**Abstract**

**Objective:** To evaluate the cost effectiveness of sequential medical and surgical therapy for the treatment of endometriosis-related dysmenorrhea.

**Methods:** A cost-effectiveness model was created to compare three stepwise medical and surgical treatment strategies compared with immediate surgical management for dysmenorrhea using a health care payor perspective. A theoretical study cohort was derived from the estimated number of reproductive age (18-45) women in the United States with endometriosis-related dysmenorrhea. The treatment strategies modeled were: strategy 1) nonsteroidal antiinflammatory drugs (NSAIDs) followed by surgery; strategy 2) NSAIDs, then short-acting reversible contraceptives or long-acting reversible contraceptives (LARCs) followed by surgery; strategy 3) NSAIDs, then a short-acting reversible contraceptive or LARC, then a LARC or gonadotropin-releasing hormone modulator followed by surgery; strategy 4) proceeding directly to surgery. Probabilities, utilities, and costs were derived from the literature. Outcomes included cost, quality-adjusted life years (QALYs), and incremental cost-effectiveness ratios. Univariate, bivariate, and multivariate sensitivity analyses were performed.

**Results:** In this theoretical cohort of 4,817,894 women with endometriosis-related dysmenorrhea, all medical and surgical treatment strategies were cost effective at a standard willingness-to-pay threshold of $100,000 per QALY gained when compared with surgery alone. Strategy 2 was associated with the lowest cost per QALY gained ($1,155). Requiring a trial of a third medication before surgery would cost an additional $257 million, compared with proceeding to surgery after failing two medical treatments. The probability of improvement with surgery would need to exceed 83% for this to be the preferred first-line approach.

**Conclusion:** All sequential medical and surgical management strategies for endometriosis-related dysmenorrhea were cost effective when compared with surgery alone. A trial of hormonal management after NSAIDs, before proceeding to surgery, may provide cost savings. Delaying surgical management in an individual with pain refractory to more than three medications may decrease quality of life and increase cost.