A simple and complete solution to determine the distributions of queue lengths at different observation epochs for the model $\text{GI}^X/\text{Geo}/c$ is presented. In the past, various discrete-time queueing models, particularly multi-server queueing models, have been solved using complicated methods that lead to results in non-explicit forms. Some authors even state that the solution procedure to $\text{GI}^X/\text{Geo}/c$ is significantly different from that of $\text{GI}^X/\text{M}/c$. The purpose of this paper is to present a simple derivation for the model $\text{GI}^X/\text{Geo}/c$ that leads to the solution in explicit form. Essentially, the technique used to solve $\text{GI}^X/\text{M}/c$ is applied to solve $\text{GI}^X/\text{Geo}/c$. The roots of the underlying characteristic equation form the basis for all distributions of queue lengths at different observation epochs. All queue length distributions are in the form of either geometric or partially geometric terms.