**Abstract**

**Objective:** The aims of this systematic review and meta-analysis were: to compare reproductive outcomes in patients who had been submitted to surgery for deep infiltrating endometriosis (DIE) before in vitro fertilization (IVF) to those who underwent IVF without a previous surgery; to analyse data according to different types of surgery (complete, incomplete) or subgroups of patients (DIE with or without bowel involvement), and to assess surgical and IVF complications and data on safety concerns.

**Data sources:** A systematic literature search from January 1980 to November 2019 with no language restriction was performed in PubMed, MEDLINE, EMBASE and WoS. The search strategy used the following MeSH terms: "in vitro", "fertilization", "IVF", "assisted reproduction", "colorectal", "endometriosis", "deep", "infiltrating", "deep infiltrative endometriosis", "intestinal", "bowel", "rectovaginal", "uterosacral", "vaginal", "bladder".

**Methods of study selection:** We included studies that compared reproductive outcomes of infertile women with DIE who performed an IVF with or without a previous surgery of DIE lesions. Meta-analysis was performed using Review Manager version 5.3. Risk of bias of included papers was assessed using the method recommended by Cochrane Collaboration.

**Tabulation, integration, and results:** The systematic search retrieved 150 articles, 98 studies were potentially eligible and their full texts were reviewed. Of these, 12 studies met our inclusion criteria and 5 presented data suitable for inclusion in a meta-analysis, but 2 of them provided overlapping data and only the larger study was finally included. No randomized controlled trials (RCT) were found. Pregnancy rate per patient (PRp) was 1.84 (95% CI 1.28-2.64), pregnancy rate per cycle was 1.84 (95% CI 1.26-2.70) and live birth rate per patient was 2.22 (95% CI 1.42-3.46) times more likely for operated patients compared to non-operated ones. The addition of data from the incomplete surgery groups also showed higher PRp for surgery before IVF (OR 1.63; 95% CI 1.16-2.28). Results favour previous surgery in DIE with digestive involvement (OR 2.43, 95% CI 1.13-5.22) and also in DIE without digestive involvement (OR 1.55, 95% CI 0.61-3.95). A qualitative analysis of complications of surgery and IVF showed a partial or complete lack of information on these issues and high heterogeneity in the reported data. None of these studies is RCT; therefore all have high risk of selection and allocation bias except for one study that statistically controlled this later risk by using propensity scores. Funnel plots showed no asymmetry.

**Conclusion:** Results were very consistent for all the studied outcomes, showing a statistically significant benefit for surgery before IVF, although they should be confirmed with RCTs. In addition to the reproductive outcomes, safety data should also be reported in order to have a complete assessment of risks and benefits.