

Prevention of deep vein thrombosis in patients undergoing plastic surgery



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ABSTRACT

INTRODUCTION: Plastic surgery is the branch of medicine that aims to recover, restore or alter the physical presentation of the patient. It is the medicine of self-esteem and seeks to repair both the physical and the psychological of those who seek it. To this end, the individual undergoes delicate procedures that can lead to complications and possible death. A complication of high incidence and morbidity and mortality is deep vein thrombosis (DVT), which is characterized by the formation of a thrombus (clot) within the lumen of one of the blood vessels of the deep venous system, in any region of the body, but more frequently in the lower limbs. As plastic surgery is classified as elective and for the well-being of the patient, it is of paramount importance that safety in its performance is a priority and listing methods to prevent DVT is one of the ways to seek this safe procedure. **OBJECTIVE:** This study aims to analyze articles that propose methods to prevent deep vein thrombosis after plastic surgery, in order to understand the usefulness and feasibility of DVT prophylaxis in plastic procedures and to enable the improvement of the surgical technique and the patient's procedure aiming at better recovery and quality of life in the postoperative period. **METHOD:** To compose this integrative literature review, we used articles obtained from searches in the virtual databases (PubMed, SCIELO and Google Scholar), using the Science and Health Descriptors (DeCS) "Deep Vein Thrombosis"; "Plastic Surgery" and "Prevention", between 2010 and 2021. **RESULTS:** From the integrative review of the articles, it was evident that there are still many controversies among the authors about the practice of prevention of DVT after plastic surgery. It is worth noting that some authors state that



healthy patients without comorbidities do not need to be enrolled in DVT prophylaxis. Even so, there are studies that highlight the high incidence of DVT in patients undergoing plastic procedures, especially in surgical processes that have determinants, such as duration of more than two hours, combined surgeries, type of decubitus and procedure. In this sense, some authors indicate the use of chemoprophylactic drugs, such as Enoxaparin and Rivaroxaban, for patients undergoing such procedures and those with comorbidities, in order to preserve the patient's health. In general, it is attested by the articles that, when well indicated, prophylaxis for DVT in plastic

surgery has an efficacy close to 100%. This fact reaffirms the importance and need to develop and expand scientific knowledge in the area. **CONCLUSION:** Thus, it is possible to conclude that thromboprophylaxis is feasible and useful. However, it must be well indicated and developed, respecting the individuality of each patient by taking into account the individual's health status and the particularities of the proposed plastic surgery procedure.

Keywords: Deep Vein Thrombosis, Plastic Surgery, Prevention.

1 INTRODUCTION

Plastic Surgery is defined as a surgical specialty in charge of reconstructing, remodeling, and/or altering body structures that present both changes in their function and structure, according to the Brazilian Society of Plastic Surgery (SBCP, 2022). In this sense, the expansion of this branch is evident, both in terms of its aesthetic and restorative performance, and in view of this, some possible consequences of these procedures are seen, especially when they are more invasive forms and associated with concomitant procedures, in which they present their outcome in a more severe form, which is the development of venous thromboembolism (PAIVA et al, 2010).

Venous thromboembolism (VTE) refers to a range of variations in the clinical presentation that the patient may present, which is composed of nosological diagnoses, among others, of deep vein thrombosis (DVT) and pulmonary thromboembolism (PTE). The latter, in turn, is largely responsible for more preventable hospital deaths (PAIVA et al, 2015).

In addition, deep vein thrombosis (DVT) consists of the formation of a venous thrombus, a cluster of leukocytes and platelets, in the bloodstream, impairing the flow of blood in the veins, being a very common disease and promoted by several factors. Thus, this loss in thrombogenic balance in the context of plastic surgery is mainly triggered by changes in blood flow and volume, by lesions or inflammation in the vascular endothelium, and by the state of hypercoagulability, and can be potentiated by basic factors such as smoking and diabetes (PAIVA et al, 2010).

Thus, it is worth noting that the recent increase in the number of plastic surgeries performed in the world has been accompanied by a significant increase in DVT, increasing the chances of complications and making plastic surgeons more vulnerable. The sequelae developed by unsuccessful procedures have an impact not only on the patient, but also on the medical team and family members. From the available literature, we can observe a scarcity of studies regarding the prophylaxis of this



scenario, and superficiality when it comes to prevention methods, which is so critical and important for clinical management (PAIVA et al, 2010).

In view of the above, it is essential to recognize that the understanding of deep vein thrombosis (DVT) associated with plastic surgery is of critical importance for the correct management of patients undergoing these procedures. Thus, the study on the prevention of this clinical condition is essential to ensure a successful surgery and a harmonious postoperative period. Thus, the objective of this study is to analyze articles that propose methods for the prevention of DVT associated with plastic surgery, in order to better understand the feasibility and efficiency of prophylactic methods in this scenario, and to add to the available literature on the subject, improving the surgical technique and the patient's procedure, aiming at a better recovery.

