

# DENTAL MANAGEMENT OF PATIENTS WITH IDIOPATHIC THROMBOCYTOPENIC PURPURA: CASE REPORT

## MANEJO ODONTOLÓGICO DE PACIENTES COM PÚRPURA TROMBOCITOPÊNICA IDIOPÁTICA: RELATO DE CASO CLÍNICO

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**Abstract:** Idiopathic Thrombocytopenic Purpura (ITP) is an autoimmune disease characterized by thrombocytopenia due to excessive consumption of platelets, which results in hemorrhagic events of varying duration and severity. The oral cavity is a common site for hemorrhagic events in these patients, due to periodontal diseases, or related to invasive dental procedures. For this reason, treating patients with blood dyscrasias, such as ITP, is considered a challenge for general dentists. This is a case report of a patient with ITP who underwent urgent dental care and periodontal treatment, focusing on the clinical management strategies used to provide safe dental care and minimize the risk of oral bleeding events. The appreciation and accessibility to oral health in an integral way by patients with ITP permeates the need for training of oral health teams, especially in the prevention and management of possible bleeding complications, in a multiprofessional scope.

**Keywords:** Idiopathic Thrombocytopenic Purpura; Periodontal Diseases; Oral Health.

## INTRODUCTION

Thrombocytopenia is defined as a reduction in the global platelet count per microliter of blood, when values below  $150,000 \text{ cells/mm}^3$  are found<sup>(1)</sup>. Idiopathic Thrombocytopenic Purpura (ITP) is an autoimmune blood dyscrasia characterized by transient or chronic thrombocytopenia. In people

with IP, the basal platelet count is usually less than 100,000 cells/mm<sup>3</sup>(2).

Thrombocytopenia secondary to ITP occurs through the production of autoantibodies, of the IgG type, directed against the surface glycoproteins (GPIIb-IIIa) of the phospholipidic membrane of platelets, leading to their phagocytosis by macrophages of the reticuloendothelial system present in the spleen and liver. As a result, platelets in people with INP survive only a few hours in peripheral blood, unlike platelets in healthy individuals, which have an estimated shelf life between seven and 10 days<sup>(2-3)</sup>. Transient itP is the most common form in childhood and usually occurs after viral infections and/or vaccines. In these cases, about 80% of the affected children have a spontaneous cure, and only about 10% - 15% of the cases develop the chronic form of ITP<sup>(4)</sup>. In adults, the PTI has a progressive increase with age and affects about 2-4/100,000 adults/year, with a higher incidence among women<sup>(3)</sup>.

The diagnosis of thrombocytopenia of autoimmune origin is made through the exclusion of other etiological agents associated with a reduction in production, or related to the increase in platelet consumption, such as thrombocytopenia secondary to drug use, chronic alcoholism, thrombocytopenia associated with heparins, myeloproliferative disorders, disseminated intravascular coagulation (VDV), splenomegaly and/or *Helicobacter*. The main differential diagnoses of ITP involve Bernard-Soulier Syndrome, Wiskott-Aldrich Syndrome, leukemias, lymphomas, viral infections (e.g., HIV/AIDS, infectious mononucleosis), in addition to other autoimmune diseases, such as Systemic Lupus Erythematosus<sup>(5)</sup>.

Only about 5% of thrombocytopenia with platelet counts below 30,000 cells/mm<sup>3</sup> have a risk of fatal bleeding in individuals diagnosed with IP<sup>(6)</sup>. Although thrombocytopenia can reach extremely low values in the ONP, these patients rarely develop severe bleeding conditions, and mild to moderate mucocutaneous bleeding patterns are more common. This is due to a compensatory physiological mechanism of supraregulation of platelet function and increased production of new platelets by the bone marrow<sup>(1)</sup>.

The oral manifestations of thrombocytopenia may represent the first signs and symptoms of TIP<sup>(5)</sup>. In the oral cavity, it is common for bleeding to occur, which can manifest through purpura, hematomas, petechiae, ecchymosis, telangiectasias, vesicles and hemorrhagic blisters. The most affected sites include the gums, soft palate and jugal mucosa. In general, the orofacial manifestations of the IP can accompany or even precede the pictures of significant visceral hemorrhages<sup>(7)</sup>.

