Introduction: Sinus lift technique provides satisfactory and predictable clinical results. However, it requires a long healing time, delaying rehabilitation treatment which brings discomfort to the patients. L-PRF is a second generation platelet concentrate that stimulates and accelerates tissue repair. A randomized controlled clinical trial has shown that L-PRF is a second generation platelet concentrate that stimulates and accelerates tissue repair.

Method: Ten maxillary sinuses were treated following a randomized distribution. Six maxillary sinuses received L-PRF as sole grafting material (group A). Four maxillary sinuses received a combination of L-PRF plus an allograft (group B) as filler. In both groups, implants were placed at the sinus lift surgery. Measurements of bone formation in both height and surface area around implants were performed from prior and subsequent CBCT in a 6-11 month post treatment range. A biopsy with trephine at the bony window area was performed in both groups for histological analysis immediately after the CBCT post treatment exam. Multivariate linear regression for each variable was performed in both groups for histological analysis immediately after the surgery. Measurements of bone formation in both height and surface area were determined using orthopedic biocompatible plateau screws. In both groups, implants were placed at the sinus lift surgery. Measurements of bone formation in both height and surface area around implants were performed from prior and subsequent CBCT in a 6-11 month post treatment range. A biopsy with trephine at the bony window area was performed in both groups for histological analysis immediately after the CBCT post treatment exam. Multivariate linear regression for each variable was performed in both groups for histological analysis immediately after the surgery.

Results: Six maxillary sinuses (60%) received L-PRF as unique grafting material with 4 implants (57.14%) in 6 patients and 4 maxillary sinuses (40%) received the combination of L-PRF plus an allograft with 6 implants (42.85%) in 4 patients. The bone gain in height (ΔAC) for group A was 6.82 ± 2.43 mm and 8.71 ± 1.50 mm for group B. This difference is statistically significant (P = 0.004). The surface area of newly formed tissue for group A was 17.34 ± 8.23 mm² and for group B was 41.43 ± 13.09 mm², a difference that was statistically significant (P = 0.0001). Histological analysis: Group A showed the aspect of normal mature bone with organized trabecular type appearance and dense collagenous matrix. Group B showed a predominance of allograft particles. The success rate was 100% for group A and 83.33% for group B.

Conclusion: L-PRF as grafting material develops new bone of better quality (histologically), but in a smaller amount (radiologically) than the bone obtained from the association of L-PRF and an allograft, for the sample. The use of L-PRF as unique filling material in sinus procedures could be a valuable treatment option as demonstrated in this randomized clinical trial, however further studies with larger number of cases allow us to draw conclusions based on stronger evidence.

References