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## Effectiveness of haemocoagulase as local haemostatic agent after orthodontic extractions

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### Abstract

Haemocoagulase a topical haemostatic agent which is derived from venom of Brazilian snakes. Haemocoagulase directly acts on common pathway of clotting and has shown promising results as a haemostatic agent. The aim of this study was to evaluate the effectiveness of haemocoagulase in stopping the bleeding & its effect over wound healing after asymptomatic orthodontic extractions.

**Material & Methods:** Present study involves 25 healthy patients referred for bilateral orthodontic extractions of Maxillary First Premolars between age of 14 to 16 years. On one side topical hemocoagulase sprinkled on the wound post operatively while on the other side Chlorhexidine gluconate solution 0.1% V/V was sprinkled on the wound. Site was determined by coin toss method. Data was collected on a predesigned Proforma.

**Conclusion:** Use of Haemocoagulase after extraction not only provides faster haemostasis but also improves healing by rapid formation of healthy tissue.

**Keywords:** Haemocoagulase, haemostatic agent

### Introduction

Bleeding from the extraction socket is the most common post extraction complication. Tough most often this complication can be easily managed by giving local pressure packs but sometimes it requires use of pharmacological agents to control excessive bleeding. Haemostasis, a physiological arrest of haemorrhage at the site of vascular injury is a wondrous feat of evolution<sup>[1]</sup>.

Sometimes it is difficult to preoperatively access the reason of excessive bleeding. There are variety of topical hemostatic agents each of them having few merits and demerits. Haemocoagulase is the first pharmaceutical preparation to be used therapeutically and is based on the coagulative and antihemorrhagic properties of those fractions isolated from the venom of "Bothrops Jararaca" or "Bothrops Atrox<sup>[2, 3]</sup>". Haemocoagulase reduces the bleeding time, promotes wound healing by promoting the growth of capillaries in wound space<sup>[2]</sup>. In the present study we have used hemocoagulase to access its effectiveness as a topical hemostatic agent.

### Materials and Methods

Present study involves 25 patients referred for bilateral orthodontic extractions of Maxillary First Premolars from the Department of Orthodontics & Dentofacial Orthopedics, MM College of Dental Sciences & Research, Mullana (Ambala).

Only healthy patients from 14 to 16 years of age with normal bleeding and clotting time (consent from parents) willing to be part of the study were selected. Bilateral extraction of upper first premolars was done by a single operator in the same appointment using standard extraction technique. On one side topical hemocoagulase sprinkled on the wound post operatively while on the other side Chlorhexidine gluconate solution 0.1% V/V was sprinkled on the wound. Site was determined by coin toss method. Data was collected on a predesigned Performa.

**Group I:** Haemocoagulase site.

**Group II:** Control site.

The criteria for evaluation was time taken for bleeding to cease ie the time was measured from application of solution into the socket to the complete stoppage of bleeding by using a stopwatch and to evaluate any post-operative complications. Each ml of Topical Haemocoagulase (Market Preparation: Botroclot) contains aqueous solution of Haemocoagulase 0.2 cu, Chlorhexidine gluconate solution 0.1 %V/V added as preservative and antiseptic & Water for injection quantum sufficient (q.s.)

**Discussion**

The average time for stoppage of bleeding at the test side was 3.7 minutes compared to 3.8 minutes at the control side (Tables 1, 2) though the results were not statically significant (Table 3). Post-operative complications were also recorded and it was seen that only in two patients in the control side there was dry socket while on hemocoagulase side no patient reported dry socket.

Dr. Babu S Parmar *et al.* in 2006 did a study where they used Haemocoagulase after lower third molar surgery and stated

that use of haemocoagulase not only provides faster hemostasis but also enhances healing by rapid formation of healthy tissue and reducing the amount of infection which may alter the normal healing process [2].

**Table 1:** Time required for stoppage of bleeding

Time / Minutes	Haemocoagulase side	Control side
3.00- 3.25	2	3
3.26-3.50	3	4
3.51-3.75	8	4
3.76-4.00	5	8
4.01-4.25	2	2
4.26-4.50	3	3
4.51-4.75	1	2
4.76-5.00	0	0

**Table 2:** The results of statically Deviation

Site	N	Mean	Std. Deviation	Std. Error Mean
Haemocoagulase	25	3.788000	.3882690	.0776538
Control	25	3.864667	.4143078	.0828616

**Table 3:** Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Time Required	Equal variances assumed	.061	.806	-.675	48	.503	-.0766667	.1135612	-.3049968	.1516634
	Equal variances not assumed			-.675	47.799	.503	-.0766667	.1135612	-.3050216	.1516882

**Conclusion**

In the present study Haemocoagulase is applied topically on the extracted tooth socket and compared with control side. The results show that there is minor difference of bleeding time in both test and control sites; which was marginally less in heamocoagulase site. The results were statically insignificant. Studies with larger sample size are required to access the efficacy of haemocoagulase as local haemostatic agent after orthodontic extractions.

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