The general dentist can contribute to the early diagnosis and stratification of the severity of the disease by identifying the mucocutaneous hemorrhagic manifestations of the ICU. However, due to the increased hemorrhagic tendency in the face of invasive dental procedures, it is common for there to be a greater professional refusal in the dental care of these patients, who may face difficulties in

accessibility to oral health services<sup>(8)</sup>.

The objective of this work is to report a clinical case of multidisciplinary dental care of a patient with IP, describing the oral manifestations of the disease and discussing the challenges encountered in the establishment of safe dental management at the outpatient level.

## PRESENTATION OF THE CASE

This clinical case report was submitted and approved by the Research Ethics Committee of the Maintainer Institute of Higher Education of Bahia (CEP/IMES) of Presentation for Ethical Appreciation (CAAE), of number 47566721.0.0000.5032, and consolidated opinion number 4,825,737.

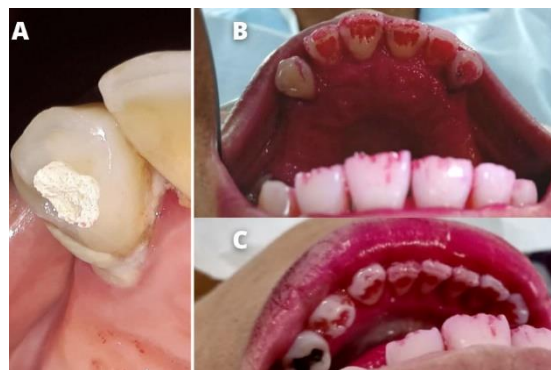
A 50-year-old female patient, melanoderma, attended the dental clinic of the University of Technology and Sciences (UniFTC), Campus Salvador, with the main complaint of "pain in a tooth that she knew needed to make a canal". During the anamnesis, the patient reported having had thrombocytopenia since 2003, diagnosed with IP in 2014. Its platelet levels oscillated between 10,000 - 50,000 cells/mm<sup>3</sup>, with only two recent episodes in which platelet counts were higher than 100,000 cells/mm<sup>3</sup>, one of which was due to treatment with venous immunoglobulin under hospitalization for hysterectomy surgery, which presented post-surgical hemorrhagic complications. Other reported hemorrhagic complications included regular episodes of gingivorrhagia, hematuria and skin ecchymosis since the diagnosis of IP, with gengivorrhagias being more frequent in the last decade. These episodes of gingivitis were common during the act of oral hygiene, but with a significant decrease in the last three years, after brushing with toothpaste based on Triclosan and Zinc Citrate, under dental prescription. The patient denied having other comorbidities or having a family history of thrombocytopenia. Previous treatments with a hematologist included corticosteroid therapy, with a peak of 80 mg/day of Prednisone, which was reflected in a transient elevation of platelet levels during treatment. However, the patient is currently refractory to corticosteroid therapy.

The patient had spontaneous pain in the right upper canine, with improvement associated with the use of analgesics. In addition, the patient reported brushing her teeth twice a day and not flossing due to the common presence of bleeding for hours when doing so. He reported progressive "dental mobility" over the years and the loss of two teeth that "loothed from the arch". About a month ago, the patient sought emergency dental care due to acute pain associated with the right upper canine, which was treated by an external service dental surgeon through endodontic access, intracanal medication and referral to endodontic treatment with a specialist in the dental care of patients with

special needs. The reason for the referral included the fact that the patient had itN.