2 METHODOLOGY

This is a descriptive study - an integrative review of the literature - whose research method allows the synthesis of multiple published studies and allows general conclusions regarding a particular area of study.

The following steps were used for the construction of this review: identification of the theme; selection of the research question; data collection by searching the literature, in electronic databases, with the establishment of inclusion and exclusion criteria to select the sample; elaboration of a data collection instrument with the information to be extracted; evaluation of the studies included in the integrative review; interpretation of the results and presentation of the evidenced results.

The guiding question of the research was: what are the methods of prevention of deep vein thrombosis after plastic surgery and what is the feasibility and functionality of this prophylaxis? To answer this question, a search of articles published in the last 13 years was performed in the following databases: Scientific Electronic Library Online (SciELO), Google Scholar and PubMed.

The inclusion criteria were: articles available free of charge with full text; with qualis A (1 and 2) and B (1, 2, 3 and 4), in English and Portuguese; articles that provided clinical data on deep vein thrombosis after plastic surgery and prophylaxis used to avoid this complication, especially when thinking about patient safety and aesthetics, and articles published and indexed in these databases. Articles available only in abstract and studies published in sources that were not available electronically were excluded.

The Health Sciences Descriptors (DECS) were: "Deep Vein Thrombosis"; "Plastic Surgery" and "Prevention".



3 RESULTS

In SOUSA, L. C. S. et al. (2021), based on the analysis of 22 articles, the numerous controversies and non-consensus regarding prophylaxis for deep vein thromboembolism became evident. It was evidenced that the best strategy for prevention is thromboprophylaxis, a widely known and little publicized method, making clear the need to discuss and disseminate this technique by medical indication. Thromboprophylaxis is a multidisciplinary duty, that is, nurses, pharmacists, physiotherapists and physicians have a mutual responsibility to weigh the risks and avoid complications in their patients.

The study by JUSTINO, T.A. et al. (2018) brought VTE to the specific reality of abdominoplasties, mainly reinforcing the lack of prophylaxis for the problem in the context of this cosmetic surgery. It brought data on 243 medical records in which 74 patients were submitted to the VTE prophylaxis protocol, of which none progressed to VTE, and the 169 medical records analyzed before the beginning of VTE prophylaxis showed the occurrence of 2 cases of VTE, reducing the incidence of VTE in abdominoplasties from 1.18% to 0% in the observed cutout.

PAIVA, R. A. et al. (2015) shows that 200,000 cases of pulmonary embolism occur annually in hospitalized patients, with death usually occurring within the first 2 hours. The objective of this study was the importance and safety of the protocol for the prevention of venous thromboembolism. A total of 2759 patients who underwent surgery at the Ivo Pintaguy Institute were followed, all of whom were evaluated in relation to the risk of VTE and submitted to the prevention protocol. In all these patients followed, there were 3 cases of VTE, so the protocol and procedures adopted by the institute proved to be important in the prevention of VTE cases and lower hematoma rates.

PONTELLI, E. P.; SCIALOM, J. M.; SANTOS-PONTELLI, T. E. G. (2012) showed that thromboembolic prophylaxis in abdominoplasty with the use of pharmacological methods, such as anticoagulants, or mechanical methods, such as compression stockings, alone have similar efficacy. In this same study, conducted with more than 560 patients who underwent abdominoplasty, in 64.3% of the surgeries there was an association of procedures together with abdominoplasty. Regarding the incidence of complications (which were considered risk factors: age, body mass index, duration of surgery, smoking, among other factors), no significant difference was observed between the groups with pharmacological prophylaxis and the group with Intermittent Pneumatic Compression.

REIS NETO, R. S. et al. (2019), based on the retrospective study of medical records at the PUC-Campinas Hospital, analyzed the medical records of 288 patients who underwent mammoplasty, either augmentation or reduction, and found an incidence of 0.69% of thromboembolic complications, two of which (n=2) progressed to pulmonary thromboembolism (PTE). Regarding risk factors, the patients were aged between 24 and 33 years, body mass index between 21 and 24, no smokers and all



nulliparous. Regarding the patients who had complications, both were introduced to treatment with low molecular weight heparin for 5 days and oral anticoagulation with warfarin.

PAIVA, R. A. D. et al (2010) state that after the insertion of the protocol for the prevention of venous thromboembolism in plastic surgery at the Ivo Pitanguy Clinic and the analysis of 1700 medical records, there was no diagnosis of any case of DVT. In addition, in 711 surgical procedures performed, there was a significant decrease in the incidence of severe hematomas, due to greater BP control in the preoperative and postoperative period after the establishment of the protocol in question.

