

Innovation of minimally invasive procedures in urology

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Abstract

Background

Prophylactic administration of tranexamic acid reduces blood loss in procedures with a high risk of perioperative bleeding. There is good evidence for this published in cardiac surgery, orthopedics, and gynecology. However, in urology, papers have been published so far with ambivalent results in transurethral resection of the prostate, open radical prostatectomy, or radical cystectomy. No study to date has tested prophylactic administration of tranexamic acid at the beginning of robotic-assisted radical prostatectomy.

Methods

Based on the promising results of a pilot study that evaluated the effect of prophylactic tranexamic acid administration during robot-assisted radical prostatectomy on perioperative blood loss and the incidence and severity of complications, we performed the RARPEX study - a prospective, double-blind, randomized, placebo-controlled trial. Our aim was to confirm preliminary data in a sufficient cohort of patients with multiple surgeons.

Results

In the RARPEX study, we demonstrated a positive effect of prophylactic tranexamic acid administration during robotic-assisted radical prostatectomy on hemoglobin decline in all measurements. However, the difference between the groups did not reach the level of clinical significance. In addition, the incidence of postoperative pelvic hematomas was significantly lower in the study group (3.3 % vs. 12.4 %). A somewhat surprising but even more clinically significant finding was the lower incidence and severity of postoperative stress urinary incontinence in the study group. The study also provided data for a possible modification of the established practice at our institution in monitoring blood counts in the postoperative period.

Discussion and conclusion

Despite the tremendous advances in the technique of robot-assisted radical prostatectomy, there is still a need for improvement. However, it is unlikely that a game-changer like the introduction of the robotic system will occur in the near future. Therefore, it is necessary to focus on a combination of small improvements, such as the individual recommendations of the ERAS (Early Recovery After Surgery) protocol. Although the prophylactic use of tranexamic acid in robot-assisted radical prostatectomy does not result in improvements in traditionally monitored parameters such as ICU length of stay, hospital length of stay, need for blood transfusions or need for rehospitalization, or number of reoperations, it can be considered another piece in the mosaic of small improvements.

Registrations

Ethics committee University Hospital Hradec Králové – 201903 I90P

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Keywords

Tranexamic acid

Robotic-assisted radical prostatectomy

Bleeding prophylaxis