The purpose of this study is to compare objective failure rates for minimally invasive sacrocolpopexy (MISC) using delayed absorbable versus permanent monofilament suture for mesh attachment to the vagina. It is our hypothesis that the objective failure rates will not be significantly different between suture types because tissue ingrowth into mesh has occurred by the time the delayed absorbable sutures lose their tensile strength.

Study design, materials and methods
This was an IRB approved, retrospective cohort study of women who underwent MISC performed at the two institutions in our fellowship-training program between 11/04 and 7/09. All subjects either underwent a robotic assisted laparoscopic sacrocolpopexy or a conventional laparoscopic sacrocolpopexy. Inclusion criteria were: 1) documentation of delayed absorbable monofilament suture (polydioxanone - PDSII™, Ethicon, Inc., Somerville, NJ, USA or polyglyconate – Maxon™, Covidien AG, Mansfield, MA, USA) to attach type 1 polypropylene mesh to the vagina in 2008. The purpose of this study is to compare objective failure rates for minimally invasive sacrocolpopexy (MISC) using delayed absorbable versus permanent monofilament suture for mesh attachment to the vagina. It is our hypothesis that the objective failure rates will not be significantly different between suture types because tissue ingrowth into mesh has occurred by the time the delayed absorbable sutures lose their tensile strength.

Results
A total of 251 women underwent MISC at our institutions since 11/04 and 84% had sufficient data to be included in the analysis (Figure 1). There were no differences in mean age (60 ± 8 vs.59 ± 9 years, p=0.64), median preoperative prolapse stage (stage 2 vs. stage 3, p=0.14), median [range] follow-up duration (21 [4-171] vs. 16 [5-62] weeks, p=0.61) or median [range] time to failure for primary or secondary outcomes (27 [4-130] vs. 56 [13-62] weeks, p=0.38) between the permanent and delayed absorbable suture groups.

There was 1 apical failure in the permanent suture group and 0 in the delayed absorbable group resulting in a 0.5% (1/211) overall apical failure rate (OR 0.995, 95%CI 0.984-1.005, p=1.00). The objective failure rates including apical, anterior, and posterior prolapse as defined by our primary and secondary outcomes were similar: 17.4% (32/183) for our permanent suture group and 17.8% (5/28) for our delayed absorbable group (OR 1.026, 95%CI 0.363-3.901, p=0.96). The permanent suture group and delayed absorbable group also had similar rates of anterior (11% vs. 10%, p=0.75 ) and posterior prolapse (9% vs. 7%, p=1.0). There was no correlation between age (p=0.759) or preoperative POPQ stage (p=0.108) and the presence of objective failure in any compartment.

Of the 37 subjects who met criteria for objective failure, 31 (84%) were at the hymen (0 cm), and only 6 (16%) were beyond the hymen (>0 cm). Of the 37 subjects: 30 (81%) were asymptomatic, 3 (8%) underwent reoperation, 2 (5%) were symptomatic but declined reoperation and 2 (5%) were considering surgery. All three subjects who underwent reoperation were in the permanent suture group; two had anterior repairs and one had a posterior repair.

Figure 1.
Further analysis was performed to determine if there was a difference in short term (<6 months) objective failure rates in any compartment. The short term failure rate was a 7% (13/183) in the permanent suture group and 8% (2/28) in the delayed absorbable group (p = 0.99).

Interpretation of results
In this preliminary study, the use of delayed absorbable monofilament suture (polydioxanone or polyglyconate) to secure polypropylene mesh to the vagina did not increase objective failure rates. These similar failure rates were observed regardless of whether we used a strict definition of apical failure or a more relaxed definition of mostly asymptomatic anterior and posterior failures. We think there is sufficient tissue ingrowth into the polypropylene mesh during the time period of adequate suture tensile strength to prevent failure. Although we recommend that this pilot data be confirmed in larger scale trials, we consider delayed absorbable polydioxanone or polyglyconate suture to be a reasonable alternative to prevent complications of permanent suture, such as suture erosion into bladder or vagina remote from surgery.

Concluding message
Our preliminary results suggest that the use of a delayed absorbable monofilament (polydioxanone or polyglyconate) suture does not result in a different objective failure rate when compared to permanent polypropylene suture for the attachment of mesh to the vagina during sacrocolpopexy.

References