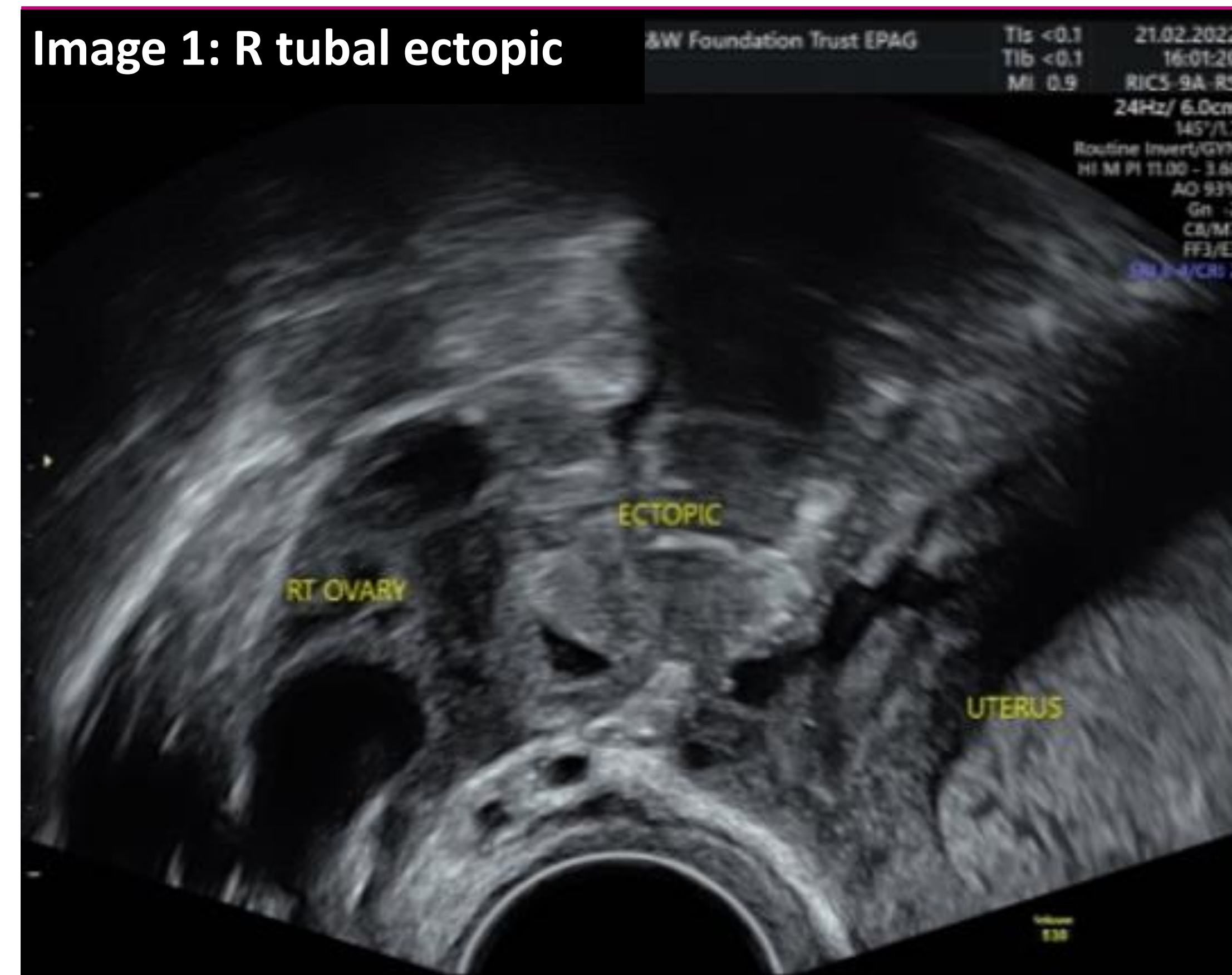




Use of serum progesterone to triage expectant management of tubal ectopic pregnancy.

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Objective: To investigate the utility of serum progesterone (P4) as a triaging tool for women with tubal ectopic pregnancy to identify those likely to have successful expectant management.



Background

- Expectant management is offered for tubal ectopic pregnancy (*image 1*) in clinically stable women with <35mm pregnancies and where serum HCG is <1000 IU/L. *NICE 2019*
- The role of progesterone in predicting outcome of ectopic pregnancy or suitability for expectant management has not been determined.

Method

Design: Retrospective cohort study. 94 patients included for analysis¹. Median age 32, 96% spontaneous pregnancies, 9.6% with history of previous ectopic.

Inclusion criteria: All women with tubal ectopic pregnancy managed in the early pregnancy unit at a London teaching hospital over a 3-year period (October 2017 to December 2020).

