Clinical identification of blue light filtering IOLs

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Introduction:

The introduction of blue light filtering intraocular lenses (IOLs), also known as yellow-tinted IOLs, began in the early 1990s in response to concerns that blue light rays may contribute to the development of age-related macular degeneration. These lenses were designed to mimic the natural yellowing of the aging human crystalline lens. However, the routine use of these lenses remains a subject of debate.

Differentiation between blue filtering yellow intraocular lenses (IOLs) and non-blue filtering IOLs can be helpful in certain scenarios to ensure that the same IOL type is implanted in both eyes as it was shown in some studies that some patients did not tolerate the difference in colour vision between both eyes.

Purkinje–Sanson images were described in the first half of the nineteenth century for evaluation of human crystalline lens; however, they can also be applied to evaluation of IOL implants.

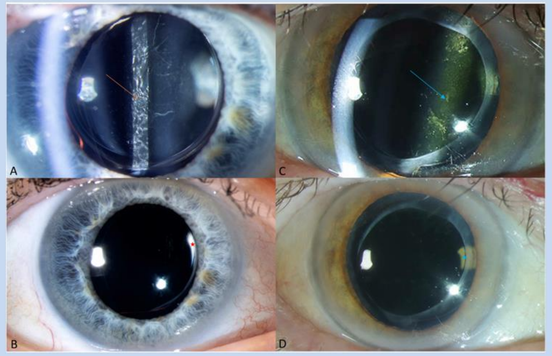
Methods:

Five patients with Eye Cee One IOL (as an example of non-Blue filtering IOLs) underwent slit lamp examination (diffuse illumination and slit illumination). Likewise, five patients with Acrysof IQ SN60 WF IOL (as an example of blue filtering IOLs) underwent similar examination. The colours of the Purkinje–Sanson images were documented in both groups.

Results:

Diffuse illumination of non-blue filtering IOLs, such as the Eye Cee One IOL, revealed that all Purkinje–Sanson images appeared white. In contrast, with blue filtering IOLs, such as the Acrysof IQ SN60 WF IOL, the posterior Purkinje–Sanson image appeared yellow.

Similarly, slit illumination of non-blue filtering IOLs showed a white IOL reflection, while blue filtering IOLs exhibited a yellow reflection.



Eye Cee One IOL implant: slit illumination (A) shows the white IOL reflection (red arrow), diffuse illumination (B) shows the white tinge of the Purkinje–Sanson image (red star). Acrysof IQ SN60 WF IOL implant: slit illumination (C) shows the yellow IOL reflection (blue arrow), diffuse illumination (D) shows the yellow tinge of the Purkinje–Sanson image (blue star)

Conclusions:

This study highlights a simple and practical clinical sign to distinguish blue light-filtering yellow IOLs from non-blue filtering IOLs. This method can be particularly useful in scenarios where medical records are unavailable or incomplete.