*

*Keywords: post-surgical hemorrhage, surgery, dental extraction, thrombin, hemostasis*

Any surgery, regardless of its magnitude, is traumatic even for a completely healthy patient so far, even if it is the case with a tared field. Operative trauma disturbs the overall neuro-hormonal balance of the body in direct relation to aggression intensity and reactive capacity of the tissue interested in dental care.

The patient reflexively triggers a series of general and local changes of defense and compensation, the appearance, intensity and duration of which depends on the body's reaction, adaptive power, strength, and defense abilities. The work of the dentist and the dento-alveolar surgeon involves the full-blown interdisciplinary approach of patients with pathological conditions for optimal therapeutic behavior that avoids the occurrence of possible bleeding complications [1-3]. Paraclinic examinations to investigate hemostasis contribute to establishing complete diagnosis and phasing of therapy. They are indispensable especially in the case of patients with conditions that have repercussions on the process of hemostasis. Knowledge of methods of prevention and treatment for the postextractional bleeding and proper diagnosis of his causes are required for each practitioner. The growing number of patients with anticoagulants is noted and therefore it should be given a special importance to cooperation with the cardiologist and the hematologist to solve them. Dental extraction is the most common oral surgery that addresses both to the dentist and the dento-alveolar surgeon [4-6]. Post-treatment hemorrhage is a topical issue in dental practice; dental extraction is a surgical intervention that can be considered a true test by the hemostatic mechanisms of the body for several reasons: oral tissues and maxillaries are very well vascularized, resulting in an open wound allowing extra bleeding; it provides an efficient supraalveolar compression

in stopping hemorrhage, the tongue tends to explore the postoperative wound, sometimes dislocating the clot and causing additional bleeding [7-9]. Salivary enzymes can clot the clot before it is organized and the development of granulation tissue. Bleeding of the post-surgical wound stops after 15-20 min by forming blood clot. Sometimes post-surgical hemorrhage characterized by important blood loss may occur depending on the occurrence of post-operative hemorrhage. Hemorrhage from this point of view can be classified as: immediate-prolonged hemorrhage - when bleeding continues beyond the normal clotting period and there is no spontaneous stopping tendency; early bleeding, bleeding reoccurs 2-3 h after dental extraction; late hemorrhage, bleeding is triggered a few days after dental extraction [10-12].

Post-operative bleeding occurs due to local or general factors that either resist clot formation or favor premature lysis.

General factors that cause disorders in the hemostasis mechanism: pathological field-vasculopathy (increase vascular permeability and vascular permeability)

-vitamin deficiency, hepatic insufficiency, acute infections

- eruptive and chronic fever, hypertension, allergic conditions, endocrine disorders, period/ menstruation.

Congenital or acquired trombocytopathies and clotting: affections of blood-shaped elements (leukemias trombocytopenia, agranulocytosis), quantitative and qualitative trombocytopathies; isolated or associated deficiencies of the plasma factor (I, II, III, IV, V, VI, VII). There are five categories of substances that are administered in cortical or temporary schemes, may interfere with coagulation (aspirin, anticoagulants, broad spectrum antibiotics, alcohol, anti-cancer chemotherapeutic agents) [13-15].

\* email: oana.ciurcanu@umfiiasi.ro

Local factors are secondary vasodilation; persistence of granulation tissue in the alveolar; the presence of bone splinters; dental remnants or bone protrusions in the alveolar; which cause local irritation; extensive mucosal wounds with gingivitis-mucosal defects; fracture of the alveolar process or jaw bone; damage to important vessels, patient's failure to observe the instructions for post-treatment care.

It is believed that in relation to the cause and mechanism of producing hemorrhagic syndromes, the disorders will be related to one or more factors involving one or more stages of hemostasis. There are hemorrhagic syndromes by vascular mechanism; by thrombocyte mechanism; due to a coagulation disorder. Anticoagulant medication is a risk factor in post-operative bleeding.

Anticoagulant drugs (syndrome, thrombostop, heparin, etc.) inhibit clotting by action on the clotting phase; they do not cause clot lysis and do not affect fibrinolytic pathways [16-18].

The most common dento-alveolar surgery is represented of dental extraction that clearly indicates clinical cases requiring dental extraction: extended teeth with large crown-destructive teeth, which cannot be reconstructed by prosthetic means; complicated pulp gangrene teeth, where endodontic or surgical conservative treatments cannot be applied; conservative endodontic methods; simple or associated with surgical methods, teeth that have caused severe perimaxilar infectious complications (phlegmon, abscess, suppressed adenitis), teeth that have caused osteomyelitis or are implanted in already detached bone seizures; teeth that support infectious processes; teeth with periapical or periodontal pathological processes; unrecoverable fractured teeth; teeth with jaw fractures of jaws; overlapping isolated teeth on the upper arch; teeth in malposition, teeth included in which there is no longer the possibility of a normal eruption on the arcade; teeth generating severe eruption disorders; supernumerary teeth that cause functional disorders; teeth that cause local chronic irritation, generating nonspecific granulation tumors, the teeth found in areas to be irradiated, in patients with cancer in the cervico-facial region, etc. Postoperative routine care is an argument for normal scarring without the risk of postoperative hemorrhage.

