During reepithelialization of the wound healing process, keratinocytes at leading edge (KLE) of the wound edge are migrating in association with a transition into spindle cells and a reduction of cell-cell contact. These phenomena of KLE are thought to belong to epithelial mesenchymal transition (EMT). Basic fibroblast growth factor (bFGF) is available in clinical use for the wound healing acceleration which stimulates granulation formation as well as angiogenesis. We examined bFGF effects on EMT of KLE using mouse skin. Histopathological approaches revealed that KLE formed a single layer of the epithelia and migrated toward the wound center. On the other hand, in a group with daily bFGF application, KLE formed multilayered epithelia with morphological transition to spindle shape. In addition, we found some KLE reduced E-cadherin and migrated individually toward the wound center. PCR array using RNA extracted from the skin wound tissues demonstrated that EMT related components such as TGF-β1, Notch1, Sox10 and PDGFRβ were significantly upregulated in the bFGF-treated wound compared to the control wound, suggesting that bFGF contribute reepithelialization through enhancement of EMT.