

Original article

## **Effect of Injectable platelet-rich fibrin (i-PRF) on new bone formation in surgical expansion with mini-screw assisted rapid palatal expander: A dog model study**

## **Abstract :**

**OBJECTIVES:** The objective of the study is to test whether the local injection of i-PRF may affect osteoblast, blood vessels and new bone formation in surgically expanded mid palatal suture using maxillary skeletal expander.

**MATERIALS AND METHODS:** Eighteen adult male local breed dogs were divided randomly into three groups: group I (control), includes the expansion with maxillary skeletal expander that was done without corticotomy and i-PRF. Group II, involves the expansion that was done with mid palatal corticotomy but without i-PRF injection. Group III, has the expansion that was done with mid palatal corticotomy and has injection with 2 ml of i-PRF. Each group consisted of 6 dogs which were subdivided into 3 dogs. Three dogs were sacrificed after 15 days and the other 3 dogs were sacrificed after 45 days. The number of osteoblast, blood vessels and new bone formation percentage were statistically analyzed using Sigma plot platform. Mean and standard error, ANOVA and Duncan were performed among the different groups. Values of  $P \leq 0.05$  were considered significant.

**RESULTS:** After expansion, the i-PRF group demonstrated a considerable increase in the amount of new bone in the mid-palatal suture at 15 and 45 days compared with other 2 groups which were indicated by highest percentages of new bone formation (29.30% of 15 days and 76.55% at 45 days) if compared to control group which were (7.72% at 15 days and 22.30% at 45 days). The corticotomy groups were in between, 15.33% and 46.84% respectively. Moreover the number of osteoblasts was higher in corticotomy with i-PRF group on 15 days and decreased on 45 days than the other two groups, while the blood vessels were highest in this group than the other two groups both on 15 and 45 days.

**CONCLUSION:** I-PRF enhanced the production of osteoblast, blood vessels, and new bone in the surgically expanded mid palatal suture.