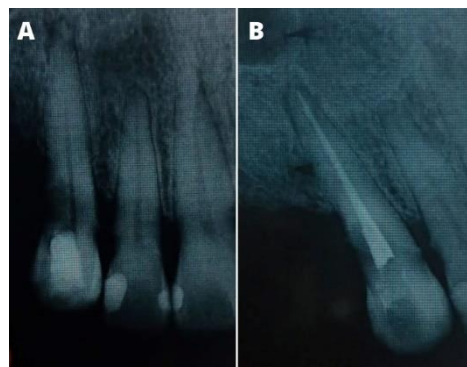
On extraoral physical examination, the patient was in good general condition, lucid, stained, eupneic, with facial symmetry and non-palpable lymph nodes. On intraoral physical examination, it was possible to notice the presence of petechiae in the soft palate and jugal mucosa, bilaterally. Other findings included the presence of thick calculus and biofilm in all sextants, dressing in provisional restorative material in tooth 13 (Fig. 1), generalized gingival recession, absence of teeth 18, 16, 15, 14, 24, 25, 26, 27, 38 and 48, as well as multiple microfractures on the incisal border of the upper central incisors. On 2A), in addition to the presence of biofilm, subgingival calculus and generalized horizontal bone loss.

**Figure 1** – A. Clinical aspect of the temporary dressing in tooth 13 and accumulation of supragingival biofilm; B and C. Evaluation of stained dental surfaces during the clinical execution of the O’Leary plaque index. Salvador, BA, Brazil, 2021.



Source: Images of the author.

**Figure 2** – A. Radiolucency in the cervical and apical third of the root of tooth 13 suggestive of root caries and periapical lesion secondary to pulpal necrosis. B. Final image of the endodontic treatment of tooth 13. Salvador, BA, Brazil, 2021.

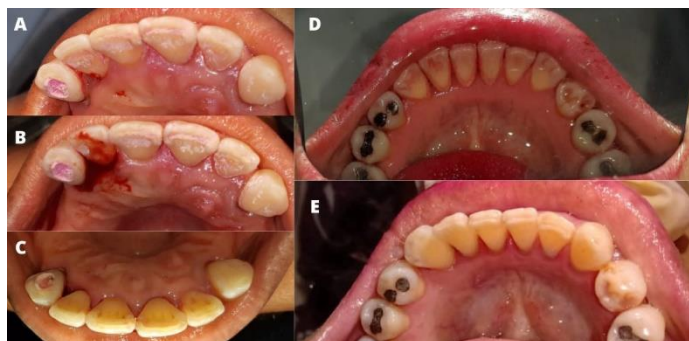


Source: Images of the author.

For the definition of the perioperative management to be adopted, successive platelet counts of the patient were requested, at least 24 hours in advance for each dental care, in order to monitor the preoperative platelet levels. In addition, before each consultation, a questionnaire and physical examination included the search for signs of active bleeding, or relevant mucocutaneous bleeding, which could indicate the severity and/or exacerbation of the disease. Respecting these perioperative evaluation criteria, the endodontic treatment of unit 13 (Fig. 2B) was carried out in two sessions, with basal platelet levels of 31,000 cells/mm<sup>3</sup>, under absolute isolation, in whose context the gingival retraction favored the placement of the clamp without traumatizing the periodontal soft tissues, using a system of manual files under continuous irrigation with 2.5% sodium hypochlorite, followed by the filling of the root canal with gutta. The anesthesia used included the use of supraperiosteal infiltrative techniques performed with a single puncture, with lidocaine hydrochloride with 2% epinephrine 1:100,000. As postoperative recommendations, the patient was informed about the possibility of forming new hematomas in proximity to the areas manipulated in a dental consultation, being instructed to apply ice packs externally on the face, in the nearby regions where the anesthetic punctures were performed, for approximately 20 minutes, every hour, in the next 24 hours.

After the resolution of the endodontic emergency of tooth 13, the following consultations included conventional periodontal treatment, with guidance and encouragement on oral hygiene techniques. A brush with soft bristles and regular use of dental floss with atraumatic technique was prescribed. The patient was instructed not to discontinue flossing if there were minor bleeding during the beginning of the implementation of this new habit. If major bleeding occurred, the patient was instructed to suspend the use of dental floss and contact the Dentistry department of UniFTC Salvador. Periodontal treatment sessions included supragingival root scraping and straightening and, after reducing local inflammation and biofilm adhered to the teeth, subgingival root scraping and straightening sessions were initiated. All periodontal treatment was carried out with the care of approaching a sextant by consultation and using local compressive maneuvers with the aid of sterile gauze to contain intraoperative bleeding (Fig. 3). Both procedures were performed under regular monitoring of the platelet count and application of a questionnaire to verify spontaneous bleeding episodes.

