Reflection of nature in dental ceramics

Understanding the nature and the way color effects are placed in different parts of natural tooth and more importantly the procedure in which the nature paints a tooth makes it easier for ceramists to fabricate natural looking ceramic restorations.

The author have spent considerable time studying the nature of shade and translucency patterns in natural dentition. Further more studying other possible substances existing in nature with similar form and color behavior as natural dentition. It was amazing to see how beach stones where colored and gently shaped by nature as if they were produced with same brush that creates color effects, crack lines and surface textures on our natural tooth.

To reproduce what is produced by nature we need to know how the nature functions. Stones are formed by layers of different, opacity, Hue and value (just like ceramic layers). The formation of crack lines and their brown or dark brown colors are very much like crack lines on natural tooth. Effect Colors of enamel family such as mamelon pink or milky could be found in translucent stones (fig..) including other colors such as yellow, ochre, khaki, brown, gray, blue, pink, white, etc.

Nature paints and alters the form of our dentition most gently trough the years with great patients. Fabricating restorations should be carried out considering all aspect of detail anatomy and color design. Proper multi layer build up technique is only possible when ceramist knows the true forms and colors of natural tooth.
Figure 1-1: Natural stone stained with aged tooth colors, very fine vertical crack line and a horizontal band of brown effect.

Figure 1-2: PFM crown made for aged tooth, with colors similar to one in nature.

Figure 2: Beautiful art of nature, with artistic enamel color effects such as mamelon pink, blue and soft white spots.

Figure 5: Translucent stone with enamel color effects of an aged tooth.

Figure 6: Nature stains grooves with warm orange and light brown hue, natural tooth does it too.

Figure 3: Translucent stone with enamel effects, note the yellow and soft white translucent with natural texture polish.
Figure 8: Piece of stone with dark brown stains, yellow and red ochre similar to what sometimes could be found in aged natural teeth.

Figure 9: A discolored direct composite build up, with unpleasant design and unnatural color.

Figure 10: Following nature in systematic ceramic build up technique.

Figure 11: Light dentin effect color.

Figure 12: Placing translucent color effects at incisal edge.

Figure 14: Note the dark gray stain on lateral and light brown on canine after preparation.
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