

# Role of Botroclot as a Local Hemostatic Agent during Flap Surgery

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**Abstract:** *Botroclot is an enzyme complex. It has coagulative and antihemorrhagic properties. This prospective study compared two surgical sites in each subject. One site received topical botroclot while other site did not receive it. Both the sites were chosen in the same patient & flap surgery was done at separate intervals. Haemostasis during flap surgery was achieved by pressure pack technique on control side & on test side botroclot was applied & time measurement was done. It has been concluded from this study botroclot not only helps in achieving haemostasis but also helps in faster healing of the surgical site by rapid formation of healthy tissue & reducing the amount of infection which may alter the normal healing process.*

**Keywords:** botroclot, hemostasis

## 1. Introduction

Bleeding during oral surgical procedures can cause distress agony & discomfort to the patient. It also distracts the surgeon from operating field leading to frustration and time consumption. Bleeding can be due to variety of local or surgical factors, control of which may require additional haemostatic agent as well as considerable armour of the surgeon.

Therefore, knowledge of fundamental of normal and deranged Hemostasis is a critical factor in successful and evenful conduction of a surgical procedure and obtaining of maximum patient compliance, along with achievement of clear dry surgical field.

Drugs that arrest bleeding promote epithelization and provide relief from pain have been widely used in oral surgical procedures, it is a well - known fact that snake venom one of the most concentrated enzyme sources, is a valuable expedient of the healing process.

Botroclot (Juggat pharmaceuticals) a topical preparation that is prepared from snake venom contains extracted hemocoagulase. It is used for its procoagulant properties as well as healing properties. It has been introduced to arrest bleeding at the site of injury. Botroclot, a non toxic systemic hemocoagulant fraction of venom is obtained from the Brazilian snake Bothrops - jararaca or atrox. Preparations are available all over the world by different names e. g. Batroxobin – a WHO approved product, Botrophase - a systemic procoagulant. The preparation of Botroclot topical solution in each ml contains (a) Bothrops atrox or Bothrops jararaca 0.2 cu/ml (b) chlorhexidine 0.1% v/v (as a preservative) and (c) water for injection IP q. s. Botroclot has multifaceted procoagulant actions. It accelerates the formation of fibrin monomers and hastens fibrin clot formation. It activates factor Xa helps in the formation of thrombin at the site of hemorrhage. It is also found to be stabilizing the fibrin by an action of the factor XIIIa. A few

reports have suggested that this parental preparation acts like a prohealer, enhances epithelization, increases wound tensile strength and turnover of collagen in the healing wound. It reduces bleeding time, promotes wound healing by promoting the growth of capillaries in wound space. It is highly resistant to plasmin wherein no withdrawal bleeding is found. Considering all these therapeutic uses of Botroclot, a present study was carried out and analysis of 40 cases was done.<sup>1</sup>

## 2. Material & Methods

This study was conducted at period of 4 months duration. Patients were included during the study period if they satisfied the inclusion criteria. The study protocol was explained & informed consent was obtained from all patients who were involved in the study. Patients who could not adhere to the study protocol of follow up were excluded from the study. Inclusion criteria were; patients aged between 30 and 65 years having generalized chronic periodontitis undergoing flap surgical procedures. All the sites were chosen such that they were not located in close proximity and surgical procedures were done at different time intervals. The site where Botroclot/Botrophase was applied was taken as “Test” site where as other site was chosen as the “Control” site in the same patient. Exclusion criteria included patients with known pre-morbid conditions like thromboembolic disorders, hypertension, hemophilia, diabetes mellitus, anticoagulant therapy, pregnant patients, hypersensitivity to topical solution & other constituent of the formulation, HIV positive patients and patients with mental illness. Clinical information with respect to demographic details, reason for flap surgery was noted. Once, the patients were included in the study, complete blood count, coagulation profile, bleeding time & clotting time was evaluated.

Flap surgical procedure was done under local anesthesia (2% lignocaine with 1: 1, 00, 000 adrenaline) using standard technique. At the first site after debridement, site was filled

with solution & measurement of time from application of solution into site up to complete stoppage of bleeding by stopwatch was done.<sup>9</sup>

After 24 to 48 hours later, flap surgical procedure was carried out at another site which required, as identified on day one. Saline pressure pack was given to achieve hemostasis at this site. This site was chosen as the control site solution was not applied to this site. Postoperative care & follow up was done.

### 3. Results & Observations

**Table:** patient distribution according to the time required to stop bleeding

Time (Mins)	Test	Control side
0.0 - 1.0	-	-
1.0 - 1.25	15	-
1.25 - 1.50	10	-
1.50 - 1.75	18	-
1.75 - 2.00	-	-
2.25 - 2.75	2	-
2.75 - 2.50	5	-
2.50 - 2.75	-	5
2.75 - 3.00	-	12
3.00 - 3.50	-	18
3.50 - 4.00	-	8
4.00 - 4.50	-	7
4.50 - 5.00	-	-

Present study was conducted to study role of as a local haemostatic agent during flap surgery. 50 patients were selected according to inclusion criteria and evaluated primarily for bleeding stoppage after debridement during flap surgery.

### 4. Discussion

Hemostasis in oral cavity is dependent upon the dynamic balance between fibrin formation and resolution and is influenced by external environment, which contain both plasminogen and plasminogen activators. Therefore, knowledge of normal and deranged Hemostasis is a critical factor to carry out a surgical procedure uneven fully and for obtaining good patient compliance. Resorbable haemostatic agents such as gel foam, absorbable collagen, microfibrillar collagen etc. have risk of adherence and infection specially if any portion remains unabsorbed by tissue, also owing to hydrophilic properties of microfibrillar collagen, it tends to adhere the gloves and instruments, and it is expensive and messy. Biological agents such as thrombin, fibrin glue are technically difficult to manipulate, especially in wet regions such as bleeding surgical sites, also they carry the risk of viral disease transmission and but not the least these agents are very expensive.<sup>2</sup>

The special features of centers on the fact that, its thrombin like action is present even in the absence of clotting factors. It also enhances the conversion of prothrombin into thrombin. The actions Botroclot/Botropase continue even in the presence of antithrombin and not absorbed in fibrin clot; hence the action of Botropase/Botroclot is prolonged. It helps to form a fibrin bridge that promotes growth of

capillary and collagen fibers in wound space. This hastens the wound healing by reducing the wound infection and thus benefitting the patient.

In this study bleeding was stopped in range of 1.00 to 2.50 minutes in all the patients, with mean value of 1.42 minutes on the test side. While on the control side bleeding was stopped in range of 2.50 to 4.50 minutes, with mean value of 2.18 minute, hence faster haemostasis was achieved on side (Table)

### 5. Conclusion

It has been concluded from present study that application of Botroclot after debridement in flap procedure will achieve faster Hemostasis and helps in wound healing by rapid formation of healthy tissue and reducing amount of infection.

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