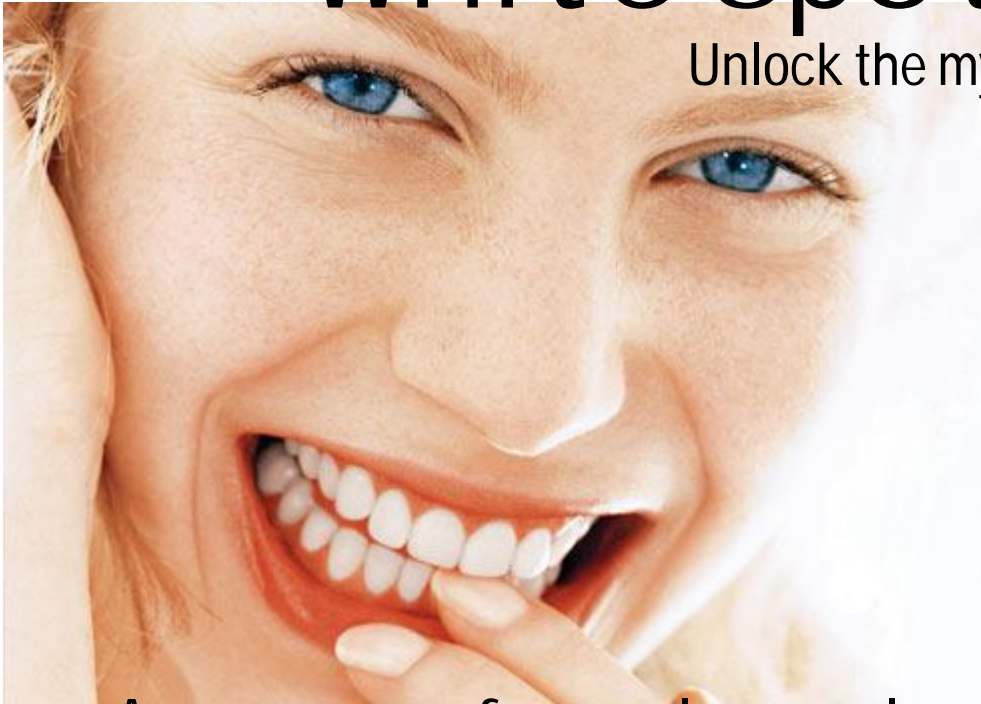


White spots

Unlock the mystery.....

Dr. Hetal Shah



Appearance of normal enamel:

Normal enamel should have lustrous surface which reflects light from the surface and from the subsurface. In the enamel of permanent teeth, the reflection of blue light is slightly less than other wavelengths, which gives the teeth a warm yellow/red underlying hue in most cases.

Regardless of the shape of the crowns of the teeth, the reflection and scattering of light from the surface and subsurface should be even.

Disturbances in normal enamel:

In normal enamel, the crystals of minerals are formed during mineralization process, and at the same time,

water and proteins are removed. Disturbances in the formation of enamel matrix and in the mineralization of the matrix can result in retention of excess water and proteins which then changes the reflection and scatter of light from the enamel surface.

Examination diagnosis:

When undertaking a clinical diagnosis of enamel defects, the teeth should be dry and observed with cheek retractors in place, and under good lighting conditions.



With some particular conditions involving tetracycline drugs or porphyrins, the use of long wavelength UV light source can be informative, since this elicits fluorescence in characteristic patterns; red fluorescence from the porphyrins and yellow/green fluorescence from tetracyclines. Note that if UV light source is used, it is important to remove all plaque, since plaque has a natural extrinsic visible red fluorescence when excited in the long wavelength UV region.

Differential diagnosis:

In terms of identifying factors where multiple teeth are affected, systemic and genetic factors should be considered.



(Different forms of enamel defects)

Fluorosis is an excellent example of systemic influence. Where a single tooth is affected, a local factor will be implicated, and trauma or infection of the deciduous teeth affecting the underlying permanent teeth is a classic example of this. Genetic dental disorders which contribute to enamel defects are, however, relatively uncommon, and other local and systemic factors should be considered.

