

DISTRIBUTION OF EXCISED PERIPHERAL NERVE TISSUE ON RADICAL PROSTATECTOMY SPECIMEN'S NERVE SPARING ASPECT

Hypothesis / aims of study

In nerve sparing (NS) radical prostatectomy (RP) the preserved nerves can obtain patients' sexual function and continence. However, postoperative data demonstrate partial insufficiency of nerve protection and anatomical conditions are under present investigation. The question arose, whether (and where) peripheral nerve tissue adjacent to the RP specimen is excised during NS RP. The aim of this study was to evaluate the distribution and local quantity of peripheral nerve tissue left at the NS aspect of the RP specimen.

Study design, materials and methods

From 10 patients unilateral NS RP whole mounted serial sections were analysed microscopically stained by PGP-9.5. Dividing each half of the prostate into 12 sectors, each ventral - ventrolateral - dorsolateral - dorsal and apex - mid - base, respectively, sectorwise counts of periprostatic nerves, rationed into small and big (>500microns), were performed. Mean values of the NS aspect were demonstrated as percentage compared to the corresponding contralateral non-NS sector.

Results

In unilateral NS in total a 54% and 56% (big/small) share of the neural tissue versus contralateral was noted; only in the dorsolateral position was the reduction to 17/44% significant ($p < 0.001$). Table I demonstrates the percentage share against the respective corresponding contralateral non NS sector for the 12 locations as well as for row and column sums for big and small nerves, respectively (big/small).

Percentage of contralateral (big/small)	Apical	Mid part	Basal	Total
Ventral	33 / 83	63 / 101	100 / 98	63 / 97
Ventrolateral	259 / 112	200 / 94	84 / 52	134 / 71
Dorsolateral	10 / 18	18 / 38	25 / 71	17 / 44
Dorsal	42 / 64	424 / 83	64 / 40	113 / 54
Total	28 / 39	78 / 62	51 / 63	54 / 56

Interpretation of results

A considerable amount of periprostatic neural tissue remains on the RP specimen's NS aspect. In the anterior part and at the dorsal surface of the prostate, only marginal NS is noted and in particular to a different extent, along the base to apex direction with lack of continuity of the preserved nerve fibers – essential for functionality.

Concluding message

NS is performed predominantly along the dorsolateral track and is strongest in the apical region, resulting in a superior total NS result apical with partial abandonment of this result basalward. These findings may contribute to an improvement of nerve sparing surgery.

References

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HUMAN SUBJECTS: This study was approved by the Ethics Committee of University of Tuebingen and followed the Declaration of Helsinki Informed consent was obtained from the patients.