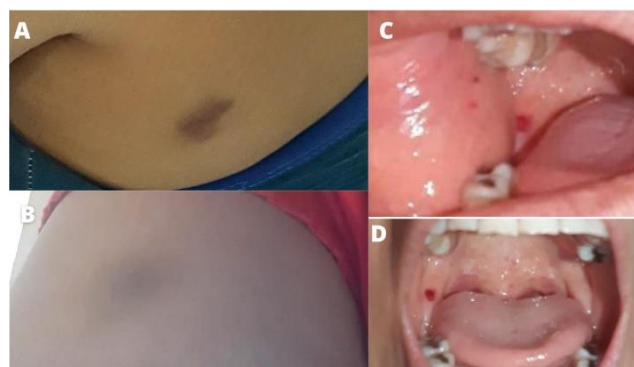
**Figure 3** – A. Clinical aspect before subgingival scraping of the sextant II. B. Transoperative bleeding of subgingival scraping associated with teeth 12 and 13. C. Clinical aspect after subgingival scraping of the sextant II. D. Clinical aspect before the supragingival scraping of the sextant V. E. Clinical aspect after supragingival scraping of the sextant V. Salvador, BA, Brazil, 2021.



**Source:** Images of the author.

In one of the patient's periodontal treatment consultations, one of the sessions was suspended due to the identification of petechiae and ecchymosis in the patient's oral mucosa, in addition to new ecchymosis in the upper limbs and back, accompanied by platelet levels of  $20,000 \text{ cells/mm}^3$  (Fig. 4). This condition could denote a greater risk of oral bleeding events resulting from a dental intervention, hence the suspension. After the patient evolved to supportive periodontal therapy, the need for strict control of the biofilm, reinforcement of oral hygiene guidelines and regular measurement of the O'Leary's plaque index was emphasized, in order to avoid oral hemorrhagic events arising from the exacerbation of the patient's periodontal condition. The continued evaluation of the O'Leary plaque index during the sessions revealed initial values of 76% of visible plaque, followed by the reduction to 21%, remaining stable at an average of 40% of visible plaque throughout the treatment.

**Figure 4** – A.B. Cutaneous purple observed in one of the consultations during the patient's dental treatment; A. Right side of the back. B. Anterior region of the left arm. C and D. Purples and petechiae dispersed in the oral cavity. Salvador, BA, Brazil, 2021.



**Source:** Images of the author.



Throughout the dental treatment of the patient, a screening and monitoring of new hemorrhagic events arising from the procedures performed was carried out. Specific instructions were provided in writing and verbally to the patient. In addition, a communication routine was established with the patient and her hematologist before dental consultations. After the consultations, contact was maintained in the first 72 hours with the patient through conversations by mobile application. All these measures aimed to identify new possible bleedings and manage them as early as possible. Even with the implementation of these initiatives, there was no manifestation of postoperative oral hemorrhagic events during the care provided.

## DISCUSSION

Although there are several published recommendations emphasizing that the dental care of patients with IP can be performed safely in the absence of severe oral hemorrhagic manifestations or in other sites, there are still barriers that impose full access to oral health of this group of patients<sup>(1)</sup>. In a previous study, one fifth of the patients questioned have already had dental care denied by a general dentist<sup>(8)</sup>. These results reflect on the need for an accurate risk-benefit assessment of providing comprehensive dental care to the group of patients with hemorrhagic disorders, such as ITP, given that the absence of regular access to dental services is linked to later more invasive interventions, which contribute to a greater chance of new oral bleeding events. The objective of this study was to report the clinical management of a patient with ITA. To this end, the reporting of the information focused on the procedures adopted, on the discussion of viable strategies for safe dental care, as well as on the reduction of the risk of oral hemorrhagic events.

