$$\Rightarrow a_{00}\left(\frac{X_0}{X_2}\right)^2 + a_{11}\left(\frac{X_1}{X_2}\right)^2 + a_{01}\, {X_0}/{X_2}\, {X_1}/{X_2} + a_{02}\, {X_0}/{X_2} + a_{12}\, {X_1}/{X_2} = 0$$

Let $\frac{X_0}{X_2} = x$ and ${X_1}/{X_2} = y$.

$$\Rightarrow a_{00}x^2 + a_{11}y^2 + a_{01}xy + a_{02}x + a_{12}y = 0.$$

$x = 0 \Rightarrow a_{11}y^2 + a_{12}y = 0$

To have a double root at $x=0$, $a_{12} = 0$

$\Rightarrow \{a_{00}x^2 + a_{11}y^2 + a_{01}xy + a_{02}x = 0\}$ is the set of all conics tangent to C' at $(0,0)$.

$\dim\{C_\lambda\} = 3$.

$\Rightarrow \dim\{C_\lambda\} > \dim\{l + l_0\} \Rightarrow$ We have a smooth conic C s.t C is tangent to C' only at p.

$\lrcorner$

Assertions 2' and 3 are easier. Note first that in general if $\{D_\mu\}$ is any family of divisors without base points on an n-dimensional variety V, the generic choice of $n+1$ divisors $D_{\mu_1}, \cdots D_{\mu_{n+1}}$ of the family have no points in common. This follows by an induction argument: if we assume the result for varieties of dimension $n-1$, then by restricting the divisors $\{D_\mu\}$ to a hyperplane section of V the generic choice of n divisors $D_{\mu_1}, \cdots D_{\mu_n}$ will have only finitely many points in common.