

vNOTES Salpingectomy for Ectopic Pregnancy - A Review of the Literature.

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What is vNOTES?

Vaginal natural orifice transluminal endoscopic surgery (vNOTES) is an increasingly popular minimally invasive surgical technique. It has gained traction in both gynaecological and general surgery, and in this review, its application to salpingectomy, indicated for ectopic pregnancy is evaluated.

Ectopic pregnancy, despite decreasing mortality over the past three decades, remains the leading gynaecological emergency across the UK.¹ The current gold standard surgical management is still conventional laparoscopic (CL) salpingectomy. However, an increasing number of salpingectomies are being performed by vNOTES.

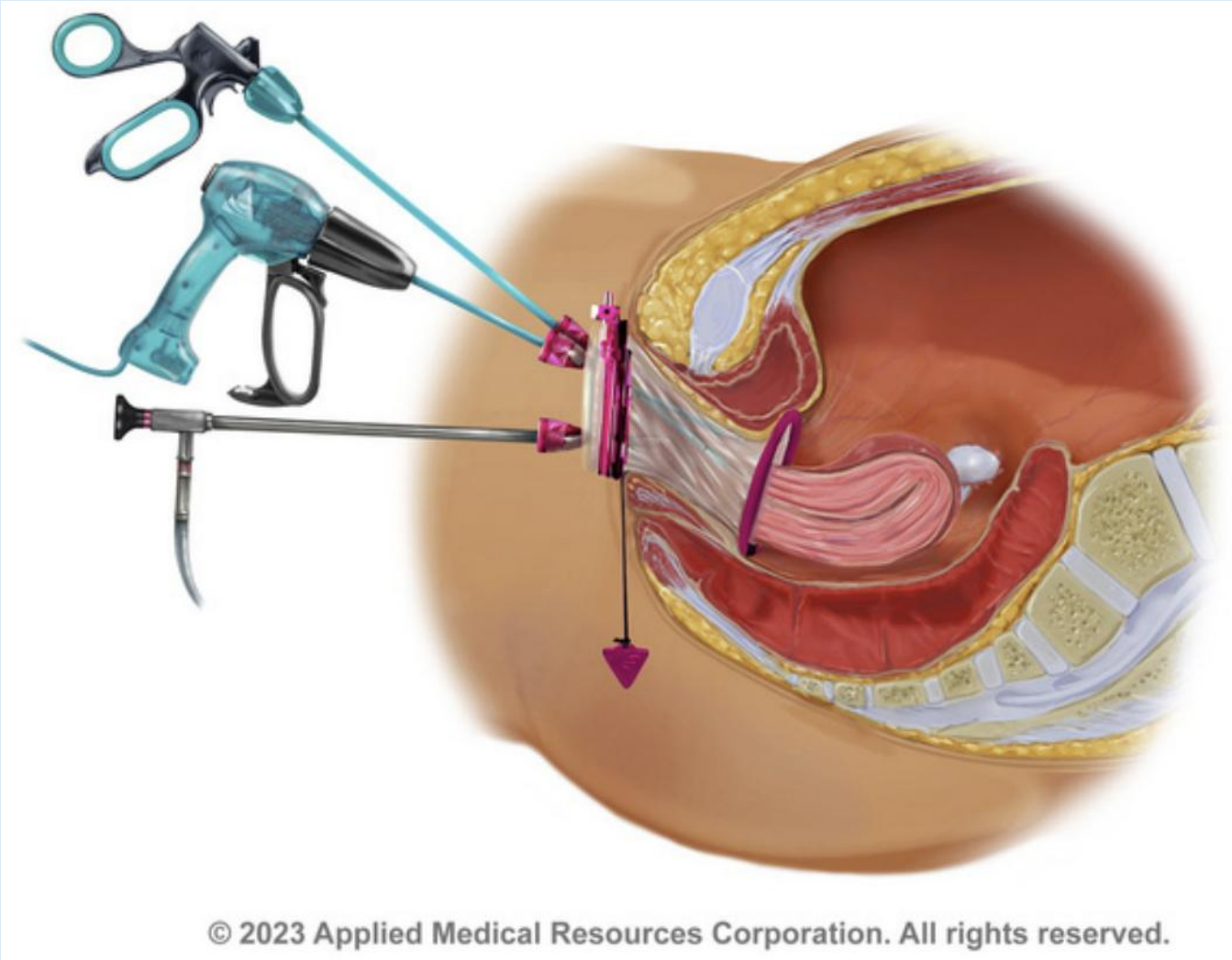


Fig. 1. Graphic illustration of vNOTES approach using endoscopic instruments, laparoscope and GelPOINT®V-Path. (Image courtesy of Applied Medical Resources Corporation. All rights reserved).

The typical method for adnexal vNOTES surgery, as described by Baekalandt et al. (2021) involves creating a 3cm posterior colpotomy incision allowing access to the Pouch of Douglas. A GelPOINT V-Path transvaginal access platform is then inserted into the pouch of Douglas, and the peritoneal cavity is insufflated to a pressure of 12mm Hg. A Karl Storz laparoscope, Johan endoscopic graspers and Voyant Advanced Bipolar Device are used for the adnexectomy. The specimen is removed through the posterior colpotomy incision and repaired using polyglactin Vicryl 1 sutures.²

