Evaluating The Efficacy And Safety Of Hyperthermic Intraperitoneal Chemotherapy (HIPEC) as an Adjunct To Surgery For Advanced Ovarian Cancer: A Systematic Review And Meta-Analysis

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Introduction

Advanced ovarian cancer remains a significant challenge in gynecologic oncology, with a 5-year survival rate of approximately 30% for patients with advanced disease. The use of surgery is the standard of care for advanced ovarian cancer. This meta-analysis aims to detect the efficacy and safety of Hyperthermic intraperitoneal chemotherapy (HIPEC) as an adjunct to surgery for advanced ovarian cancers.

Methodology

We systematically searched PubMed, Embase, Clinicaltrials.gov, and the Cochrane databases from inception till 10 Jan 2025, focusing on randomized controlled trials (RCTs) reporting therapeutic and safety outcomes of integrating HIPEC to surgery for advanced ovarian cancers. Dichotomous outcomes were presented as risk ratios (RR) with 95% confidence intervals (CI). The inter-study heterogeneity was dealt with using the random effect model. All the calculations were performed using RevMan 5.4. A P value of < 0.05 was considered statistically significant.

References

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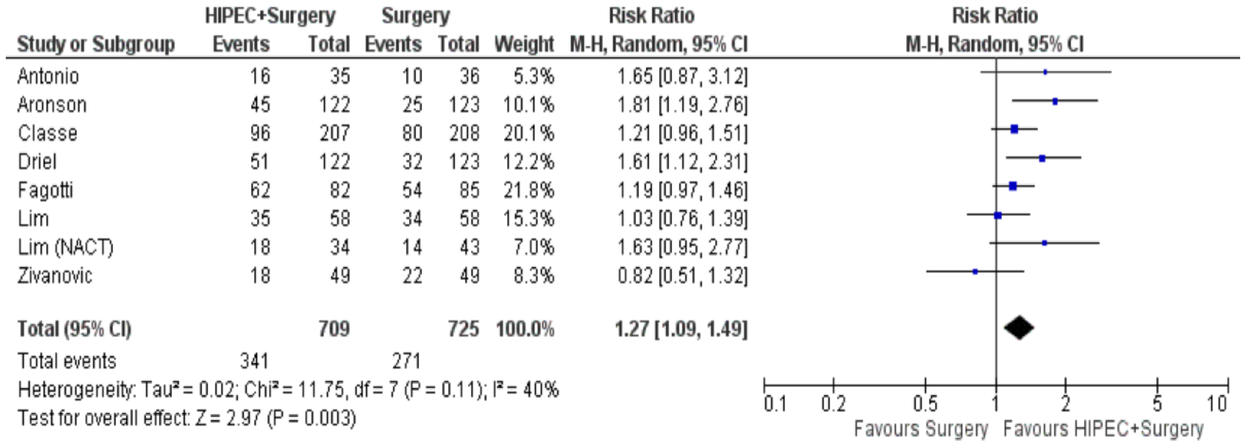
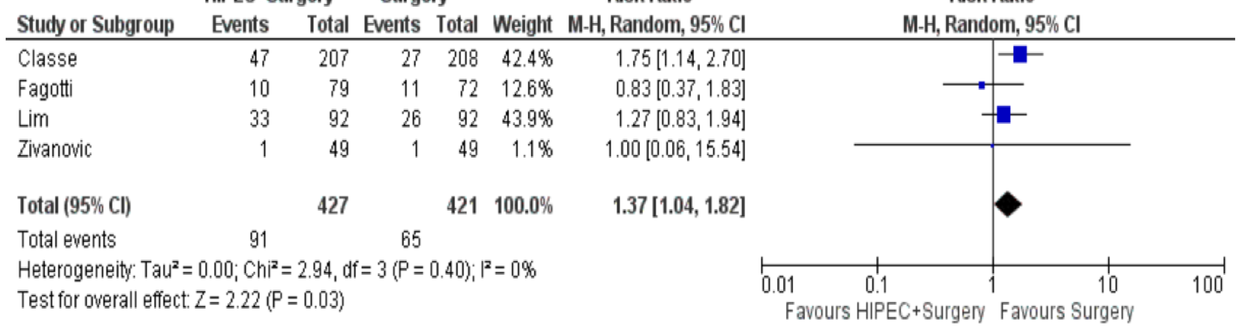
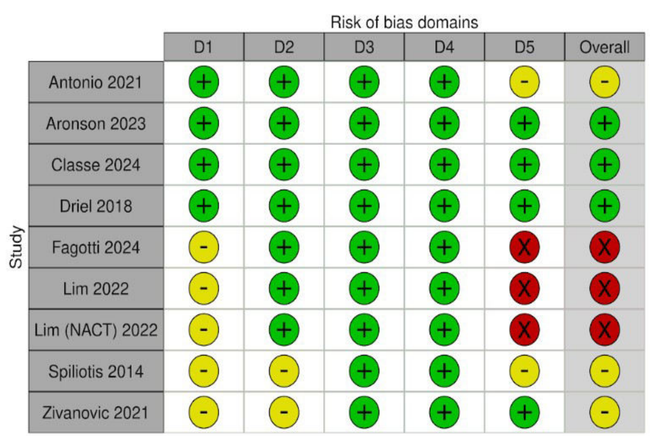
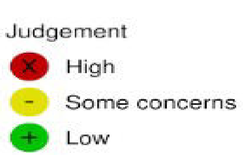






Domains:
D1: Bias arising from the randomization process.
D2: Bias due to deviations from intended intervention.
D3: Bias due to missing outcome data.
D4: Bias in measurement of the outcome.
D5: Bias in selection of the reported result.



Results

This meta-analysis included nine RCTs with 1,545 patients comparing HIPEC plus surgery (n=770) with surgery alone (n=775). No significant difference was observed in overall survival (OS) at one year (RR=1.02, 95% CI: 0.99–1.05, p=0.11) or three years (RR=1.08, 95% CI: 1.00–1.17, p=0.06), but a significant benefit was seen at five years (RR=1.27, 95% CI: 1.09–1.49, p=0.003), while OS at seven years remained non-significant (RR=1.39, 95% CI: 0.93–2.09, p=0.11). Progression-free survival (PFS) showed no significant differences at one year (RR=1.12, 95% CI: 0.97–1.29, p=0.14), three years (RR=1.24, 95% CI: 0.87–1.79, p=0.24), five years (RR=1.01, 95% CI: 0.67–1.54, p=0.95), or seven years (RR=1.10, 95% CI: 0.77–1.58, p=0.61). HIPEC plus surgery was associated with a higher risk of thrombocytopenia and sepsis, while other adverse events showed no significant differences.

Conclusion

This meta-analysis suggests that adding HIPEC to surgery for advanced ovarian cancer improves overall survival at five years but not at earlier or later time points. Progression-free survival showed no significant benefit. HIPEC was associated with a higher risk of thrombocytopenia and sepsis, while other adverse events remained comparable.