It has already been shown in a study that patients with baseline platelet levels of up to 20,000 cells/mm<sup>3</sup> rarely need transfusion of blood products, such as platelets. The authors also state that, even when the platelet count is lower than the indicated level, an accurate investigation of the real need to transfuse platelets for minor dental procedures should be carried out<sup>(9)</sup>. This is due to a physiological mechanism of supraregulation of platelet function and compensatory increase in the production of megakaryocytes by the bone marrow of these patients, which causes the risk of new hemorrhages to be reduced, even in the presence of chronic thrombocytopenia, when compared to patients with other types of thrombocytopenia. In the reported clinical case, although the patient progresses with basal platelet levels around 20,000 - 30,000 cells/mm<sup>3</sup> during dental consultations, most treatments could be performed without severe hemorrhagic complications. The procedures adopted included infiltrative anesthesia, installation of metal staples for absolute isolation, as well as

scraping and supra and subgingival root planing during periodontal treatment.

Systemic therapies can be used in order to increase baseline platelet levels prior to invasive interventions in patients with IP. Corticosteroid therapy, use of intravenous immunoglobulins, anti-D antibodies and specific thrombopoietin receptor agonists are described as the main systemic therapies for patients refractory to corticosteroid and immunoglobulin therapy<sup>(10)</sup>. Splenectomy and platelet transfusion are still considered therapies of last choice for those patients who are not responsive to corticosteroids and human immunoglobulin, the latter being conditioned to the presence of active bleeding or invasive surgeries that may bring life-threatening to the patient<sup>(11)</sup>. Since the control of systemic platelet levels is of medical competence, it is evident the importance of the partnership between dental surgeon and hematologist in the care of patients with ITP, to the perception of the possible oscillation of platelet levels in the course of dental treatment. For the clinical case reported in this study, the patient had previously undergone systemic therapy with corticosteroids and immunoglobulins for other surgical procedures, and is currently without the use of systemic therapies to increase platelet values. Splenectomy and platelet transfusion were not considered as a viable therapeutic option by the medical team until the present moment of writing this case report. For the proposed dental treatment, systemic therapy was not performed in order to raise the basal platelet levels, due to the stability of the clinical condition of the patient, who was in the absence of active bleeding.

The main recommendations for the dental care of patients with itP include the performance of a platelet count prior to dental procedures, invasive or not, since anesthesia is part of the routine of the dental surgeon, and may represent a greater risk for the formation of intramuscular hematomas and/or perioral and cervical bruises after puncture and anesthetic infiltration. The literature shows that the use of anesthetic techniques that include inferior alveolar nerve block and infiltrations in the lingual region should be avoided by the risk of hematoma formation in the retromolar or ptérigomandibular spaces<sup>(8)</sup>. Other recommendations include the use of staples, retractor thread and ties for absolute isolation in an atraumatic way, avoiding soft tissue injuries; performance of periodontal scraping with the aid of ultrasonic instruments; adjustment of prostheses in order to reduce the risk of injuries and bruising in soft tissues by friction or tightening<sup>(7)</sup>. Care with drug prescription includes avoiding the use of acetylsalicylic acid or non-steroidal anti-inflammatory drugs (NSAIDS) for pain relief due to their inhibitory action on platelet aggregation<sup>(4,7)</sup>. For the reported case, local care included the use of infiltrative anesthetic techniques with a single puncture, slow injection of anesthetic salt associated with vasoconstrictor, local postoperative cryotherapy in the places where the anesthetic punctures were made, atraumatic positioning of metal clamps for absolute isolation, prescription of paracetamol for the control of postoperative pain, in addition to strict



monitoring for new oral bleeding events through guidance and effective communication with the patient.

A range of local hemostatic methods can be used in order to minimize, or treat oral bleeding events in patients with bleeding disorders, such as itP. The use of local therapies for the control of oral bleeding in the face of the need for invasive dental procedures has significantly reduced the need for replacement of blood products, or platelets, and even the need for corticosteroid therapies in these patients. The most applicable recommendations for this type of interventions include the use of antifibrinolytic agents (e.g. tranexamic acid) and local compressive maneuvers with gauze and obliterative sutures<sup>(4)</sup>. Other local hemostatic agents can be used for the same purpose, including absorbable alveolar dressings (e.g. regenerated oxidized cellulose weft, gelatins, gelatin soaked with thrombin, microfibrillar collagen); biological (e.g., fibrin sealant) or synthetic glues based on cyanoacrylate; chitosan and bovine For the reported case, only local compressive maneuvers with the use of sterile gauze were sufficient to contain the transoperative bleeding arising from supra and subgingival scraping. There was no need to use other local hemostatic methods due to the low invasiveness of the proposed procedures.

