Introduction
With the implementation of "Two-child policy" and widespread use of assisted reproductive techniques, the incidence of twins has been increased sharply in China. Compared with singleton pregnancies, the prevalence of structural anomalies is higher in twin ones. Several studies have explored the association between pregnancy characteristics, ultrasound manifestations such as nuchal translucency (NT) discordance or crown-rump length (CRL) discordance and adverse perinatal outcomes in twin pregnancies, but the results were inconsistent.

Objective
To evaluate the efficacy of first-trimester ultrasound scan in detecting fetal structural anomalies in twin pregnancies. To assess the association between characteristics, measurement discordance and occurrence of fetal structural anomalies, evaluate their predictive accuracy.

Methods
This was a retrospective study, case data were collected and analyzed from twin pregnancies booked at Beijing obstetrics and gynecology hospital between January 2012 to Dec 2016. Fetal structural anomalies were classified, and the diagnostic performance of first-trimester ultrasound was then analyzed. The potential independent variables for predicting fetal structural anomalies were evaluated by step-wise forward logistic regression. Predictive accuracy of the variables were calculated by using area under the receiving operator characteristics curve (AUC).

Results
A total of 1445 twin pregnancies were included in the study. Fetal structural anomalies were present in 2.8% (40/1445) per women, 5 cases involved both twins. The rate of fetal structural anomalies detected by ultrasound was 37.8% per fetus (17/45) in the first trimester. Diagnostic performance was good for abdominal wall defects and anencephaly. Nuchal translucency (NT) discordance (OR 3.6, 95%CI 2.4-5.3) was significantly associated with fetal structural anomalies. For detecting fetal structural anomalies, AUC, sensitivity and specificity of NT discordance was 0.7 (95%CI 0.6-0.8), 62.5% (95%CI 53.8-69.0) and 63.3% (95%CI 61.8-64.6). CRL or NT discordance in monochorionic twins with fetal structural anomalies seemed more obvious than dichorionic ones, but the different had no significant difference.

Conclusions
The rate of fetal structural anomalies detected by first-trimester ultrasound was 37.8% per fetus in twin pregnancies. Abdominal wall defects and anencephaly could be well detected by first-trimester ultrasound. Increased NT discordance was significantly associated with increased probability of fetal structural anomalies, but the efficacy for predicting fetal structural anomalies was limited.