# The Effect of Laparoscopic Endometrioma Surgery on Anti-Müllerian Hormone: A Systematic Review of the Literature and Meta-Analysis

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## Abstract

**Objective:**This study aimed to assess the effect of endometrioma surgery on ovarian reserve by measuring anti-Müllerian hormone (AMH) levels.

**Methods:**This systematic review and meta-analysis included observational studies and randomized clinical trials published in English referenced in MEDLINE, SCOPUS and Cochrane (1982-2019). We included studies that reported AMH levels in the pre and post-operative period of patients undergoing laparoscopic surgery for endometrioma. Preoperative AMH was defined as the baseline AMH; short term AMH was measured no later than a month after surgery; medium term AMH was measured between one and six months after surgery; and long-term AMH was measured six or more months after surgery.

**Results:**Thirty-six studies met the inclusion criteria. A significant decrease was observed in short, medium and long-term post-operative AMH levels when compared with baseline AMH. However, there were no differences between short and long-term post-operative AMH levels, suggesting a non-significant recovery after one year of follow-up. A significant decrease in post-operative AMH was observed in bilateral endometriomas compared with unilateral cases. In addition, patients with endometriomas presented a significant decline in post-operative AMH compared with patients with other benign ovarian conditions. The decrease in post-operative AMH was significantly greater in bilateral cystectomy when compared with vaporization with bipolar energy or laser. We also observed a greater decrease in post-operative AMH with bipolar energy hemostasis compared with suture and hemostatic agents. These results should be taken with caution due to the high heterogeneity of the studies analyzed.

**Conclusions:**Endometrioma surgery has a deleterious effect on short, medium, and long-term post-operative AMH levels. Bilateral endometriomas and endometriomas greater than 7 cm have been associated with greater decreases in AMH. The mechanical resection of healthy tissue and the inflammatory damage on the ovarian cortex might explain the diminishing of ovarian reserve.

**Keywords:**anti-Müllerian hormone; endometrioma; endometriosis; laparoscopic surgery; ovarian reserve.