How to identify mild Fluorosis:

The typical appearance of mild Fluorosis is small white opaque flecks, which are more visible near the incisal edges of anterior teeth. They are not translucent like normal enamel. Closer examination, however, reveals that all teeth are affected, not only incisors.



This pattern is generally more obvious when the teeth have been dried and isolated from soft tissues. These enamel changes would not be visible to untrained eyes at normal conversational distances.

How to identify moderate Fluorosis:

In cases of moderate Fluorosis, the disturbances to enamel mineralization result in porosity, stains can be taken up and trapped within the enamel, making these areas more obvious. There is a range of dietary chromogenic substances which can be taken up and retained within the superficial enamel giving these areas a more discolored appearance. Discoloration can also occur pre-eruptively, but in most cases it becomes more obvious following eruption of the teeth.



How to identify severe Fluorosis:

In more severe forms, the impact on the physical properties of enamel is more dramatic. A common sequel to this problem is that at various times following eruption, small areas of the enamel surface are lost spontaneously, giving the appearance of enamel hypoplasia. This results in the enamel, looking as if it has not formed.



Typically where the matrix has been affected, the associated porosity allows more intense uptake of stained material from the diet and the environment.

How to identify enamel hypomineralisation and hypoplasia:

The distinction between hypoplasia and hypomineralisation is important. In the latter, there is a change in translucency of the enamel surface, such that it becomes white, creamy, yellow or brown, but the enamel surface is smooth and the thickness of the enamel itself is normal. Most common causes are febrile episodes in infancy, chronic infections,

premature birth and low birth weight.



(Hypomineralisation)

Whereas hypoplasia is a quantitative defect of enamel, may occur in several forms including grooves, as well as individual pits or rows of pits or a patch.



(Hypoplasia)

White spot carious lesion:

As dental plaque produces organic acids, leaching of enamel mineral can occur, and the replacement of this mineral by water leads to changes in the refractive index of the enamel surface and subsurface. The altered scattering of light makes these areas appear white.



(white spot)

The distinction between white spot lesions and other areas of altered enamel can be made purely on clinical grounds.



Treatment options:

Some of the basic treatment options for each type of Fluorosis are as follows:

Mild Fluorosis: conventional t/t such as enamel microabrasion (etching followed by gentle abrasion with pumice) only affects the surface, and will improve the surface but not subsurface. Regeneration of subsurface, using surface remineralizing agent like **tooth mousse immediately after microabrasion can address the underlying opacity and maximize the aesthetic benefit of t/t.**

The clinical protocol is to isolate the teeth and undertake a two minute etch with 37% phosphoric acid gel. Then rinse and gently pumice each labial tooth

surface for 20 sec. the effect is then reviewed, the abrasion cycle repeated as needed (often twice). Tooth mousse is applied immediately and then each night at home before bed. The patient should be reviewed after four weeks.

Moderate Fluorosis:

Moderate Fluorosis requires two or three abrasion cycles at initial appointment, followed by tooth mousse application. At four weeks review appointment, further etch t/t can be undertaken. This will greatly accelerate the subsurface regeneration effect of the **Recaldent CPP-ACP** (Natural milk derived product containing casein phosphopeptides CPP and amorphous calcium phosphates ACP), and will also smooth the irregular enamel surface and improve the reflection of light.

Severe Fluorosis:

Treatment is same as above, only areas of marked enamel loss which remain will require conservative restoration with composite resin, to achieve a smooth enamel surface.

Enamel hypoplasia and hypomineralisation:

Areas of hypoplasia are imperfect substrate for bonding adhesive dental restorative materials, and these areas should be topically treated with a twice daily application of tooth mousse for at least two weeks prior to their restoration.

It is important to understand that cases with well demarcated opacities are not indicated for the treatment with tooth mousse, as their depth precludes effective penetration by it.

More complicated cases can also be treated lastly by following protocol:

- **Bleaching procedures**
- **Laminates/Veneers**
- **Crowns**

Along with all these treatment options, to treat the tooth, the basic etiology/cause of the lesion should not be overlooked by the dentist who will finally *unlock the mystery, identify the problem and find appropriate treatment solution...*

Dr. Hetal Shah