Methods and Search Strategy

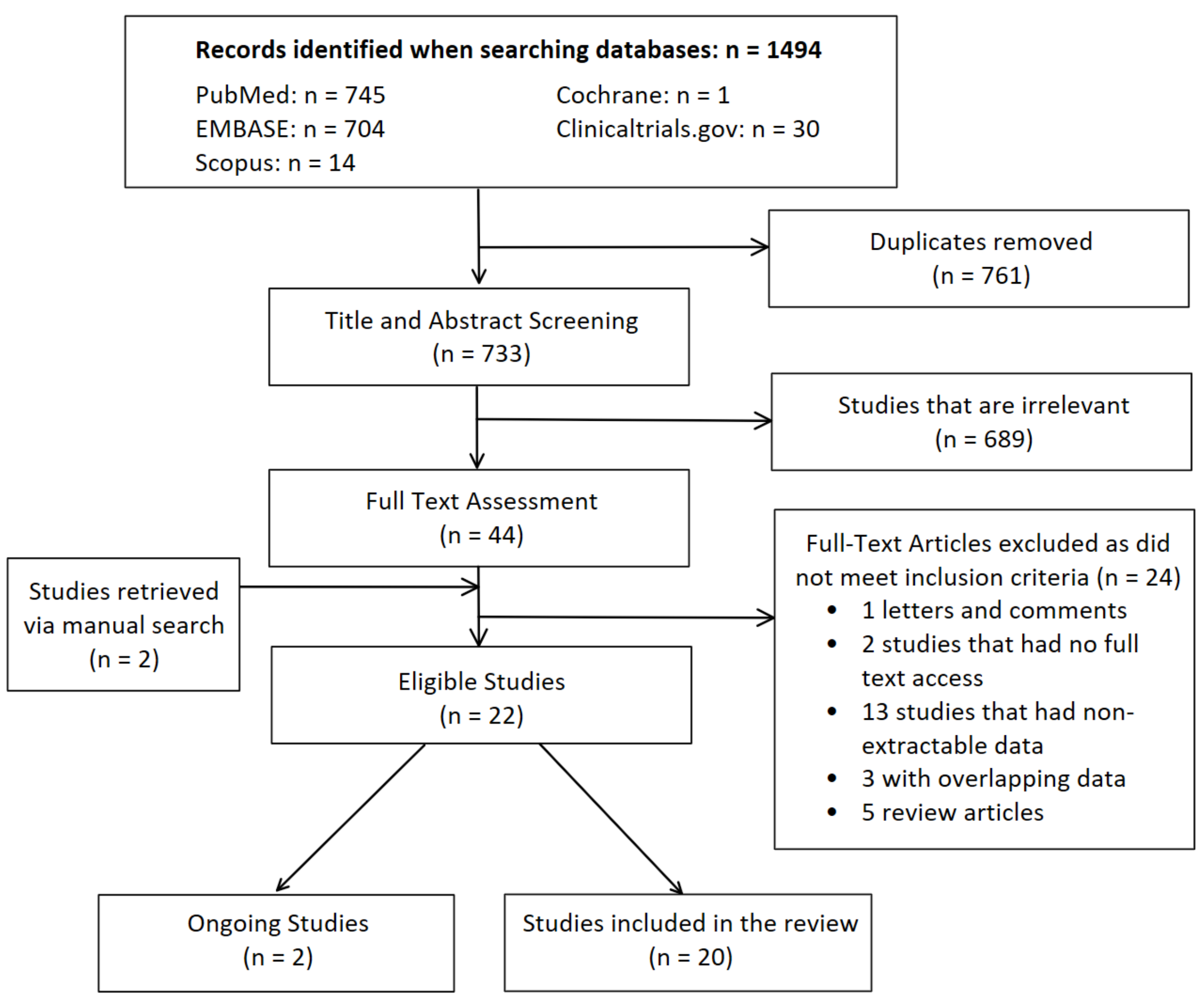


Fig. 2. PRISMA flowchart.

Eligible studies were detected via thorough searches of the PubMed, Cochrane Library, EMBASE, Scopus and Clinicaltrials.gov databases with the search terms: Salpingectomy AND ectopic pregnancy OR tubal pregnancy AND vnotes OR vaginal natural endoscopic transluminal endoscopic surgery. The date of the last search was January 24th 2025.

Twenty studies met the criteria for inclusion in this review, encompassing 654 cases of vNOTES salpingectomy. Of the studies, five compared vNOTES salpingectomy to CL salpingectomy, with data pertaining to duration of surgery and length of hospital inpatient stay extracted for meta-analysis. Other parameters are discussed without statistical analysis.

