Dentistry Section

Effect of Platelet-Rich-Plasma (PRP) Implant Surface Topography on Implant Stability and Bone Revisited

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Sir,

We read the article entitled "Effect of Platelet-Rich-Plasma (PRP) Implant Surface Topography on Implant Stability and Bone" [1] published in the Journal of Clinical and Diagnostic Research by Renu Kundu and Manu Rathee with great interest. We would like to comment on a technical issue, which is usually misdescribed.

There are important differences between the terms "RPM", which stands for 'revolutions per minute' and "G", which refers to the gravitational force. RPM should not be used as an expression of unit, because the force actually varies depending on the radius of the machine. The acceleration applied on samples from two different centrifuges differing in size but identical in RPM levels is actually not the same. This condition follows the rule of "the bigger the radius, the more acceleration with identical RPMs".The force exerted on the substance in a given mixture in any centrifugation is the relative centrifugal force (RCF) and RCF is responsible for the separation of the components in the mixture. The rotor, regardless of its size, revolves at that rate. The force applied to the contents, however, varies according to the size of the centrifuge. This condition may further be explained as follows:

RCF or G-force$= 1.12 \times R \times (RPM/1000)^2$

Where R is the radius of rotation measured in millimeters.

G describes the amount of gravity applied on the samples and two centrifuges with the same RPM but different radius do not apply the same G force on the same samples. G is universal and may be calculated to develop an experiment. RPM, on the other hand, will not always represent the same force in different machines. For example, when revolving at 2000 RPM, a larger centrifuge with a longer radius length will spin samples at a higher g-force than a smaller centrifuge with a shorter radius length. RCF is a constant that is independent of the apparatus used.

CONCLUSION

G force should be used instead of RPM. We hope that this brief text will help minimize erroneous descriptions of RPM.

REFERENCE

[1] Renu Kundu, Manu Rathee. Effect of Platelet-Rich-Plasma (PRP) andImplant Surface Topography on Stability and Bone. *J Clin Diagn Res*. 2014, Vol-8(6): ZC26-ZC30.

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REPLY BY THE AUTHOR

I acknowledge with thanks the receipt of invitation for opinion regarding our published article titled "Effect of Platelet-Rich-Plasma (PRP) Implant Surface Topography on Implant Stability and Bone".

I am also thankful to the reader for kind comment and highlighting the distinction between RPM and RCF.

It is very aptly stated in the Letter to Editor that the radius of the centrifugal machines will affect the force applied on the mixture for separating its contents. However, in our study, we had a dedicated centrifugal machine for PRP preparation for our patient pool. Hence we did not require using a different radius machine for any of our samples. Thankfully, we were able to avoid the mistake of using different radius machines for the project and the same force (RCF) was applied to all samples. The details of the machine which we used are as follows:

Model	Heraeus Cryofuge 6000i
Max. speed (rpm)	4,000
Max. RCF (x g)	5,312
Max capacity	2 x 950 ml
Max. perm. mass (g)	3,500
Min. temp. at max. RCF	-5 degree Celsius
Max. acceleration time (s)	140
Min. braking time (s)	180
Radius (cm)	29.7

Hope I have been able to address your concern.

Regards

Dr. Manu Rathee .