Objective
To evaluate the efficacy of transvaginal three-dimensional ultrasonography for the detection of abnormally located levonorgestrel-releasing intrauterine system (LNG-IUS).

Methods
Patients with LNG-IUS between January 2017 and January 2018 were recruited in this study. Transvaginal sonography (TVS) was performed in all cases to assess the localization of the LNG-IUS. Two-dimensional ultrasound and three-dimensional ultrasound were performed by experienced examiners. Hysteroscopy was performed in patients with pelvic pain, abnormal bleeding and suspected image malposition of LNG-IUS either by 2D or 3D TVS to establish the final diagnosis.

Results
Among 120 patients who were enrolled in the study, satisfactory 3D ultrasonography image were obtained in 112 (93.3%) cases. Among them, 41 (36.6%) cases were found LNG-IUS dislocation, including 15 cases (13.4%) with rotation, 18 (16.1%) with descend and 8 (7.1%) with expulsion. In 2D ultrasound examination, 26 cases were found dislocation of LNG-IUS, including 8 (7.1%) cases with rotation, 10 (8.9%) with descend, and 8 (7.1%) with expulsion. Hysteroscopy were performed in 33 case. The diagnostic accuracy of 3D ultrasonography was significantly better than that of 2D ultrasonography (P<0.001).

Conclusion
The transvaginal three-dimensional ultrasonography should be used when malposition is suspected of levonorgestrel-releasing intrauterine system.