Findings and Discussion

Duration of Surgery

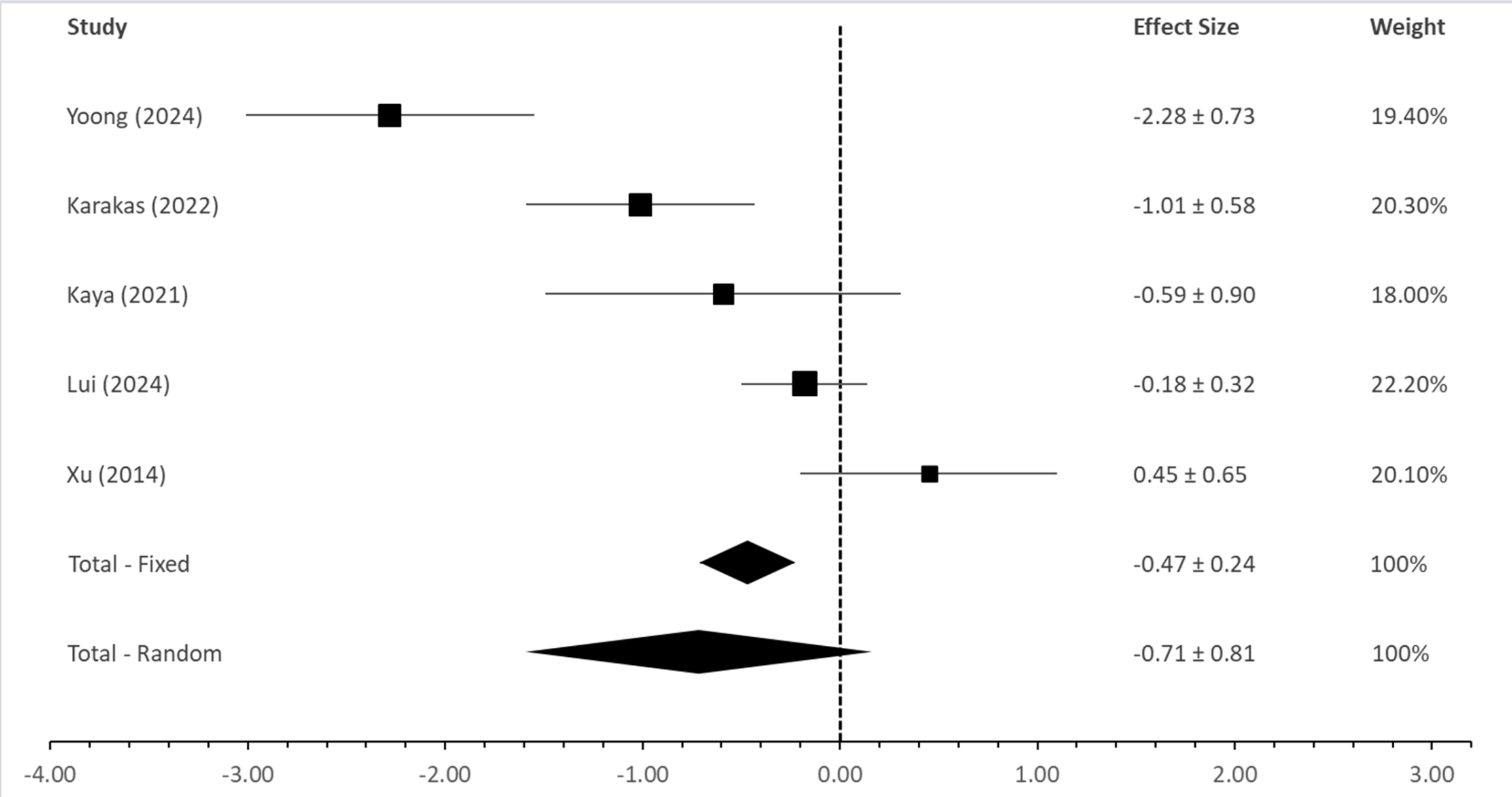


Fig. 3. Forest Plot of Meta-analyses for Duration of Surgery. Fixed effect significance <0.0001. Random effect significance 0.09. vNOTES is significantly faster than CL, leading to cost saving by reducing theatre time.