Results

- 26% (n=24) successfully completed expectant management (68% surgical; 6% medical management).
- **Progesterone (P4) concentrations in the expectant management (median 6, IQR 2-9) group were significantly lower** than those who had surgical or medical management (median 17, IQR 5.75-29.25; $P=0.0005$). (Fig.1)
- Area under the ROC curve (AUC) values for P4, first HCG and peak HCG were 0.733, 0.796 and 0.798 respectively in predicting successful expectant management. (Fig.2 (A), (B), (C), (D))
- **Combining P4 with first HCG produced greatest AUC value (0.8036)** compared to any of other markers alone/combination. (Fig.2(4)- **red box**)
- **Thresholds to predict successful completion of expectant management:**
 - **P4 of <12.5 had a sensitivity and specificity of 83.3% (95% CI=64.2-93.3%) and 62.8% (95% CI=51.2-73.2%).**
 - First HCG <1028 had a sensitivity and specificity of 79.2% (95% CI=59.5-90.8%) and 55.7 (95% CI=44.1-66.8%).
 - Peak HCG <1520 had a sensitivity and specificity of 95.8% (95% CI=79.8-99.8%) and 44.3 (95% CI=33.3-55.9%)
 - **P4 x first HCG <12915 had a sensitivity and specificity of 87.5% (95% CI=69-95.7%) and 60% (95% CI=48.3-70.7%).**

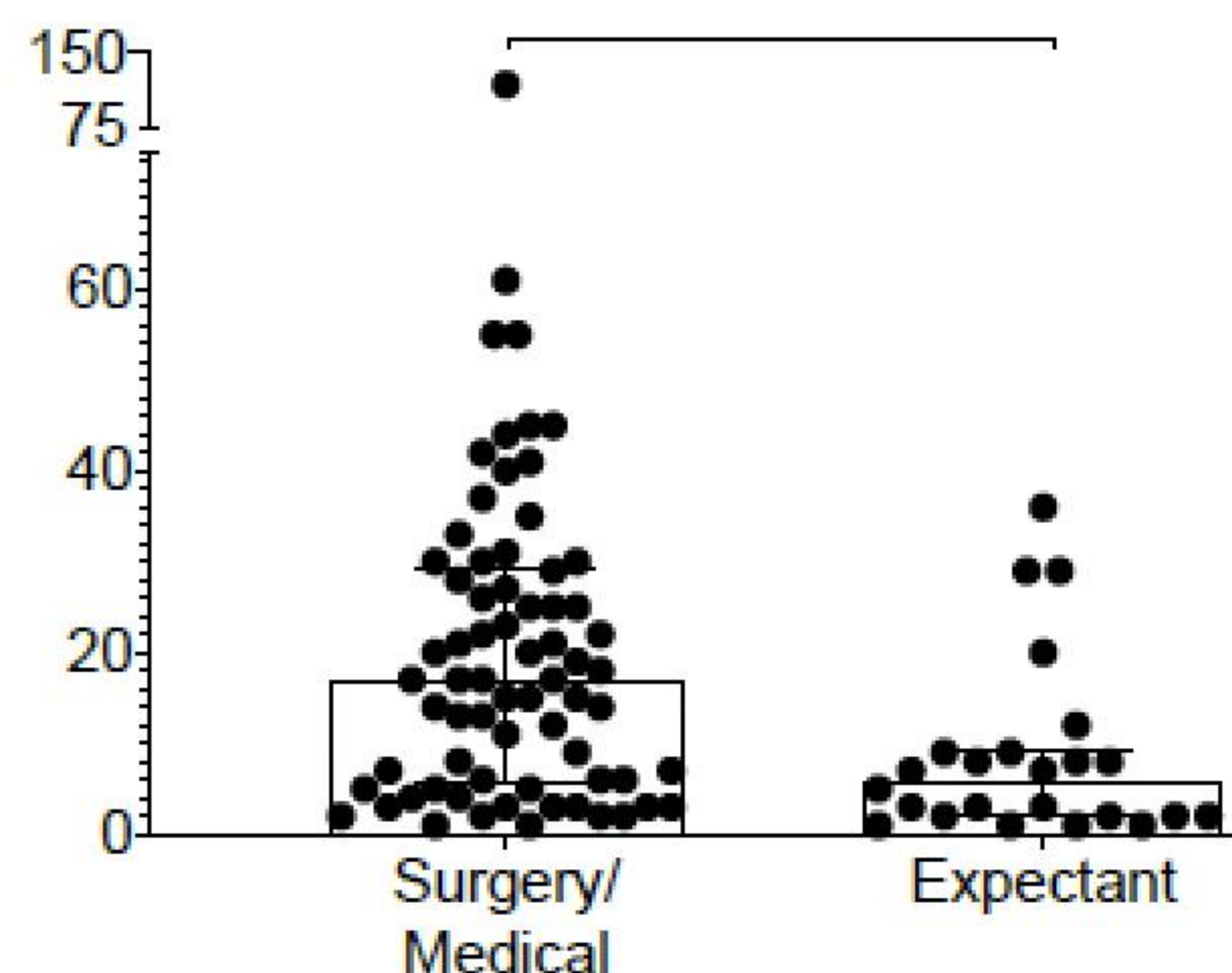


Figure 1: P4 concentrations (nmol/L)

