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Introduction & Objectives: To systematically evaluate the safety and efficacy of intra-operative cell salvage (ICS) in urology.

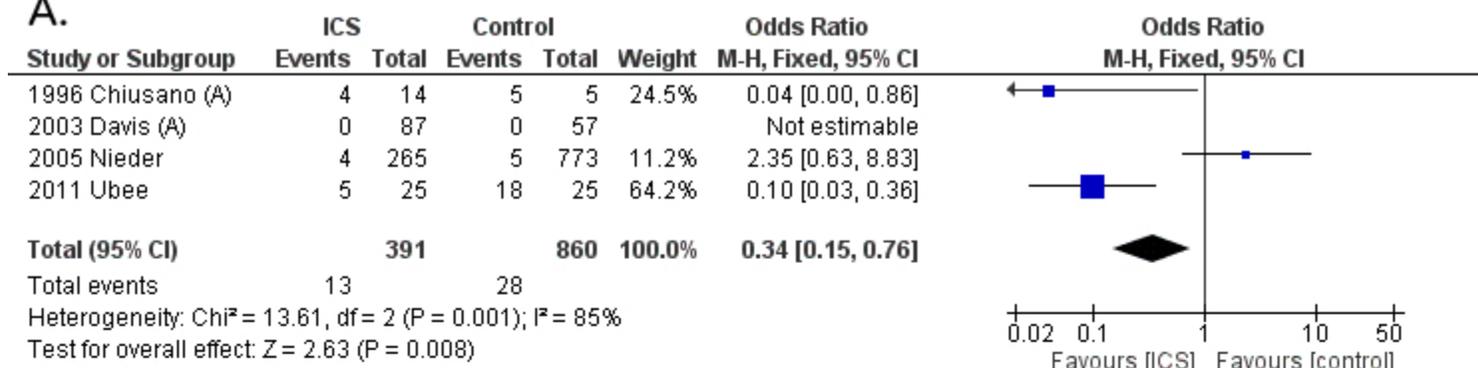
Materials & Methods: A search of Medline, Embase and Cochrane Library to August 2017 was performed using methods pre-published on PROSPERO. Reporting followed the Preferred Reporting Items for Systematic Review and Meta-analysis guidelines. Eligible titles were comparative studies published in English utilising ICS in urology. Primary outcomes were allogeneic transfusion rates (ATR) and tumour recurrence. Secondary outcomes were complications and cost.

Results: Fourteen observational studies were identified, totaling 4,536 patients. ICS was compared to no blood conservation technique (seven studies), pre-operative autologous donation (PAD) (five) or both (two). Cohorts underwent open prostatectomy (eleven studies), open cystectomy (two) or open partial nephrectomy (one). Meta-analysis was possible only for ATR within prostatectomy studies. In this setting, ICS reduced ATR compared with no blood conservation technique (OR 0.34, 95% CI 0.15-0.76) but not PAD (OR 0.76, 95% CI 0.39-1.31). In the non-prostatectomy setting, ATR amongst ICS patients was significantly higher or similar in one and two studies respectively.

