



Open to Debate – Referee

TREXIT Is Now: Should We Abandon the Transrectal Route for Biopsy? A Three-continent Debate—Referee

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Histological assessment of prostate tissue remains the gold standard to confirm a diagnosis of prostate cancer [1]. With the prostate lying deep in the small pelvis, ventrally to the rectum, the most common routes for sampling of prostate tissue via needle biopsies are the transrectal (TR) and the transperineal (TP) routes. The TR biopsy route punctures the rectal wall before entering the peripheral zone of the prostate via a dorsal approach, while the TP route transverses the perineal skin and pelvic floor muscles before entering the peripheral zone of the prostate via an apical approach. Both approaches have specific advantages and disadvantages. The rectal wall proximal to the pectinate line (linea dentata) is not innervated by nociceptors, but the perineal skin and pelvic floor muscles are innervated by sensory neurons. Another major difference is the more heavily contaminated rectal mucosa, with limited options for appropriate cleaning. This is in contrast to the perineal skin, which can be decontaminated easily using standard surgical procedures. Both the TR and TP routes have been used for many years, although the TR route is the approach most commonly used worldwide [2,3].

The discussion on the most appropriate approach for prostate needle biopsy has intensified in recent years, both in the medical literature and in other channels such as social

media. Some argue that the advantage of TP biopsy regarding lower infection is the most important issue, especially in an era of increasing microbial resistance and modern antibiotic stewardship. Others argue that TR biopsy remains the quickest, most widely available, and most straightforward approach. Here, we summarize the arguments for and against presented in the debate in this issue of *European Urology Open Science*, and aim to present a balanced conclusion.

Grummet et al [4] make the case for the TP route. Their main argument is the fact that sterile techniques can be used in the TP approach, so that violation of sterile surgical techniques is avoided, resulting in less infection and sepsis. This issue is considered so crucial that it would justify complete transition to TP biopsy and abandonment of the TR route for prostate biopsy.

Olivier et al [5] argue that TR biopsy is the most well-known and most frequently used technique worldwide, and that this approach is still justified. The differences in sepsis rates between the two techniques may be rather small, especially when adequate preparations such as rectal povidone cleansing procedures and properly adapted antibiotic prophylaxis are applied. The burden of TP on health care systems may also be greater, especially when performed under general anesthesia, and therefore this approach may be less accessible in some countries or centers. The TP route also has a higher risk of retention and lacks validated biopsy sampling strategies that are comparable to the accepted 12-core approach in TR. Finally, the authors argue that there is no level 1 evidence on the advantage of TP over TR. They advocate for improvement of the TR technique as a more judicious and efficient strategy than a complete transition to a new technique.

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To put the discussion into perspective, it should be remembered that the arguments for and against both techniques have different weights; severe sepsis is a rare but dramatic outcome, while pain and retention are more frequent but less burdensome. In addition, the different issues may be evaluated differently from physician versus patient perspectives. For patients, logistic and financial considerations may be less relevant. The clichéd consideration “What would be my preference as a patient be?” may clarify the discussion.

- The most important outcome may be the cancer detection rate. These are comparable between the TP and TR approaches [6].
- The advantage of the TP sterile route regarding infections is undeniable, as highlighted by Grummet et al [4]. Although infections after TR can be reduced using new or improved targeted antibiotics or by decreasing the bacterial load in the rectum, as outlined by Olivier et al [5], prevention will always remain better than cure. The hypothesis that avoidance of the rectal flora reduces infections is fully logical and has been confirmed in different studies, although the extent of the reduction varies between a moderate reduction to complete avoidance of any infections or sepsis.
- In the TP route, the skin and pelvic floor muscles are transversed, so that more extensive preparations using local anesthesia are needed to achieve similar pain rates in comparison to the TR approach [6]. Pain increases with longer procedure times [7]. If a general anesthesia approach is applied to guarantee adequate anesthesia, this poses a large burden on health care systems, which would be a large disadvantage of TP. However, it is totally feasible to perform the procedure in an outpatient setting under local anesthesia.
- The risk of retention may be higher for the TP route. This is still not a common side effect, and it is temporary and not life-threatening. The number of biopsy cores taken is predictive of the risk of retention.
- The equipment for TP and TR in an outpatient setting is almost similar, although an ultrasound probe with (mini) grids and steppers may need to be adapted. This is not a major issue. The learning curve may not be different for the TP versus the TR approach. The anatomical orientation of needle trajectories may actually be more straightforward in TP biopsies parallel to the apex-base dimension (two-dimensional), while TR biopsies have a diagonal trajectory in different dimensions (three-dimensional).

In conclusion, the advantages of TP biopsy are clear and will only strengthen in an era of increasing microbial resistance; the disadvantages weigh less heavy and can be overcome by training and education. Financial, reimbursement, and logistic issues may also play a role and may differ by country and region, but could be overcome.

An additional argument in the discussion on biopsy approach should be seen in the light of developments in targeted biopsies. The PRECISION trial showed that magnetic resonance imaging-guided biopsy indication in combination with targeted cores increased the detection rate for significant cancer and decreased the detection rate for insignificant cancer [8]. The additional value of systematic cores may be limited in many cases, and in a screening situation [9,10]. Reducing the number of cores further decreases some of the disadvantages (procedure time, pain, retention) of TP.

Therefore, an outpatient TP biopsy approach using (mostly) targeted biopsies only, may represent the best of two worlds. Barriers preventing implementation of TP biopsy should be torn down. Urologists have encountered bigger challenges than the transition from TR to TP biopsy.

Conflicts of interest: The authors have nothing to disclose.

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