【**Abstract**】 **Objective:** To explore the value of applying different magnetic resonance imaging MRI sequences in the differential diagnosis of benign and malignant breast tumors. **Materials and methods:** Routine breast magnetic resonance scans (T1-weighted image, T1WI; T2-weighted image, T2WI), dynamically enhanced scans, DWI, and DKI scans were performed on 63 female patients with breast-occupying lesions. The benign and malignant lesions were confirmed by biopsy, excision -histopathology reports. There are 70 lesions, of which 46 are benign and 24 are malignant. Analyze the primary conditions, such as the shape, size, and boundary of the lesion, and determine the apparent diffusion coefficient (ADC), mean kurtosis (MK), and mean diffusion(MD) values. The receiver operating characteristic curve (ROC) was used to evaluate the value and difference in differentiating benign and malignant lesions. **Results:** In this study, the results of the two testers both showed that the MK of malignant lesions was significantly higher than that of benign lesions (P<0.001), and the MD of benign lesions was higher than that of malignant lesions (P<0.05). The ADC of benign lesions was higher than that of malignant lesions (P<0.05). For MK, the area under the curve (AUC) of the two testers was 0.855/0.869, respectively. When the best cut-off value of MK for tester 1 was 0.515, the sensitivity and specificity of MK for diagnosing malignant tumors were 83.3%/87.0%, respectively. For the two testers MD, and ADC, the area under the curve (AUC) was less than 0.5, and the diagnostic value was low. **Conclusion:** The MK value obtained by DKI has a specific value in the differential diagnosis of benign and malignant breast lesions. DKI is helpful in the identification of benign and malignant breast tumors. The diagnostic value is outstanding, and its importance to the changes in the microstructure of the organization needs to be further explored.