

## **DISTRIBUTION OF INTERGLOBULAR DENTINE IN HUMAN BICUSPID TEETH**

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Disturbances which occur during development are well manifested in dental hard tissues. Interglobular dentin (IGD) is considered to be such an area, typically located in the crown as hypomineralized regions. Mineralization of dentin takes place considerably in the form of calcospherities, which eventually fuse to form a single calcified mass. When calcospherities fail to fuse into a homogeneous mass, small areas of uncalcified/poorly-mineralized matrix are left leading to formation of IGD. These areas are more prevalent in human teeth exposed to vitamin D deficiency and excess fluorides. Some researchers speculate that development of IGD is time and position specific. In this context, it would be important to explore the relationship between the distribution pattern and the time formation of IGD in teeth. The present study describes the distribution of IGD in human bicuspid teeth.

Caries free 99 premolars were fixed in 10 % formalin and longitudinal sections of the tooth were made in bucco-lingual planes using Leica sp 1600 saw microtome. Sections were further ground and polished manually to obtain thin sections. The mounted sections were observed by light microscope. The presence or absence of IGD was recorded in 5 different locations of the crown (coronal 1/3, middle 1/3, cervical 1/3, cusp tip, intercuspal region) and 3 sites in the root (cervical 1/3, middle 1/3, apical 1/3,) both in buccal and lingual sides. Therefore 15 readings were taken from each tooth section.

90 % of teeth in our sample showed IGD at least in one place of the tooth. Many teeth depicted IGD more than one site. As expected, IGD was present in the circumpulpal dentin just below the mantle dentin of the crown. In addition, 49 % of the teeth our sample displayed IGD in different places of the root dentin. In the crown, the commonest location was the middle one-third followed by cervical one-third, intercuspal region and coronal one-third. Interestingly, cusp tips of the tooth did not show IGD in any of the sections. In respect of the root, the highest occurrence of the IGD was found in the cervical one-third followed by middle one-third and apical one-third. Some teeth displayed IGD through out the length of the root from the cervical margin to the apex. There was no significant relationship between the number of positive sites of IGD in the crown and that of the root.

The scarce amount of the IGD in the coronal one-third of the crown and its complete absence in cusp tips indicate that the propensity for the formation of the above malformation is less during the early stages of tooth development. This is further supported by the observation of numerous IGD in the cervical half and the intercuspal regions of the crown dentin, which are formed at the same period in later stage of the crown development. Therefore, we suggest that the intrinsic factors of the developing tooth structure itself can influence the formation of the interglobular dentin in addition to changes in the local environment such as vitamin D deficiency and excess fluorides. This study also reports the different patterns of IGD locations in the root.