Introduction
Preoperative distinguish between borderline and benign ovarian tumors is very important. Risk of Malignancy Index (RMI) is an algorithm based on scores derived from ultrasound variables, menopausal status, and serum CA125 level.

Objective
To examine the performance of the four RMI in discriminating borderline ovarian tumors (BOTs) and benign ovarian masses in daily clinical practice.

Methods
Finally, a total of 162 women with BOTs and 379 women with benign ovarian tumors were enrolled in this retrospective study. Also, we classified these patients by histopathological subtypes.

Results
RMI I had the highest AUC and the highest specificity in BOTs group. Similar results were found in serous borderline ovarian tumors (SBOT) subgroups.

Conclusion
RMI I was the best-performed method for differentiation of BOTs from benign ovarian tumors. At the same time, RMI I also performed best in discrimination SBOT from benign ovarian tumors.