It is recommended to perform the suture of the post-surgical wound whenever possible because it helps to heal better and faster, significantly reducing the risk of bleeding complications. After removal of the tooth from the alveolar, its integrity, possible processes of rhizitis, hyperdermosis, the granulation tissue are investigated [19-22].

A series of therapeutic measures are needed to prevent the occurrence of possible complications, to ensure a rapid healing of the post-surgical wound, while at the same time an alveolar ridge as good as possible for later prosthesis. If the tooth was extracted completely and periradicular there are no chronic infectious or tumoral infections, the curettage of the alveoli is contraindicated. Intra-canal washings with antiseptic substances are also contraindicated, the caustic substances are introduced into the alveolus, and the joints are contraindicated.

A sterile compression buffer is applied over the postextracanal plaque, and it is advisable for the patient to bite over the swab, thus maintaining it for about two hours [23-25].

If the extracted wisdom teeth have had acute or chronic infectious processes with evolving intraalveolar lesions or with periradicular granulation tissue, it is necessary to: ensure a complete evacuation of all pathological elements, to take all measures to prevent the extensive evolution of the pre-existing process; prevent the appearance of

secondary complications that would delay the healing process; ensure conformance of a suitable alveolar ridge for prosthesis.

In order to be able to institute appropriate measures to be taken in the event of postoperative hemorrhage, it is necessary to specify the level at which the deficiency affecting the hemostasis is established; it is only possible if the mechanism of hemostasis is known, representing the basis of diagnoses and therapeutic reasoning [26-28].

The most appropriate management of hemorrhage is the prevention; this includes a correct preoperative history, a careful clinical examination, the doctor's knowledge of bleeding disorders, meticulous intraoperative technique and recommendations, proper post-operative care.

During oral surgery, a minor and persistent bleeding is common, but occasionally an important bleeding episode may stop the procedure and lead to special hemostasis [29-31].

These intraoperative complications occur frequently at the time of incision of an area of granulosomatous tissue, the vessels of the peritoneal or mucous membrane or the encounter of a nutritional artery in the alveolar bone. Identification of the source of bleeding requires good illumination and adequate visibility in the operator field. Once identified, the bleeding site may be cauterized, debrided or sutured. Hemostatic agents should be available and if necessary they will be applied. If local measures are not successful, emergency treatment should be instituted, especially when the patient becomes symptomatic. The airways must be released and circulated. Uncontrolled intraoral hemorrhage can rapidly lead to compromised breathing due to hematoma enlargement in the throat or aspiration of blood in the upper airways [32-34].

Immediate post-surgical hemorrhage occurs especially after traumatic extractions, with extensive breakdown of soft and bone parts, in cases where rich vascularized granulation tissue remains in the alveolar. Despite perceptions states that any clot already made must be left in place, all clots and debris must be removed to allow the examination of the alveoli. Alveoli must be cleaned and scooped to allow identification of the source of bleeding.

Biological hemostasis as thrombin powder, gelatin or fibrin sponges imbed in thrombin, or collagen fragments embedded in gentamicin may be introduced into the alveolar.

Whether or not the suture is made, it is mandatory to apply a iodine buffer over the wound, slightly compressive which will be maintained for 3-4 days, and then changed every two days to scarring. One of the most common methods of controlling intraoperative hemorrhage involves the use of topical hemostatic agents. Application is almost always associated with surgical suture of the alveolar mucosa, which is often sufficient to prevent a post-surgical hemorrhage. Capillary bleeding is reduced by substances that cannot prevent blood from getting out of blood vessels with significant intravascular pressure (purified thrombin, some snake venoms, Russell viper, gelatin resorbable sponges, oxidized cellulose, microcrystalline collagen, collagen fibers, hemostatic collagen).

These substances have a high absorption capacity and are capable of maintaining the absorbed liquid for a long time [35].

Their indications are for the protection and control of bleeding from clean wounds in the oral cavity. The products are kept at the wound's level for 2-5 min to get the hemostasis and then removed, repositioned or left at the site.

All collagen-based materials will resume after 14-56 days. If local control measures do not provide hemostasis,

laboratory tests are required to assess the severity of the clotting disorder. Initially, prothrombin time, platelet count, standard bleeding time, etc. are required.

Laboratory examinations for more complex investigation of hemostasis disorders as well as general treatment for patients with coagulopathies are established in the interdisciplinary team: hematologist, dento-alveolar surgeon. General treatment of hemorrhages in hemorrhagic area is an extremely complex, very costly problem and it is carried out only in an interdisciplinary team under mandatory hospitalization conditions [36,37].