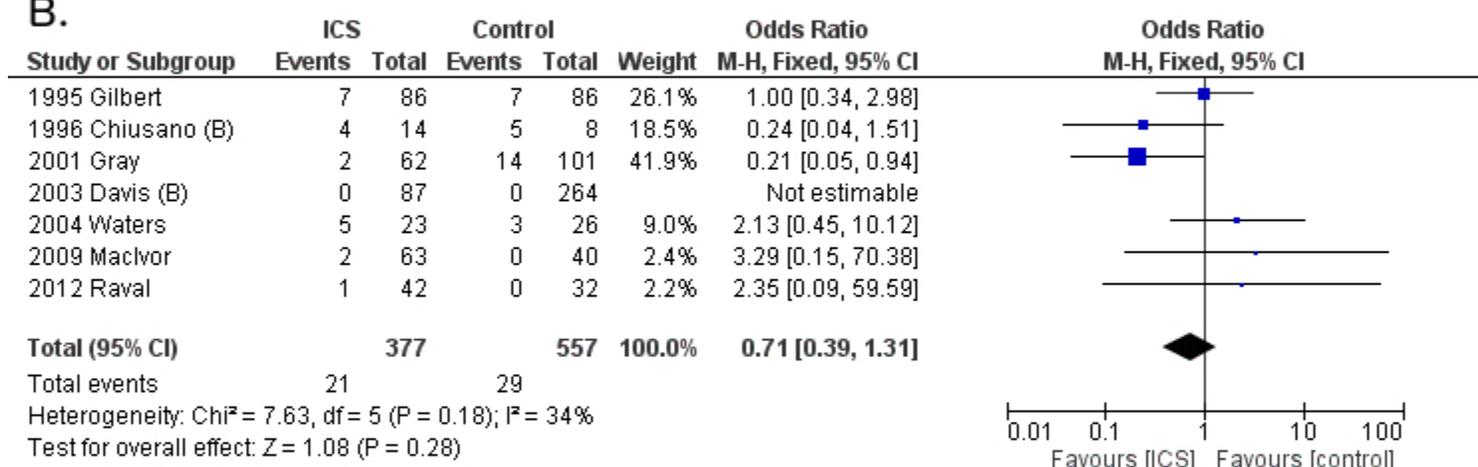
Tumour recurrence was found to be significantly less common (two studies), similar (eight) or not measured (four). All six studies reporting complications found no difference for ICS cohorts. Regarding cost, one study from 1995 found ICS more expensive than PAD, while two more recent studies found ICS cheaper than no blood conservation technique. Due to inter-study heterogeneity, meta-analyses were not possible for recurrence, complications or cost.

Figure 1 – A. and B. Meta-analysis of allogeneic transfusion rates amongst radical retropubic prostatectomy studies, comparing cohorts with intra-operative cell salvage versus no blood conservation technique (A) or pre-operative autologous donation (B). C. Forest plot of oncological outcomes, with suppression of the pooled estimate.

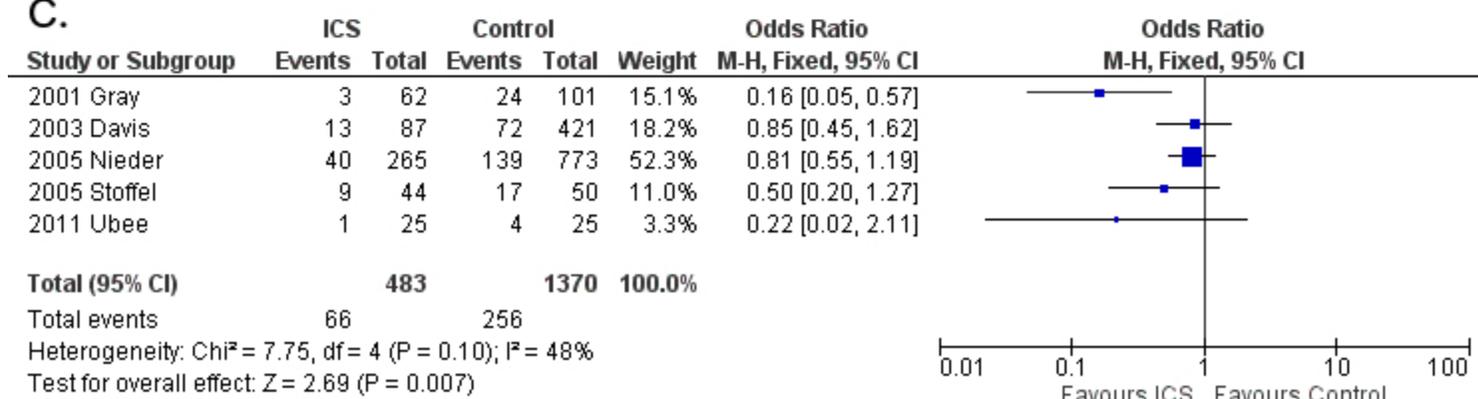
A.



B.



C.



Conclusions: Low level evidence exists that compared with other blood conservation techniques, ICS reduces ATR and cost while not affecting complications. It does not appear to increase tumour recurrence post-prostatectomy, although follow-up durations are short. Small size and short follow-up negate conclusions on recurrence following nephrectomy or cystectomy.