MAXILLARY SINUS LIFT USING CONCENTRATED GROWTH FACTORS

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We report 8 cases of sinus lift using concentrated growth factors (CGFs) and autologous fibrin-rich blocks rounded-up with Bio-Oss. 6 patients, 4 women and 2 men, with a mean age of 53.6, were selected for this study. A total of 8 sinus grafts were performed using the lateral window approach.

PREPARATION OF FIBRIN RICH BLOCKS WITH CGF

CGF is a fibrin matrix with a complex dimensional architecture which makes it a real platelet, leukocyte and growth factor rich biomaterial. It is prepared according to Sacco’s protocol who developed the technique in 2006. 20 to 60 mL of blood is taken from the patient’s forearm, divided into 2/8 glass coated tests tubes without anticoagulants, and centrifuged at 2400-2700 using a specific centrifuge with a rotor turning at alternated and controlled speed for 12 minutes (Medifuge®; Silfradent). At the end of the process 6/8 pieces of fibrin-rich blocks are obtained characterized by 4 phases: the uppermost platelet poor plasma (PPP) layer; the middle fibrin buffy coat layer; the third liquid layer, containing white stem cells and concentrated growth factors (CGF); the lowest platelet rich coagulation (RBC) layer. Serum can be separated right after centrifugation and used to amalgamate graft materials or irrigate cavity before sinus lifting. Red clot is separated from fibrin gel before the use; it can be used alone or in combination with particulate fibrin coat and autologous or heterologous bone grafts. Fibrin buffy coat is a dense polymerized fibrin network; it contains platelets, leukocytes, growth factors and provides a matrix for fibroblasts and endothelial cells involved in angiogenesis and tissue remodeling. In particular, platelets are important since they release high concentrations of active proteins (PDEG-BB, II TF/H-FG-I and H-FG-I) and support recruitment, growth and cell morphogenesis. Fibrin gel blocks can be used as fillers or membrane or fragmental and mixed with other grafts material.

We use fibrin buffy coats and blood clots cut into small pieces and mixed with particulate bone grafts (Bio-Oss®; Geistlich). The whole is mechanically homogenized into the Round Up device (Silfradent, Italy) for about 6 second. The mix results in a dense and adhesive autologous graft, easily to wedge into the cavity, capable of recruiting, support and maturation of bone and bone remodeling.

The remaining fibrin blocks are pressed down with special pliers to obtain membrane, used to cover fibrin membrane (Q-T). After an average of 5 months healing period, panoramic x-ray shows newly formed bone along the original sinus floor beyond the original sinus floor (R-U).

CONCLUSION

CGF is a stimulator of multifactorial system, different from all other regenerative techniques, because all phases and constituent can be used depending on the specific needs. Compared with PRP or PRGF, fibrin rich blocks with CGF's are simple to make and do not require any synthetics or chemical additives, such as bovine thrombin or anticoagulants. This technique provides: fibrin rich blocks, activated clot, with high growth factors concentration, serum, with protein and antibody. In our case series, CGF mounded-up with Bio-Oss, have been used successfully in maxillary sinus augmentation in order to facilitate new bone formation and reduce healing time. We tried to take advantage of Bio-Oss osteoconductive property matched with CGF’s regenerative potential.

REFERENCES

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