Gingivorrhagia is one of the most frequent oral hemorrhagic complications in patients with itP<sup>(3)</sup>, who may have active periodontal disease<sup>(14)</sup>. In these cases, the control of oral biofilm and periodontal disease represent one of the greatest challenges to be faced by the dental surgeon, due to the necessary level of joint cooperation with the patient. In this case report, the patient reported the presence of gingival bleeding associated with the use of dental floss, which motivated her to interrupt its use. Discontinuation of oral hygiene in recurrently bleeding gingival sites secondary to gingivitis or periodontal disease is common in these patients, which favors the maintenance of a pro-hemorrhagic environment due to the local inflammatory process<sup>(2)</sup>. In the reported case, oral hygiene instruction measures were massively implemented, with stimulus to the use of dental floss and revision of the visible plaque index in all consultations that preceded the periodontal treatment, until the patient presented progress in the control of the oral biofilm.

Studies have correlated the increased presence of tissue plasminogen activators, t-PA, in saliva and crevicular fluid, associated with inflammatory events and local tissue stresses, such as in periodontal disease, which corroborate the increase in oral fibrinolytic activity, responsible for the early dissolution of the newly formed blood clot<sup>(14)</sup>. A statistically significant correlation was also identified between the plaque indices and the indices of fibrinolytic activity of the alveolar blood of the teeth studied. The higher concentration of plasmin can activate metalloproteinases, increasing tissue destruction caused by periodontal disease<sup>(14)</sup>. Given the evidence, studies have also instigated that the destruction of platelets results in the release of a variety of platelet factors that would

contribute and amplify lesions in the gingival and periodontal tissue, reflecting once again in the pro-disease cycle<sup>(15)</sup>. Considering the possibility that the reduction of periodontal inflammation may have a positive impact on the clinical reduction of spontaneous and/or provoked gingival bleeding, it is imperative that the adequacy of the oral environment of this group of patients includes the stimulus to the reduction of biofilm and periodontal treatment, when indicated, as carried out in the present clinical case.

Among the possible systemic changes, the most worrying for the clinical daily life of the general dentist are blood dyscrasias. About 20% of the 105 patients questioned in a study did not attend a dental surgeon regularly due to previous experience of refusal in the face of the revelation of their blood dyscrasia during the anamnesis<sup>(8)</sup>. Patients who have regular access to dental consultation for oral health maintenance and prevention have a lower risk of needing invasive procedures that require systemic and/or local hemostatic coverage. Considering the invasive nature of dental procedures and the presence of bleeding in much of such procedures, the individual with ITP may end up avoiding the search for dental services, which directly impacts their oral health condition, making them more susceptible to. The present clinical case aims to illustrate the situation of refusal of dental care experienced by the patient, which may have contributed to the worsening of her oral health, requiring more complex procedures and, with a greater hemorrhagic risk.

The research took place in a context of a COVID-19 pandemic, therefore, several times dental care had to be postponed by the restrictive measures that prevented the habitual operation of clinics in universities. Thus, the results reported here do not illustrate the total conclusion of the patient's initial planning. However, the report becomes relevant due to the rarity of the patient's clinical condition and the need to alert dental surgeons about the inclusion and full access to dental services by people with blood dyscrasias.

## CONCLUSIONS

The difficulty in accessibility to oral health in an integral way by patients with bleeding disorders, such as IP, is still a reality experienced in this specific population. This is reflected in the need to train oral health teams in order to properly identify and manage possible oral bleeding events in these patients, using intraoperative or postoperative local hemostatic maneuvers, in line with the hematologist, due to the increased risk for oral bleeding events.

The authors understand that the appreciation and guidance of healthy oral hygiene habits are essential for patients with ITP, given that the presence of inflammatory events, such as gingivitis and

periodontal disease, greatly increase the risk of new hemorrhagic events in the oral cavity, thus perpetuating a pro-hemorrhagic cycle.

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