New criteria enhances prostate surgery outcomes

October 10 2013, by Sophie Hepburn

Credit: AI-generated image (disclaimer)

A new method to pre-operatively identify transition zone prostate cancer has enabled surgeons to adopt a more targeted surgical approach to treatment.

The set of criteria for examining biopsy specimens was developed by

researchers funded and supported by the West Australian Urological Research Organisation.

The prostate gland, although considered a single organ, is composed of different anatomical zones (peripheral, transition, and central), and tumours arising in these regions differ in biological behaviour.

The transition zone (Tz) is situated furthest away from the rectum through which biopsies are obtained, and identification of Tz cancer on biopsy almost always indicates a large cancer that tends to spread toward the bladder neck.

Co-author Stephen Lee from Uropath Pty Ltd, Western Australia, says that "prior to this study there was no way of distinguishing Tz cancer from tumours occurring in the other prostatic zones on pre-operative biopsy, and therefore no way to safely modify the surgical approach".

"About one-quarter of cancers originate in the Tz and these tumours are far less likely to involve the nerves important for erectile function," Dr Lee says.

"Further, these tumours invade the bladder neck and wider resection of this structure is needed to ensure cure."

The new biopsy test criterion identifies the Tz tumour, pre-operatively, allowing surgeons to change their surgical approach to best retain full erectile function and recovery.

The method used for Tz tumour identification, uses a specific tissue fixative (Solufix) developed in WA over a decade ago.

The fixative preserves structures called prostate secretory granules (PSGs), which are retained in Tz tumours but not in cancers from the

peripheral or central zone.

They evaluated four morphologic features to predict origins of tumours; the percentage of tumour cells retaining PSG, and the percentage of cells with pale cytoplasm, columnar shape, and luminal secretions.

The amount of PSG found in tumours was the most sensitive marker for Tz tumour origin in 44 surgically removed tumours and in 135 biopsy specimens preserved in Solufix.

When a PSG content of >50 per cent was combined with one of the other parameters the ability to correctly identify tumours that were not of Tz origin increased.

The results showed that testing for a combination of PSG content of >50 per cent (major criteria) with one of either; >30 per cent columnar cells, >30 per cent pale cells, or secretions (minor criteria) in biopsy specimens is a reliable predictor of Tz origin.

The group now successfully apply this set of criteria in routine practice.

Provided by Science Network WA