Collision-induced relaxation of ICl* and differing caging mechanisms of electronically excited ICl* within He · · · ICl* complexes are investigated using laser-induced fluorescence and two-laser, pump-probe spectroscopy. It is found that collisions of He atoms with molecules prepared in the short-lived ICl($B^3Π_{0+}, v' = 3$) rotor states occurs on timescales sufficient for vibrational relaxation down to the long-lived ICl($B, v' = 2$) rotor states. It is also shown that when linear He · · · ICl($X^1Σ_{0+}, v'' = 0$) complexes are promoted to the continuum of states correlating with the repulsive, inner wall of the ICl($A^3Π_1$) potential, the dissociating ICl($A$) molecule undergoes kinematic one-atom caging, ejecting the weakly bound He atom, and re-stabilizing the molecule in high lying vibrational levels within the $A$ electronic state with very little rotational excitation. Features associated with transitions of the linear He · · · $^3P^5Cl(X, v'' = 0)$ complex to intermolecular states associated with the ICl($B$) diabat that are coupled with those in the ICl($B''$) adiabat formed by an avoided curve crossing are also observed in laser-induced fluorescence spectra. The ICl* molecules within the excited state complex undergoes a non-adiabatic one-atom caging mechanism forming $^1P^5Cl(B, v')$ products with little rotational excitation.