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Title:

A LONGITUDINAL ASSESSMENT OF OVARIAN RESERVE AFTER MYOMECTOMY

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Objective:

Myomectomy is the preferred treatment option for symptomatic fibroids in women desiring fertility-sparing treatment. However, the effect of myomectomy on ovarian reserve is largely unknown. There is evidence to show that other treatments for fibroids including uterine artery embolization and hysterectomy may diminish ovarian reserve. Additionally, the use of a tourniquet transiently decreases blood supply to the ovaries, which may impact ovarian reserve. This study sought to determine whether open and minimally invasive myomectomy are associated with immediate and/or long-term changes in serum anti-Mullerian hormone (AMH).

Design:

Prospective cohort study

Materials and Methods:

Patients undergoing minimally invasive (robot-assisted or laparoscopic) or open abdominal myomectomy by one primary surgeon from May 2018 through March 2019 were included. A Penrose drain tourniquet was used for all open myomectomies. Vasopressin was injected into the myoma subserosa for all minimally invasive myomectomies (MIS). Baseline data collected

included age, BMI, and race. Surgical data collected included surgical approach, additional procedures, estimated blood loss (EBL), length of procedure, and weight of fibroids removed. Serum AMH was collected prior to the procedure. Follow-up serum AMH levels were measured at 2 weeks, 3 months, and 6 months after the procedure. To achieve 80% power to detect a 15% difference in mean AMH level, with $p < 0.05$, a minimum of 43 subjects needed to be recruited. Paired t-tests were used to detect the mean difference between baseline AMH and 2 week, 3 month, and 6 month AMH respectively. Univariate linear regression was used to detect the effect of surgical approach and covariates on the percent difference in AMH from baseline to each follow-up time point. All follow-up visits will be completed by September 2019, therefore a preliminary analysis was conducted for the purpose of this abstract.

Results:

A total of 56 patients were included in the study. 32 had open myomectomies and 24 had minimally invasive myomectomies. A significant decrease in serum AMH was found between baseline and 2 weeks post-operatively (n=42) ($b=0.26 \pm 0.75$ (95% CI 0.03-0.49) $p=0.029$). This transient effect was no longer significant after 3 months (n=20) and 6 months (n=14). Linear regression showed a significantly greater decrease at 2 weeks post-operatively in the open compared to MIS group ($b=-0.56$, $p=0.039$). No significant differences in AMH were seen between open and MIS groups at 3 and 6 months. Surgical factors such as EBL, length of surgery, and fibroid weight were not significantly associated with post-operative changes in serum AMH level.

Conclusion:

AMH levels appear to undergo a transient decline in the immediate post-operative period after myomectomy, with a more pronounced effect with an open compared to MIS approach. The use of a tourniquet might cause a more significant decrease in AMH in the immediate post-operative period, but does not appear to have a sustained effect. Patients can be reassured that undergoing a myomectomy does not have a long-term impact on ovarian reserve, regardless, of the approach.