$$(S_2P - S_2P) = \frac{2yd}{(S_2P + S_2P)}$$

$$\Delta x_g \approx \frac{2yd}{2D} = \frac{yd}{D}$$

Since μ = 1 for air, the optical path difference between the two wavelets reaching at point P is $\Delta x_0 = \left(\frac{d.y}{D}\right)$ ……..(3)

For constructive interference:

$\Delta x_0 = \pm n\lambda$ (n = 0, 1, 2, ...)

$$\Rightarrow \quad \left(\frac{d.y_n}{D}\right) = \pm n\lambda \quad \Rightarrow \quad y_n = \pm n\frac{\lambda D}{d} \quad \text{……..(4)}$$

y_n is distance of n^{th} maxima from the center of screen.

For n = 0, By equation (4) $y_0 = 0$

i.e. zeroth order maxima or central maxims lies exactly at the center of the screen.

For n = 1, By equation (4), $y_1 = \pm \lambda D/d$