In MOULIM, J. L. et al (2010) evaluated a total of 212 patients, 28.3% male and 71.7% female, with a mean age of 33.9 years, regarding the type of surgery performed, 107 (50.47%) were aesthetic and 105 (49.53%) were restorative. Bearing in mind the comparison of the Davison-Caprini (American) and Sandri (Brazilian) thromboembolic event prevention protocol, there is an important variation in the classification of low, medium, and high risk for DVT. When the modified Sandri protocol (Sandri M) is inserted, the improvement of this variation is evident, which is more comprehensive and applicable.

4 DISCUSSION

The analysis of the data revealed, first, that deep vein thrombosis (DVT) represents a significant concern in the postoperative context of plastic surgery, due to its potential impact on the morbidity and mortality of patients (PAIVA, R. A. et al. 2015). Finally, it is important to highlight the fact that there are controversies among authors regarding the prevention of DVT after plastic surgery. Even so, there are authors who advocate the practice of prevention, based on factors such as the surgery to be performed, the type of anesthesia and the degree of risk of the patient, especially considering smoking, two or more pregnancies and hormone replacement. These data are obtained in a rigorous clinical evaluation.

In addition, it was possible to observe that the prevention protocol is used individually, being the basis for the postoperative management and already being practiced since the first consultation, through the suspension of medications with thrombogenic potential, such as oral contraceptives. However, the analysis of the articles showed a certain pattern for the prevention of DVT found in certain situations, such as surgery time above two hours, combined surgeries, and type of decubitus, in addition to the factors analyzed in the preoperative clinical evaluation (JUSTINO, T.A. et al. 2018).

Thus, it was evidenced that the standard to prevent DVT exists and is applied 10 days before and after surgery, but there are variations in its use according to the patient, since there are patients with severe comorbidities (use of central venous catheters) and, therefore, there is a high risk of developing DVT (JUSTINO, T.A. et al. 2018)



Medications designed to prevent thrombi, known as antithrombotics, include antiplatelet and anticoagulant drugs, such as warfarin, low molecular weight heparin, and fondaparinux. There is concern about the risk of bleeding when raising the International Normalized Index (INR) for orthopedic surgeries, which may put patients at low risk of deep vein thrombosis at greater risk of bleeding (GALIL, J.C; CAMARGO, D.B; 2019).

For patients with a history of DVT, pharmacological prophylaxis and compression devices are recommended, while those with bleeding disorders or liver disease may opt for compression devices. In this context, aspirin is considered effective as an antiplatelet agent, and studies show its utility combined with early mobilization and regional anesthesia in the prevention of thromboembolic events after total knee arthroplasty. From this perspective, in 2006, Lotke and Lonner published their results with the use of aspirin combined with early mobilization, regional anesthesia and foot pumps for the prevention of thromboembolic events in 3,473 patients undergoing TKA (Total Knee Arthroplasty). The prevalence of nonfatal PE (Pulmonary Embolism) and proximal vein thrombosis was 0.26% and 0.2%, respectively (SCARAVONATTI, M.E.F; 2021).

Therefore, it is clear that the use of chemoprophylactics should exist in specific cases, due to the high risk of hemorrhagic conditions in patients at low risk of deep vein thrombosis (DVT), which highlights the importance of the use of compression devices.

The ACCP Guidelines do not include evidence on plastic surgery in their protocols, but some authors have researched VTE prophylaxis protocols, despite the fact that it is one of the causes of preventable death of great relevance in the postoperative period. At the Ivo Pitanguy Institute, the patient receives an assessment of the risk of VTE in the preoperative period, thus receiving a procedure according to his or her risk classification. The patient receives instructions regarding the medications for continuous use that should be maintained, and medications that pose a risk to surgical success may be suspended for a certain period. In addition, constant surveillance is offered so that, if necessary, the protocol can be modified, for example, in case of major bleeding during surgery. Thus, in the sample of 2759, 3 patients had VTE, while 34 had hematomas during the study from 2009 to 2011 at the Ivo Pitanguy Institute. (PAIVA et al., 2015).

5 CONCLUSION

Therefore, in view of the above, it is noted that thromboprophylaxis is an effective measure to combat venous thromboembolism, both in the form of deep vein thrombosis and pulmonary thromboembolism, common pathological conditions in the postoperative period of plastic surgery. Thus, it is essential to perform a rigorous clinical evaluation of the patient, in an individualized manner, in order to identify their risks regarding the development of the condition, considering their health status in general and the particularities of the surgical procedure performed. Thus, this is done, the



prevalence of VTE in patients undergoing plastic surgery is mitigated and, consequently, complications are reduced not only for the patient and their families, but for the entire health team in charge.



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