

BARD BRACHYTHERAPY TEACHING COURSE

9 -10 February 2012

Prostate HistoScanning™ - Clinical Aspects

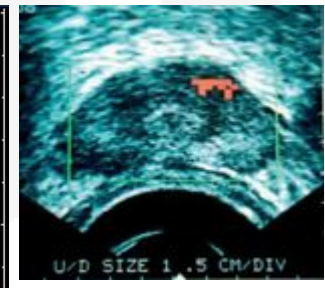
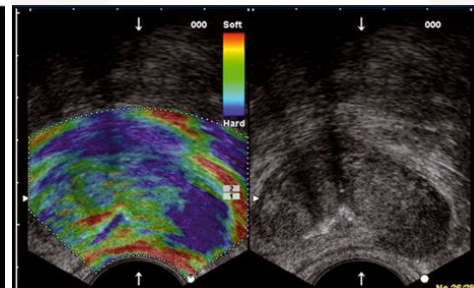
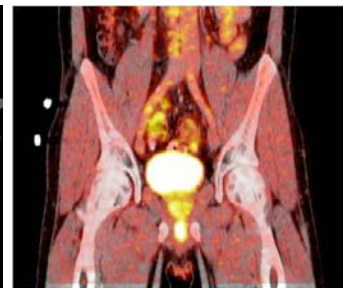
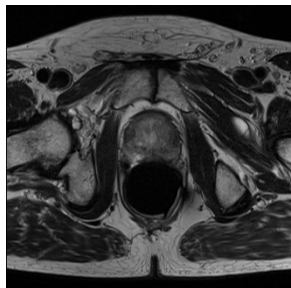
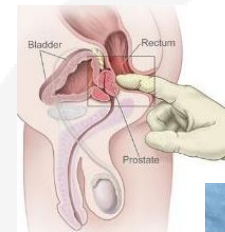
Priv.-Doz. Dr. med. J. Zumbé
Klinikum Leverkusen, Klinik für Urologie
First Prostate Center DVPZ e.V.

Agenda

- Detection tools for Prostate Cancer (PCa)
- Conflict of Prostate Biopsy
- Prostate HistoScanning™ (PHS)
- First publication
- Individual Treatment
- The examination and report-system
- Prostate HistoScanning™ at the Prostate Center Leverkusen
- Patient database Prostate Center Leverkusen
- PHS02 study
- The advantages Prostate HistoScanning™
- Outlooks

Detection tools for Prostate Cancer

- Base Screening
 - Digital rectal examination (DRE)
 - Prostate specific antigen (PSA)
- Imaging system
 - not adapted for screening and detection of PCa
 - no reliability



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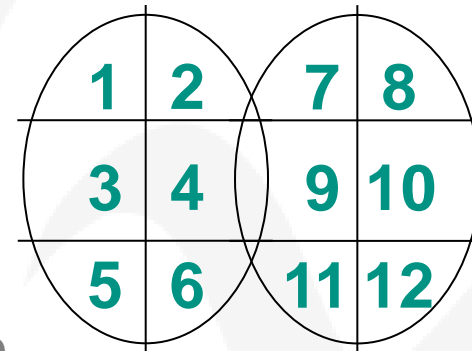
Your Total Resource

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Conflict of Prostate Biopsy

- Prostate is the last organ in the body we biopsy without a visual focus
- Biopsy (baseline biopsy)
- Standardized
- 10-12 needle biopsies
- As far posterior and lateral as possible in the peripheral gland

We just evaluate cuttings of the prostate
We create sampling errors
We need a visual decision guidance



Prostate HistoScanning™ (PHS)

- 3D ultrasound-base application
- visualization of differentiated prostate tissue
- PCa suspected tissue
- displayed as red pixels
- assessment of their size and location within the prostate
- 3D image output
- individual treatment planning



First publications of Prostate HistoScanning™

BJU Int. 2008 Feb;101(3):293-8. Epub 2007 Oct 8.

Computer-aided ultrasonography (HistoScanning): a novel technology for locating and characterizing prostate cancer.

Braeckman J, Autier P, Garbar C, Marichal MP, Soviany C, Nir R, Nir D, Michielsen D, Bleiberg H, Egevad L, Emberton M.

Academic Hospital, UZ Brussel, Vrije Universiteit, Brussels, Belgium. johan.braeckman@uzbrussel.be

BJU Int. 2008 Dec;102(11):1560-5. Epub 2008 Aug 14.

The accuracy of transrectal ultrasonography supplemented with computer-aided ultrasonography for detecting small prostate cancers.

Braeckman J, Autier P, Soviany C, Nir R, Nir D, Michielsen D, Treurnicht K, Jarmulowicz M, Bleiberg H, Govindaraju S, Emberton M.

UZ Brussel, Vrije Universiteit, Brussels, Belgium.

