
Unravelling human ejaculatory duct morphology

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Benign Prostatic Hyperplasia (BPH) is a frequent cause of Lower Urinary Tract Symptoms (LUTS), particularly in elderly males, which strikingly compromises the quality of life. BPH is caused by the enlargement of predominantly the transitional zone of the prostate which encircles the urethra. If medical management fails in relieving the obstruction, surgical resection or enucleation of the adenoma is an option which can be offered to patients. Among the minimally invasive surgical procedures used for this purpose, transurethral resection of the prostate (TURP) remains a globally utilised treatment for BPH. Since ejaculatory ducts traverse the prostate to join the prostatic urethra, TURP poses a considerable risk of iatrogenic injuries to the ejaculatory ducts. Damage to the ejaculatory ducts may lead to retrograde ejaculation (where semen travels backwards to the bladder during ejaculation) or an ejaculation postoperatively. Hence, it is imperative to appreciate regional anatomy in order to prevent such surgical morbidity. Nonetheless, surgical landmarks to identify and preserve the ejaculatory ducts during the TURP are not well established. To fill this gap, we intended to explore the three-dimensional characterization of ejaculatory duct morphology in relation to the prostatic urethra.

Using serial cross-sections of the cadaveric prostate glands (Figure 1A) and subsequent three-dimensional modelling of the segmented images, we delineated the precise course of the ejaculatory ducts within the prostate gland (Figure 1B). Based on our findings, we defined a safe zone to resect the prostate gland without damaging the ejaculatory ducts. Moreover, we set out to systematically review the available literature on ejaculatory duct morphology based on radiological, immunohistochemical and endourological investigations. Following meticulous consideration of the quality of the published data, we were able to derive the most likely course of the ducts within the prostate. Our findings may help enhance the quality of care by the practicing urological surgeon by minimizing postoperative ejaculatory dysfunction following prostatectomy.

A)

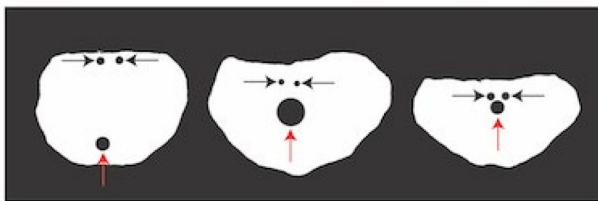
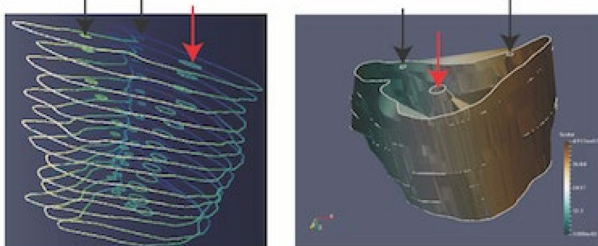


Figure 1: Modelling of the three-dimensional course of the ejaculatory ducts within the prostate gland

A) Masked images of the axial sections of the prostate showing the ejaculatory ducts (black arrows) and the urethra (red arrows). Left – A superiorly located section; Middle – An intermediate section; Right – An inferiorly located section.

B)



B) Stacked sections (left) and three-dimensional representation (right) of the prostate gland showing the relationship between the ejaculatory ducts (black arrows) and the prostatic urethra (red arrows)

Bibliography

1. Malalasekera, A.P., Sivasuganthan, K., Sarangan, S., Thaneshan, K., Weerakoon, D.N., Mathangasinghe, Y., Gunasekera, C.L., Mallawaarachchi, S., Nanayakkara, N.D., Anthony, D.J. and Ediriweera, D., 2018. Morphological variations of the human ejaculatory ducts in relation to the prostatic urethra. *Clinical Anatomy*, 31(4), pp.456-461.
2. Mathangasinghe, Y, Samaranayake, UMJE, Dolapihilla, BN, Anthony, DJ, Malalasekera, AP., 2018. Morphology of ejaculatory ducts: A systematic review. *Clinical Anatomy*. pp.1– 12.

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## *CCPR awards ceremony - the first batch completes the course*

The award ceremony for CCPR1 was held on 24<sup>th</sup> January 2020. The event was graced by the Dean, Faculty of Medicine as the chief guest and by the advisors of RPF. A total of 45 students followed the course out of which 37 were successful.



The ceremony was preceded by a free workshop on handling grants and statistics for all the participants and the academics of the Faculty.