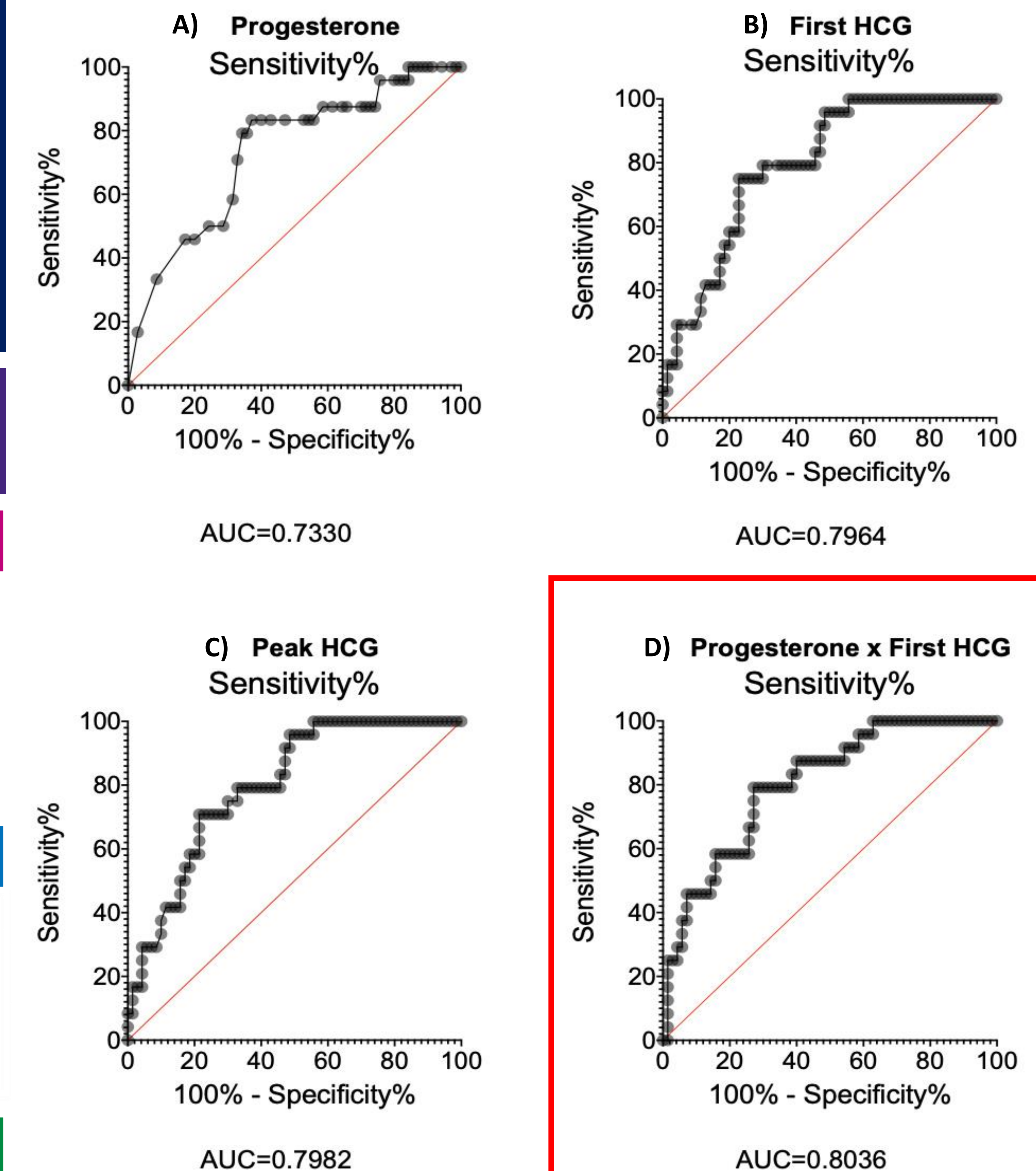


Figure 2: ROC curve with AUC values for Progesterone (A) AUC=0.7330 (95% CI=0.6181-0.8479), first HCG (B) AUC=0.7964 (95% CI=0.7043-0.8886), peak HCG (C) AUC=0.7982 (95% CI=0.7061-0.8904) and Progesterone x First HCG (D **red box**) AUC=0.8036 (95% CI=0.7090-0.8982).

Conclusion

- Low serum progesterone performs well as a discriminator for successful expectant management of tubal ectopic pregnancy, especially combined with HCG.

Take home message:

Progesterone has the potential to be used as a tubal ectopic triage tool, combined with first HCG, on suitability for expectant management.