- 29 Patients (open/random study)
- 100% concordance between PHS and histology in the attribution of multifocality and unilateral/ bilateral
- Extraprostatic extension was indentified in all three pT3a
- 100% sensitivity, 82% specificity, 80% PPV, 100% NPV (cancer foci of ≥ 0.5 mL)
- Critical point: small group of patients

Individual Treatment

- Detection tool

PSA elevation before a baseline biopsy

PSA elevation/ persistence and negative prostate biopsy

- Treatment tool

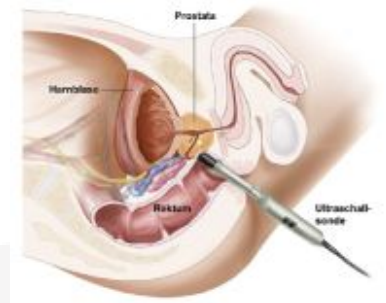
Surgical strategy (Nerve sparing)

Observation of patients for active surveillance

Interstitial therapy

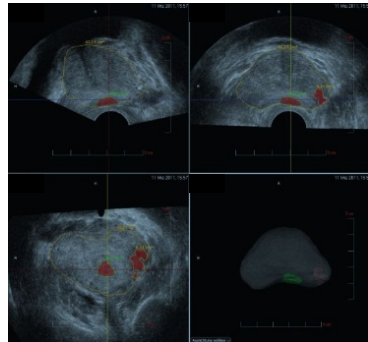
The examination

- bladder and bowl should be empty for the scan
- short examination (10 – 15 minutes)
- ultrasound probe coupled with a rotational mover
- standardized data assessment
- duration 45 seconds
- analysis and evaluation of the data after the scan
- Creation of the report
- 3D Modell
- sagittal, transversal, coronal projection
- 6 and 9 region projections
- grid projection
- special pathology projection



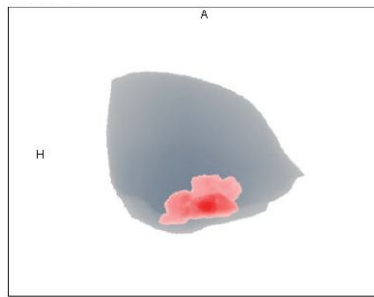
The Report precondition for the biobsy

- transrectal

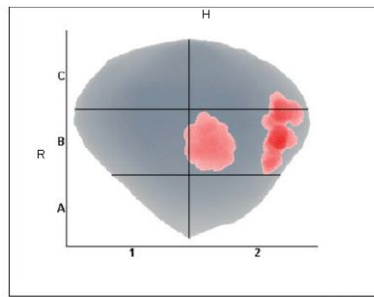


3D Projektionen: 6 Regionen

11. Mrz 2011, 15:57



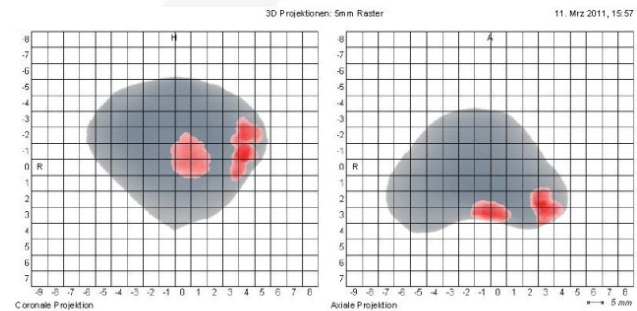
Sagittale Projektion



Coronale Projektion

5 mm

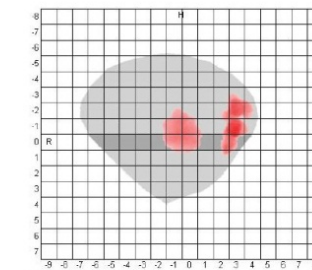
- perianal



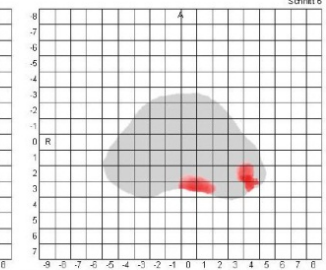
Coronale Projektion

Axiale Projektion

Projizierte Verbunde (cm²) 0.96
Projiziertes Gewebe (Prostata-Teilbereich) (cm³) 42.27



Coronale Projektion



Axiale Schnittprojektion

Projiziertes Gewebe (Prostata-Teilbereich) (cm³) 42.27
Projizierte Verbunde (cm²) 0.96

