

Correlations of calculated total prostate volume from transrectal ultrasonography with either computed tomography or magnetic resonance imaging in male patients with anorectal cancer who underwent recent surgery

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Hypothesis / aims of study

- **TRUS: not available under certain conditions**
-the presence of anal strictures, recent surgical history of colorectal surgeries or Miles op.
- **CT, MRI: an alternative imaging modality to determine prostate volume.**
- **The aim: to evaluate the value of preop. And postop. CT and MRI in determining total prostate volume (TPV) as an alternative to TRUS**

Study design, materials and methods

- **The 131 patients with anorectal cancer with postoperative voiding were included from July 2006 to March 2016 at a single cancer institution.**
- **Patients underwent either CT or MRI preop. and postoperatively within a 3 month interval after preop. TRUS.**
- **CT/MRI imaging was reviewed repeatedly twice by two independent participants with a time interval of one month after initial evaluation.**
- **Prostate length and width were measured on axial images, while height was measured on sagittal images (Ellipsoid formula for TPV).**
- **To analyze the correlations of TPV from CT and MRI with TPV from TRUS and interobserver and intraobserver variability tests, Spearman/Pearson correlation analyses and Bland-Altman plot were statistically evaluated.**

Results

Parameter	Mean ± SD
Age (years)	71.0±9.3
pre/postop. PSA levels (ng/dL)	17.9±30.2/ 34.6±26.1
pre/postop. IPSS, Total Quality of life	9.3/15.8 3.0/5.2
time interval between CT/MRI and TRUS (days)	27.3±22.0
TRUS-TPV (cc)	31.2±25.6
1 st person CT/MRI-TPV (cc)	47.8±23.5/37.0±21.0
2 nd person CT/MRI-TPV (cc)	47.8±23.5/39.3±17.4

Results

- **Interpersonal variability test: CT/MRI -0.9071-0.9970**

- **Correlation between TRUS –TPV and pre/postop.**

CT/MRI-TPV

	Pearson Correlation	Spearman Correlation
1st person CT volume	0.7314	0.7644
1st person MRI volume	0.8634	0.8044
2nd person CT volume	0.7465	0.7840
2nd person MRI volume	0.7561	0.6274

- **Correlation between TRUS –TPV and pre/postop.**

CT/MRI-TPV

	Pearson Correlation	Spearman Correlation
1st person CT volume	0.7604	0.7900
1st person MRI volume	0.5272	0.6667
2nd person CT volume	0.8773	0.8216
2nd person MRI volume	0.2854	0.2571
1st person CT volume	0.7787	0.8082
1st person MRI volume	0.4766	0.5798
2nd person CT volume	0.7703	0.6427
2nd person MRI volume	0.3593	0.2810

- **Correlation between TRUS-TPV and CT/MRI-TPV in prostate volume < 30gm or ≥ 30gm**

	Pearson Correlation	Spearman Correlation
<30gm, 1st person CT volume	0.5252	0.4825
1st person MRI volume	0.5902	0.5715
2nd person CT volume	0.5103	0.4419
2nd person MRI volume	0.3361	0.4319
≥30gm, 1st person CT volume	0.5824	0.4599
1st person MRI volume	0.7491	0.6331
2nd person CT volume	0.5932	0.5369
2nd person MRI volume	0.7062	0.5600

Conclusion

- **Preoperative CT is a reliable method for TPV measurement, and is well correlated with TRUS, whereas MRI is a reliable method in a preoperative setting only for TPV ≥ 30 mL.**
- **Although CT and MRI overestimate TRUS, CT or MRI can be used as an alternative to TRUS according to the size of TPV when TRUS is not applicable.**