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## Rate of intrusion and root resorption of maxillary incisors by different intrusion mechanics: A comparative study

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**Introduction & Aim:** There are many intrusion mechanics such as Ricketts utility arch, K-SIR, RCS, J-headgear, implant, Connecticut intrusion arch, Burstone arch, three piece arch, vertical loops and many more. Since it is difficult to choose which method is better, an attempt is made through the present study to compare the rate of intrusion, root resorption and effect on maxillary central incisors achieved by three different commonly used intrusion techniques: Ricketts utility arch, Kalra's simultaneous intrusion and retraction arch and arch with reverse curve of Spee.

**Methods:** The study was conducted over 30 patients aged between 14 and 25 years with deep bite requiring at least 2-4 mm intrusion of maxillary incisors. These patients were equally divided into three groups based on intrusion technique used, Ricketts utility arch (Group I), K-SIR arch (Group II) and RCS arch (Group III). For each patient, amount of intrusion and root resorption occurring during intrusion was measured. Seven angular and six linear cephalometric measurements were made to evaluate skeletal and dental changes before and after incisor intrusion.

**Results:** The mean true incisor intrusion achieved with utility arch was 1.6 mm, with K-SIR; 1.25 mm and with RCS; 0.70 mm, respectively. The rate of intrusion of utility arch was 0.44 mm/month, K-SIR-0.33 mm/month, RCS-0.35 mm/month, the difference was not statistically significant ( $p=0.451$ ). Utility arch had significantly higher mean root resorption of 1.56 mm as compared to K-SIR of 1.08 mm and RCS of 0.96 mm.

**Conclusion:** Both the intrusion rate and root resorption is more in utility arch compared with the KSIR arch, though the rate of intrusion is almost same; the root resorption is much less.

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## *In vitro* evaluation of microleakage of class II cavities restored with bulk-fill flowable

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This study compares the microleakage of cavities filled with bulk-fill flowable composite and those incrementally filled with FiltekZ250 micro-hybrid composite at the enamel and dentin margins. A total of 102 sound human premolars were collected and randomly divided into 6 groups of 17. In groups 1, 3 and 5, standard class II mesio-occlusal cavities with specific dimensions were prepared with their gingival margin 1 millimeter above the cemento-enamel junction. In groups 2, 4 and 6, standard class II mesio-occlusal cavities with specific dimensions were prepared with their gingival margin 1 millimeter below the cemento-enamel junction. After etching of the cavities, Single Bond 2 was applied as recommended by the manufacturer. In groups 1 and 2, all cavities were incrementally filled with FiltekZ250 composite. In groups 3 and 4, the gingival 2 mm of the cavity was filled with Filtek bulk-fill flowable composite and the rest of the cavity was restored with FiltekZ250. In groups 5 and 6, the gingival 4 mm of the cavity was restored with Filtek bulk-fill flowable composite and the remaining part was restored with FiltekZ250. The teeth were immersed in 2% basic fuchsin for 24 hours and after rinsing and drying, they were mesiodistally sectioned by a diamond disc. The sections were evaluated under a stereomicroscope at  $\times 40$  magnification. No significant difference was noted in the microleakage scores of the gingival margins of the 6 groups. No microleakage was noted in the enamel margins of the samples. Neither Filtek bulk-fill flowable nor FiltekZ250 could completely prevent gingival wall microleakage. Based on the results, Filtek bulk-fill flowable composite can be safely and reliably used in 4 mm thick increments.

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