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Comparison of the compressive strength of three core built up materials

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Abstract
The aim of this study is to compare the compressive strength of 3 commonly core build up materials used in clinics. Three core built up materials, a cermet cement (ketac silver), a light cure composite and conventional silver amalgam was used (control group) and divided into Group A, B and C respectively. The root canal of 90 extracted mandibular molars with similar anatomy and morphology were selected. Group A showed highest compressive strength followed by group C and then group B.

Keywords: Compressive strength, core build up

Introduction
The compressive strength of core built up material is one of the most important factors for success of prosthesis. The various core built up materials include 1) Silver amalgam 2) Reinforced G.I.C 3) Light cure composite. Core built up is generally done in grossly decayed Tooth. With the development of new materials like metal modified GIC (miracle mix, zirconia, reinforced GIC and bulk composites) the treatment options have considerably improved.
The commercially available reinforced GIC are Ketac Molar, GC 9, zirconomer. The commercially available composited include Kerr, Ivoclar, Densply. All these composites are excellent materials for core buildup of grossly destructed tooth.
The aim of this study is to compare the compressive strength of 3 commonly core build up materials used in clinics.

Materials and Methods
Three core built up materials, a cermet cement (ketac silver), a light cure composite and conventional silver amalgam was used (which was taken as control group).The root canal of 90 extracted mandibular molars with similar anatomy and morphology were selected. The teeth were divided in to three groups Group A restored with Silver amalgam Group B Restored with light cure composite Group C restored with reinforced Glass ionomer. The samples were tested using universal testing machine (UTM) to measure compressive strength of all samples.

Results
The Group A filled with conventional Silver amalgam showed average compressive strength of 510mpa, Group B restored with light cure composite material showed average compressive strength of 490mpa. Group C Restored with reinforced GIC showed compressive strength of 495Mpa.
The results clearly reveal that conventional silver amalgams still has the best compressive strength and is the material of choice for core built up in grossly decayed tooth. Light cure composites also show excellent results and are also the material of.

Discussion
The aim of study was to determine strength of various core built up materials. Nowadays with development of new material like metal modified GIC, zirconia reinforced GIC and advanced composites the treatment protocol have changed [1]. Metal modified GIC is also an excellent material with strength of over 600 MPA [2].

Generally 2 methods are used to prepare metal modified GIC. One is that silver alloy admixed Spherical amalgam alloy powder is mixed with type II GIC powder (miracle mix) [3] second is silver particles are bonded to glass particles which is called as cermet or ketac silver.

The bonding of particles is done at high temperature [4]. Cermet or ketac silver has better mechanical properties as core built up material as compared to admixed [5].

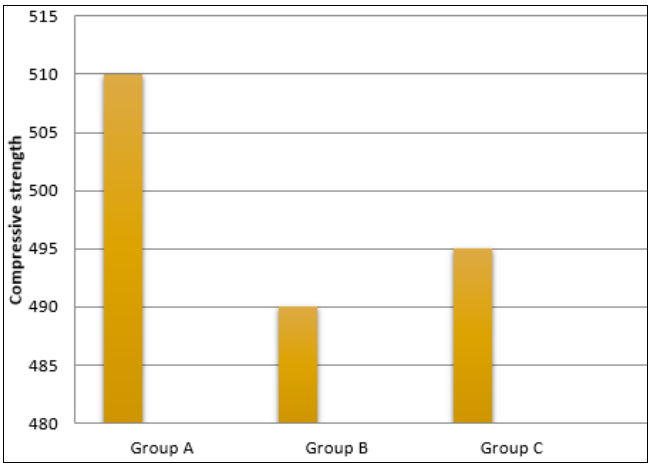

Fig 1: Showing Compressive strength of Group A, B and C

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