Kinematic evolution of the Paleozoic rocks exposed in Nowshera region, Khyber Pakhtunkhwa

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Microscopic to mesoscopic structures preserved in the Paleozoic age rocks of the Nowshera and Panjpir formations show the early ~ 47±3 Ma NW-SE horizontal bulk shortening tectonic event across the western hinterland zone of Pakistan. A consistent NE-SW trend of tectonic stylolites, foliations, stretching lineations and synchronously developed veins, which are perpendicular to theses structures indicates NW-SE horizontal bulk shortening in the study area. This event predates the ~ 31 to 23 Ma ESE-WNW trending F_4 deformation events related with the development of the Swabi Synclinorium and rocks exposed to the north-east of Nowshera region. NE-SW microscopic to mesoscopic structures preserved in Nowshera and Panjpir Formations appears to have been responsible for the generally NE-SW trending structures of ~47±3 Ma age associated with F_1/F_2 deformation event recognized previously by detailed micro to meso structural analyses in the western hinterland zone of Pakistan. The Paleozoic rocks exposed in the northeastern part of the Peshawar basin pivoted anticlockwise in Swabi region relative to the same age rocks exposed to the west in Nowshera region around the ESE-WNW trending fold axis of the Swabi Synclinorium.