South Delhi orogeny is constrained by correlating the deformational fabric with geochronology of the granites and metasediments around Beawar-Rupnagar-Babra, Rajasthan, NW India. The area consists of metaconglomerate, calcareous schist, mica schist and amphibolite. These were deformed by three stages of deformation ($D_1$-$D_3$) and intruded by four types of granite plutons ($G_1$-$G_4$). The $D_1$ deformation produced $F_1$, reclined/recumbent folds with $S_1$ axial planar fabric in greenschist facies metamorphic condition. The $D_2$ deformation produced NE-SW trending $F_2$ folds coaxial with $F_1$ (type 3 interference pattern), crenulations and $F_2$-axial parallel ductile shear zones. The $D_3$ deformation produced NW-SE $F_3$ folds, which superimposed on $F_1$ and $F_2$ to create type 1 and 2 interference pattern. Granites carry pervasive $S_1$ fabric. In $G_{1-3}$ granites, the $S_1$ is characterized by low temperature deformation fabric marked by bulging recrystallization of quartz. The $G_4$ granite (namely Sewariya granite) contains magmatic to submagmatic fabric and the $S_1$ fabric in it is a high temperature deformation fabric and lies parallel to magmatic fabric in the rock. Plagioclase is dynamically recrystallized by subgrain rotation and grain boundary migration and quartz shows chess board twinning. We interpret that the $G_4$ granite is syntectonic and $G_{1-3}$ were pre-tectonic to $D_1$ deformation. U-Pb data (SHRIMP method) of $G_1$, $G_2$ and $G_4$ granites yield Concordia age calculated with $^{206}\text{Pb}/^{238}\text{U}$ and $^{207}\text{Pb}/^{235}\text{U}$ ratio at ~982 Ma, ~992 Ma and ~878 Ma respectively. Thus the South Delhi orogeny is constrained by the age of $G_4$ granite at ~878 Ma (~870 Ma). The $G_{1-3}$ granites are pre-Delhi orogeny and probably constrain the age of rifting of the Delhi basin. EPMA Th-U-total Pb monazite geochronology of the garnet-staurolite-quartz-feldspar-biotite schist from the basal conglomerate zone shows three distinct ages, ca. 1611 Ma, 864 Ma and 718 Ma. Correlating with granite SHRIMP age, the ~864 Ma corresponds to Delhi metamorphism and $D_1$ deformation (~870 Ma). The event ca. 1611 Ga probably belongs to pre-Delhi age, which is observed in nearby pre-Delhi localities like Sandmata terrane.

Keywords: Deformational fabric, geochronology, metaconglomerate, granite and geochronology.