Length of Hospital Stay

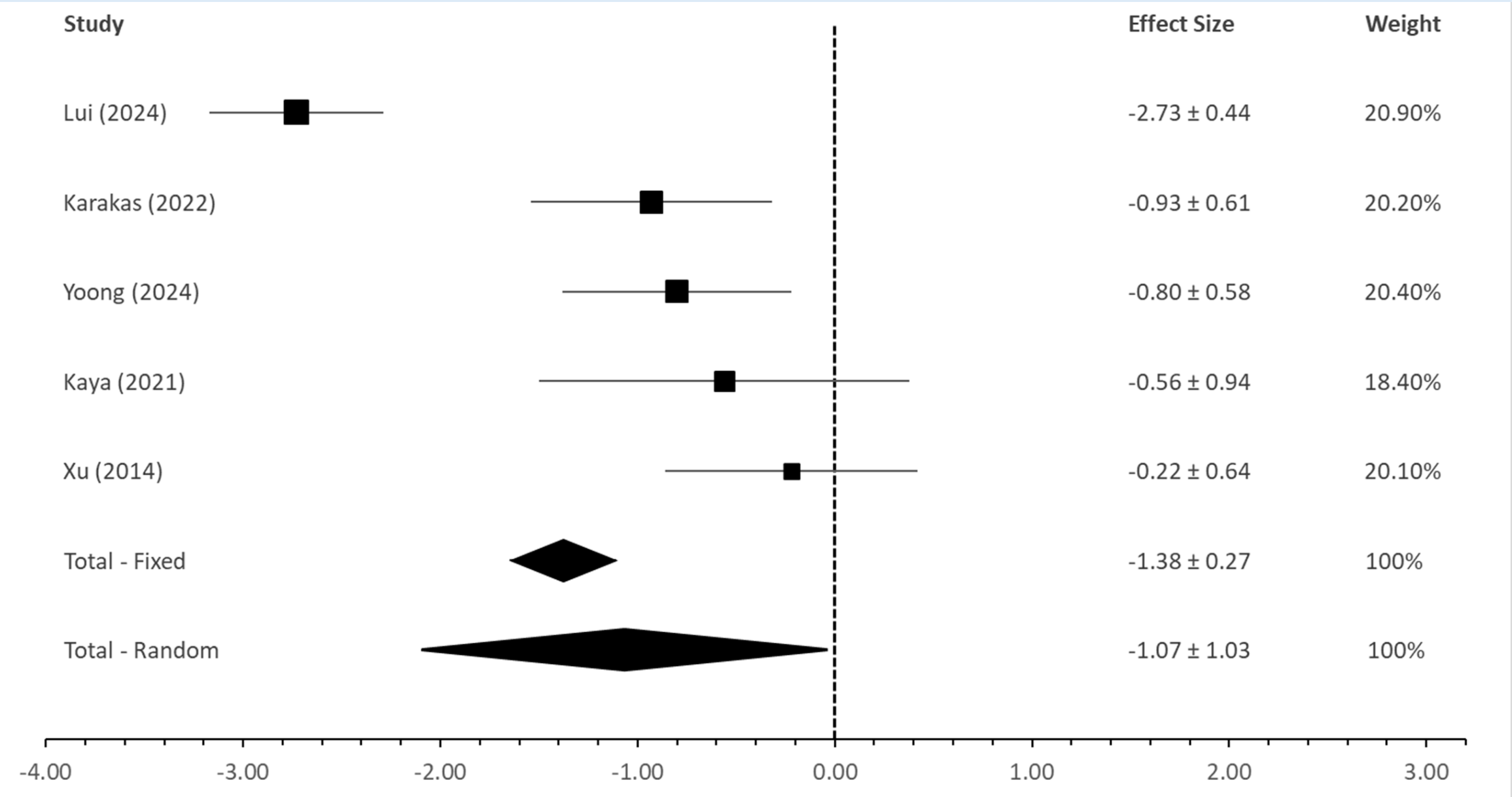


Fig. 4. Forest Plot of Meta-analyses for Length of Hospital Stay. Fixed effect significance <0.00001. Random effect significance 0.04. vNOTES approach has the possibility to alleviate bed shortages across the NHS by reducing overnight inpatient stays.

Post-Operative Pain Scoring

Author	Findings (vNOTES vs CL cohorts)
Xu ³	Significantly lower at 4hr. No significant difference at 24 and 48hrs
Kaya ⁴	Significantly lower at 6 and 24hrs
Karakas ⁵	Significantly lower at 6 and 12hrs
Yoong ⁶	Significantly lower at 24hrs
Zhong ⁷	Significantly lower (no time period given)

Fig. 5. Table demonstrating the findings of post-operative VAS pain scores in vNOTES and CL cohorts.

All five studies showed those who underwent vNOTES had significantly less pain than those in the CL group at least one time point. Furthermore, Liu, Yoong, Karakas all demonstrated significant decreases in postoperative analgesia requested by the patient.

Sexual Function

Tekin et al. found no significant difference in the female sexual function index (FSFI) at 3 and 6 months post-operatively compared to pre-operatively in 4 cases of vNOTES salpingectomy.⁸

Berisha et al. reported on 103 adnexal vNOTES procedures, of which 6 were salpingectomy for ectopic pregnancy. They found 1.0% of cases reported new deep dyspareunia, persistent over 12 months, although they continued to show gradual improvement.⁹

Fertility and Future Deliveries

Tavano et al. reported that 26 patients achieved pregnancy after vNOTES, with no vNOTES related complications in delivery. Vaginal deliveries accounted for 76.9% of these cases.¹⁰

Zhang et al. reported similarly, with 12 patients delivering successfully within 28 months of vNOTES procedure. No adverse outcomes related to vNOTES were detected, with 83.3% being vaginal deliveries.¹¹

References

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