Systematic reviews of observational studies of risk of thrombosis and bleeding in urological surgery (ROTBUS)

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Citation

Review question(s)
What are the best estimates of risk of symptomatic venous thromboembolism and bleeding requiring reoperation for common urological procedures and how confident can we be in these estimates?

Searches
We used two search strategies. First, we used the MEDLINE database to search for potentially eligible articles published from January 1, 2000 until April 10, 2014. Medical subject headings included the “urological procedures” term family combined with the “thrombosis” term family as well as the “urological procedures” term family combined with the “bleeding” term family and the sensitive prognosis filter. Furthermore, papers known to the experts in the panel were also added.

Types of study to be included
Cohort studies or large case series, which were published in English-language medical journals in the year 2000 or after that: 1) enrolled at least 50 adult patients undergoing a given procedure for diseases of the urinary tract or (male) genital system, including kidneys, ureters, bladder, prostate, seminal vesicles, urethra, scrotum, testicles, penis, and vagina; 2) enrolled the majority of patients in the year 2000 or after (if evidence available, if not, then we also included studies which had patients from the 1990s); 3) clearly defined the time period of follow up (we used a defined follow-up of three months or less, if evidence available, if not, then we also included studies with less clear follow-up time); and 4) reported at least one absolute estimate of risk of the patient important outcomes of interest (fatal pulmonary embolism, symptomatic pulmonary embolism, symptomatic deep vein thrombosis, and symptomatic venous thromboembolism, as well as fatal bleeding and bleeding requiring reoperation).

Condition or domain being studied
Venous thromboembolism, which includes deep vein thrombosis and pulmonary embolism, represents a serious, and on occasion fatal, complication of urological surgery. Pharmacological prophylaxis decreases the risk of venous thromboembolism in surgical patients but also increases the risk of post-operative bleeding requiring re-operation. The decision to use prophylaxis therefore presents a tradeoff between a reduction in venous thromboembolism and an expected increase in bleeding requiring re-operation. The crucial issue in the decision to use pharmacological prophylaxis is the risk of venous thromboembolism and bleeding requiring re-operation in those not receiving anticoagulants – this is the research question of this review.

Participants/ population
Inclusions: Adult male or female urological patients
Exclusions: None.
Intervention(s), exposure(s)
The review series will examine the risk of symptomatic venous thromboembolism and bleeding requiring reoperation after urological surgery. We will also stratify the risk by patient risk factors when possible.

Comparator(s)/ control
Not applicable.

Context
While conventional systematic reviews comparing treatments against one another and control interventions are common and well-established, systematic reviews and meta-analyses addressing baseline risks of venous thromboembolism and major bleeding are uncommon, necessary and in need of methodological innovation. The rates of such events in the absence of prophylaxis can only be identified from systematic reviews of relevant studies, none of which have previously been completed in the area of urology.

Outcome(s)
Primary outcomes
Absolute risks of symptomatic venous thromboembolism and bleeding requiring reoperation (including re-exploration and angioembolization).

Cumulative risk estimates at postoperative day 28.

Secondary outcomes
Absolute risks of fatal pulmonary embolism and fatal bleeding.

Cumulative risk estimates at postoperative day 28.

Data extraction, (selection and coding)
The search described above will be used to select abstracts for screening. We will develop piloted, standardized data forms for this study. Two methodologically trained reviewers will apply these forms, guided with written instructions, to screen searched study reports for eligibility, and extract data from eligible reports, independently and in duplicate. The reviewers will conduct pilot screening and data extraction exercises to achieve a high level of consensus. Two authors will screen titles and abstracts to select papers for full-text assessment. Then, we will screen full text papers to confirm eligibility of the articles. All data extraction will again be in duplicate. Reviewers will resolve any disagreement regarding eligibility or study characteristics via an adjudicator (a clinician-methodologist). Finally, we will send our consensus of data extraction to the original authors of each article for confirmation or correction. When needed, we will also ask authors to clarify details regarding thromboprophylaxis, surgical technique (such as pelvic node lymph dissection), as well as other missing or unclear information.

In addition to the primary and secondary outcomes and design features for the assessment of risk of bias, data for the following characteristics will also be extracted from studies: year of publication; patient recruitment years; source of sampling (such as retrospective case series or prospective cohort study); study type (such as single surgeon series or multicenter); country/countries; multinational; urological procedure(s); total number of patients; gender distribution; age distribution; proportion of patients with malignant disease; use and extension of pelvic lymph node dissection; use of mechanical thromboprophylaxis; use of anticoagulants; use of aspirin or other antiplatelet drugs.

Risk of bias (quality) assessment
Design features that could potentially bias venous thromboembolism or bleeding risks and the risk of bias of each study will be assessed separately. Design feature assessment include: 1) recruited patient population representativeness; 2) study type (such as single surgeon series vs. multicenter); 3) losses to follow-up; 4) explicitness of criteria for venous thromboembolism diagnosis; 5) thromboprophylaxis documentation; and 6) data source (for instance, whether data abstracted by investigators from patient charts). We will also consider representativeness of the study sample by recording and comparison of each study population's mean age and the proportion of patients with malignant disease.

Strategy for data synthesis
A quantitative synthesis is planned, including procedure-stratified estimates for the primary and secondary outcomes at
four weeks postoperatively. Modelling of estimates using large-scale population-based studies is planned for studies that did not report estimates using this interval. Case fatality rates for both venous thromboembolism and bleeding requiring re-operation will also be calculated.

**Analysis of subgroups or subsets**
Estimates will be stratified by procedure. Overall baseline risk by procedure will also be stratified by patient risk factors (including age, body mass index, and history of venous thromboembolism).

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**Details of any existing review of the same topic by the same authors**
None available.

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Conflicts of interest
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Stage of review at time of this submission

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