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Comparison of long-term oncological outcomes between alternative treatment methods of localised prostate cancer: Brachytherapy and radical prostatectomy

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Introduction & Objectives: Brachytherapy (BT) and radical prostatectomy (RP) are treatment methods for localised prostate cancer (PCa) that can achieve the same effects. A total of 2478 patients (pts) with localised PCa were treated with BT and RP from 2007 to 2017 in Hospital of Lithuanian University of Health Sciences (LUHS) Kaunas Clinics.
To compare the long-term oncological outcomes (overall survival (OS), cancer specific survival (CSS) and biochemical free survival (BFS)) between pts treated with BT and RP.

Materials & Methods: A total of 568 pts with localized PCa were treated with BT I–125 seeds and 1910 with RP in LUHS. 452 pts from BT and 1054 from RP group were enrolled in this analysis. The ambulatory case records of pts were analised over the last 11 years. D'Amico classification was used to set the risk of disease. Biochemical relapse (BR) in BT group was verified using the "Phoenix" definition, based on PSA nadir+2ng/ml, BR in RP group was verified if PSA level after surgery was >0.2ng/ml. Kaplan-Meier method an Kruskal-Wallis test were used. For all tests, a value of $p \leq 0.05$ was considered statistically significant. Analysis was performed using SPSS version 23.0.

Results: Median follow up in BT group was 55 months, and in RP group 49 months, p=0.2. Median age in BT 63 and 63 years in RP groups. Median PSA in BT group 5.24 and 5.82ng/ml in RP, p<0.001. Median Gleason sum was 6 in both groups. In BT and RP groups 5 year OS was 92.7% and 96.5%; 10 year OS – 84.6% and 86.1%; p=0.2. 5 year CSS in BT and RP groups was 99.1% and 99.6%, 10 year – 98.2% and 98.5%; p=0.7. In BT and RP groups 5 year BFS was 94.7% and 79.9%, 10 year – 89.5% and 62.8%; p<0.001.
We divided all the pts into low and intermediate risk groups to perform a correct comparison.
BT was performed for 341 and RP for 257 pts with low risk disease which met the criteria. Median PSA in BT and RP groups was 5 and 5.02ng/ml (p=0,2); median follow up 55 and 54 months, p=0.7. In BT and RP groups 5 year OS was 91% and 99%; 10 year OS – 82.8% and 89.7%; p=0.004. In BT and RP groups 5 year CSS was 99.2% and 99.6%; p=0.5. In BT and RP groups 5 year BFS was 96.4% and 85.6%; p<0.001. In intermediate risk group BT was performed for 111 and RP for 797 pts. Other preoperative factors in BT and RP groups, such as median PSA 6.4ng/ml and 6.3ng/ml, p=0,7; median follow up 55 and 49 months, p=0,4. In BT and RP groups 5 year OS was 96.7% and 95.6%, 10 year OS respectively – 91.7% and 84.1 %; p= 0.2. In BT and RP groups 5 year CSS was 98.6% and 99.6%, 10 year – 96.8% and 98%; p=0.5. In BT and RP groups 5 year BFS was 89.5% and 78.1%, 10 year BFS respectively – 58.9% and 57.6%; p=0.005

Conclusions: OS and CSS rates of patients with localised PCa are equal in BT and RP groups.
RP has a higher OS rate in a low risk group.
BT has a better BFS rate in both low and intermediate risk groups.