PG - 66 : FORCE GENERATION BY ORTHODONTIC SAMARIUM COBALT AND NEODYMIUM IRON BORON MAGNETS AT VARIOUS DISTANCES-AN INVITRO STUDY

Eunice John, Final year postgraduate,

Department of Orthodontics,

Indira Gandhi Institute of Dental Sciences, Pondicherry.

Aim: The aim of the study is to evaluate and compare both the attractive and repulsive force values in Neodymium iron boron magnets and Samarium cobalt magnets of different sizes at various distances.

Materials and Methods: For this study 168 magnets each of NdFeB and SmCo of cylindrical shape were procured. The NdFeB magnets were grouped as Group I and was further subdivided into GROUP IA for 10x3mm size, GROUP IB for 6x3mm size, GROUP IC for 4x4mm size depending on size. The SmCo magnets were grouped as Group II and was further subdivided into GROUP IIA for 10x3mm size, GROUP IIB for 6x3mm size, GROUP IIC for 4x4mm size) depending on size. The force of attraction and repulsion was measured using the Instron Universal testing Machine.

Results: The attractive and repulsive test for both the groups were performed at all the nine specified distances and the readings were recorded and statistically analysed using unpaired t test. The obtained results were tabulated depending on the distances maintained. Both the SmCo and NdFeBo magnets of 4x4mm size at 10mm to 20mm distance apart with 2.5mm intervals could not generate any force levels suggesting lacking in ability to generate any force at that distance and above.

Conclusion: The study showed that NdFeB magnets had higher force values than SmCo magnets.The forces generated for NdFeB and SmCo magnets ranged from 943.01-24.13gms and 738-11.39gms respectively for different sizes and distances all of which can be used for orthopaedic correction or orthodontic tooth movement.