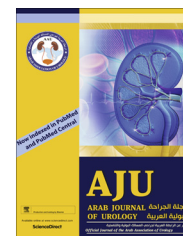




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REVIEW

Critical appraisal of literature comparing minimally invasive extraperitoneal and transperitoneal radical prostatectomy: A systematic review and meta-analysis

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KEYWORDS

Extraperitoneal;
Laparoscopy;
Minimally invasive;
Robotic;
Transperitoneal;
Prostatectomy

ABBREVIATIONS

BTR, blood transfusion rate;
EBL, estimated blood loss;

Abstract Objectives: To systematically review studies comparing extraperitoneal (E-RP) and transperitoneal minimally invasive radical prostatectomy (T-RP).

Methods: The systematic review was performed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines in September 2015. Several databases were searched including Medline and Scopus. Only studies comparing E-RP and T-RP (either laparoscopic or robot-assisted approach) were evaluated. The follow-up of the included patients had to be ≥ 6 months.

Results: In all, 1256 records were identified after the initial database search. Of these 20 studies (2580 patients) met the inclusion criteria. The hospital stay was significantly lower in the E-RP cohort, with a mean difference of -0.30 days (95% confidence interval [CI] $-0.35, -0.24$) for the laparoscopic group and 1.09 days (95% CI $-1.47, -0.70$) for the robotic group ($P < 0.001$). Early continence rates favoured the E-RP group, although this was statistically significant only in the laparoscopic

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LOS, length of hospital stay;
 MD, mean difference;
 MIRP, minimally invasive radical prostatectomy;
 OR, odds ratio;
 PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses;
 PSM, positive surgical margin;
 (E-)(T-)RP, (extraperitoneal) (transperitoneal) radical prostatectomy;
 STROBE, Reporting of Observational Studies in Epidemiology

group (odds ratio [OR] 2.52, 95% CI 1.72, 3.70; $P < 0.001$). There was no statistically significant difference between the E-RP and T-RP cohorts for 12-month continence rates for both the laparoscopic (OR 1.55, 95% CI 0.89, 2.69; $P = 0.12$) and robotic groups (OR 3.03, 95% CI 0.54, 16.85; $P = 0.21$). The overall complication and ileus rates were significantly lower in the E-RP cohort for both the laparoscopic and robotic groups. The symptomatic lymphocele rate favoured the T-RP cohort, although this was statistically significant only in the laparoscopic group (OR 8.69, 95% CI 1.60, 47.17; $P = 0.01$).

Conclusion: This review suggests that the extraperitoneal approach is associated with a shorter hospital stay, lower overall complication rate, and earlier return to continence when compared to the transperitoneal approach. The transperitoneal approach has a lower lymphocele rate.

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Introduction

Radical prostatectomy (RP) is the 'gold standard' curative surgical treatment option for the management of clinically localised prostate cancer [1]. Since the first description of laparoscopic RP by Schuessler et al. [2], there has been significant evolution in the techniques of minimally invasive RP (MIRP), which include the laparoscopic RP and the robot-assisted laparoscopic RP. There are various techniques for MIRP described in the contemporary literature. Most of these techniques were initially described with conventional laparoscopy and subsequently adopted in robotic surgery. Regardless of the technique used, all of these procedures require either an extraperitoneal or transperitoneal approach. The extraperitoneal approach emulates the open retroperitoneal RP and avoids any access to the peritoneal cavity [3]. In the transperitoneal approach the intraperitoneal space provides more space enabling easier port insertion and robotic docking (in the case of the robot-assisted technique) [3]. Both approaches have advantages and disadvantages, without any clear evidence on the most appropriate approach for MIRP. Thus, the final selection of the approach seems to be more a matter of personal expertise and preference.

The aim of the present study was to systematically review the studies comparing extraperitoneal and transperitoneal approaches with an emphasis on perioperative and immediate outcomes, positive surgical margin (PSM) rate, continence rate, and complications. Additionally, we critically evaluated the methodology and outcome reporting of the existing literature in this field.

Methods

All randomised trials and observational studies comparing extraperitoneal RP (E-RP) and transperitoneal RP (T-RP) were considered.

Search strategy and study selection

The systematic review was performed according to the Cochrane guidelines. Databases searched were Medline, Embase, Scopus, Cochrane Central Register of Controlled Trials (CENTRAL), CINAHL, and individual urological journals. The search was conducted in August 2015. All studies comparing E-RP and T-RP (both conventional laparoscopy and robotic approach) were evaluated; also references of searched papers were evaluated for potential inclusion.

Comparative outcome endpoints between E-RP and T-RP

1. Perioperative and immediate outcomes: Operative time, estimated blood loss (EBL), blood transfusion rate (BTR), length of hospital stay (LOS), and analgesia requirement.
2. Functional outcome: Continence rates at ≤ 3 month (early continence) and 12 months.
3. Oncological outcome: overall PSM rate.
4. Complications and mortality: Overall complication, Ileus, lymphocele, bladder neck stenosis, rectal injury, and mortality rates.

Data extraction and statistical analysis

Two reviewers (B.P.R., P.K.) independently identified all studies that appeared to fit the inclusion criteria for

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