In serious hemorrhages it is urgent to restore the circulating mass by administering plasma, macromolecular solutions and blood. In small and medium hemorrhages, both for the restoration of circulating mass and especially for the intake of the biological elements necessary for hemostasis, are indicated fresh blood perfusions. In cases where hemorrhage is very severe, a hematologist will be consulted, both for the diagnosis of causal illness and for establishing the most judicious general therapeutic course.

### Experimental part

Determination of the time of blood clot formation after tooth extraction and the appreciation of its quality in patients with uncompromised hemostatic system; the evaluation of the frequency of dental post-operative hemorrhages and the etiological factors involved in their occurrence; evaluation of the particularities of the clinical picture of post-operative hemorrhage depending on etiology; developing the method of providing hemostasis by using human thrombin; analysis of efficacy of local hemostatic treatment by application of sutures, human thrombin in patients with post-surgical hemorrhage of various etiology; to determine optimum conditions for performing dental extractions in patients with a background of antithrombotic medication without canceling these preparations; the elaboration of the algorithm for prophylaxis and treatment of post-operative hemorrhages. The treatment algorithm of patients with post-operative hemorrhage guides the practitioners to select the optimal treatment method. The algorithm for prophylaxis of post-operative hemorrhage, implemented in practice, is useful to the dentist and contributes to the significant reduction of post-operative hemorrhage. The statistical survey was conducted in 2015 - 2017; conducted on a lot of 225 patients. A baseline patients were informed about the need for treatment. This study was conducted following the following factors: sex, age, occupation, marital status, origin, educational level, diagnosis.

### Results and discussions

Of the 225 patients enrolled in the study, 96 (42.66%) were male and the remaining 129 (57.36%) were females. From the clinical point of view, the selection of cases was done randomly in relation to the patient's addressability during the study period. Were charged in ambulatory clinic for oral and Maxillofacial Surgery 196 (87.11%) were practiced dental extractions, and on the rest of cases, 29 (12.89%) other interventions were performed, too, of oral and maxillo-facial surgery.

Investigating patients requiring dental extractions revealed that only 48.44% of them required the extraction of a monoradicular tooth, and the remaining 51.56% of the pluriradicular dental extraction. Due to the morphological particularities of the teeth as well as to the extremely varied anatomical reports of the neighborhood, post-accidental complications and accidents sometimes manifest dramatically, postoperative complications occurred in only

29 cases (12.88%), the surgery performed without complications in the rest of the patients.

The postextraxic complications occurred in the 29 cases (12.88%) were: edema and post-operative pain-7 cases (3.11%), postex-tractional alveolitis - 6 cases (2.66%), trismus- (0.88%); bleeding sites after extraction, -11 (4.88%) ,3 other cases complications (1.33%).

The causes that led to post- extracorporeal hemorrhage were local and general; local causes led to the occurrence of post-operative hemorrhage were represented by secondary vasodilation; bone wounds; fractures of the alveolar process; persistence in the alveolus of inflammatory processes, the presence of splinters; non-observance of post-treatment directions.

The most common local causes of post-surgical hemorrhage are non-observation of post-operative indications, along with the persistence in the alveolus of chronic or acute inflammatory pathological processes. General causes that have led to bleeding postextraxic were represented by systemic diseases and anticoagulants. Immediate hemorrhage, early hemorrhage, and delayed hemorrhage were observed in the patients under study. Although the importance of suture in the positive evolution of post-operative wound is unanimously accepted, it is not sufficient for hemostasis if a correct anamnesis is not performed or if all the technical steps of the dental extraction are not followed. Retaining in the post-surgical alveolar of pathological tissues, alveolar wall fractures, the creation of large gingival plaques, the presence of bone beaks along with a series of general disorders that alter the process of hemostasis may lead to post-operative hemorrhage.

The cleansing and post- extraction wound was performed and the hemostasis was checked every 15 minutes by replacing the superalveolar dressing; sufficient maneuvers to obtain hemostasis. When the hemorrhage persisted, the suture of the wound was sutured with non-resorbable sutures. After the suture of the wound, the hemorrhage was stopped.

If the bleeding persists after another 15 minutes, remove the suture thread and apply the hemostatic sponge to the post-surgical wound and then suture the plaque. The optimal conditions for dental extractions were determined in patients with antithrombotic medication background without canceling these preparations.

### Conclusions

Post-surgical bleeding may occur at any time as a complication of dental extraction, as having local causes or generalized factors.

Knowing the methods of prophylaxis and treatment in case of post-operative bleeding, as well as the correct diagnosis of its causes, are mandatory for every practitioner.

The identification of high-risk patients lies with the dentist, the dento-alveolar surgeon, and the established preventive and treatment measures for this complication must be fair and firm.

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Manuscript received: 17.10.2018