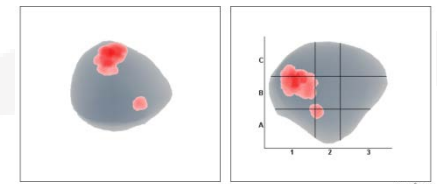
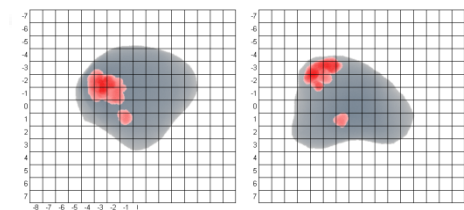
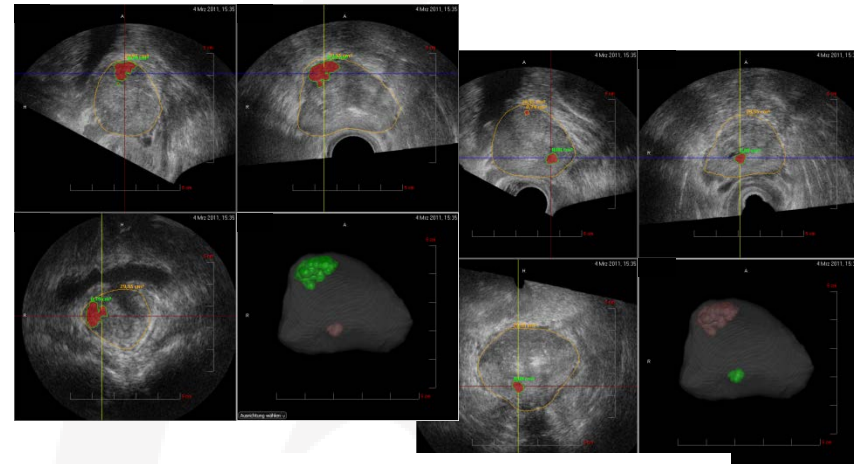
Schnitt 6
5.60
0.28

Prostate HistoScanning™ at the Prostate Center Leverkusen

- Organizational Form
 - Hardware community
 - Prostate Center Leverkusen, Marienkrankenhaus Bergisch Gladbach, registered urologists
 - Core Team Establishment
 - cooperation, supervision, autonomy/independence
- Creating costs for
 - machines
 - examinations
- Patients management
 - reliable appointments, standardized algorithm and documentation protocol

Patient database Prostate Center Leverkusen

- Detection tool
Age: 67
PSA: 11,59 ng/ml
Volume: 20 ccm
2 negative biopsies
- 2 PHS positive lesions
right middle/base anterior region
right apex/middle border to adenoma part
- 12 standardized needle biopsies, 2 target cores
Target 1: Gleason-Score: 7 (3+4)
Target 2: Gleason-Score: 6 (3+3)
Standardized: BPH
- Patient was scheduled for radical prostatectomy



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Your Total Resource

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Patient database Prostate Center Leverkusen

- Planning nerve sparing surgery

Age: 54

PSA: 11 ng/ml

Volume: 20 ccm

7/12 cores Gleason-Score: 6 (3+3)

- PHS positive lesion

One lesion, mainly located on the left side, extending from the apex to the base

One lesion located on the right base side

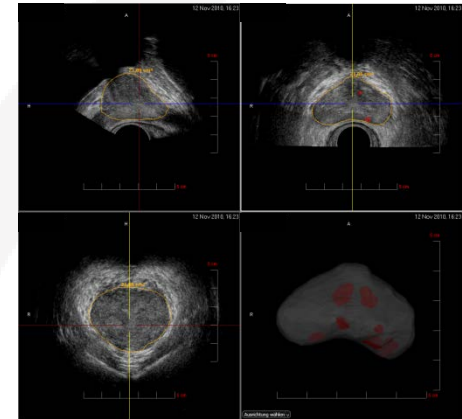
No extracapsular growing

- The patient underwent DaVinci Prostatectomy with nerve sparing at both sides

TNM Classification: pT2c, N0, I0, V0, G2, R0

Gleason-Score: 6 (3+3)

Frozen section of the left nerve bundle: no tumor



PHS02 study

[BJU Int.](#) 2011 Nov 17. doi: 10.1111/j.1464-410X.2011.10734.x. [Epub ahead of print]

Detection, localisation and characterisation of prostate cancer by Prostate HistoScanning(™).

[Simmons LA](#), [Autier P](#), [Záťura F](#), [Braeckman J](#), [Peltier A](#), [Romic I](#), [Stenzl A](#), [Treurnicht K](#), [Walker T](#), [Nir D](#), [Moore CM](#), [Emberton M](#).

Division of Surgical and Interventional Science, University College London Bostwick Laboratories, London, UK International Prevention Research Institute (IPRI), Lyon, France Palacky University Hospital, Olomouc, Czech Republic UZ-Brussel Jules Bordet Institute, Brussels Advanced Medical Diagnostics, Waterloo, Belgium Semmelweis Hospital, Budapest, Hungary Tuebingen University Hospital, Tübingen, Germany.

- PHS02 open study is published
- 27 patients
 - 23 patients had an index focus ≥ 0.5 mL at pathology – PHS identified 21 – Sensitivity 91%
 - 27 patients, histological analysis found 32 cancerous foci ≥ 0.2 mL – PHS showed a sensitivity of 90% and a specificity of 72%

PHS02 study conclusions

[BJU Int.](#) 2011 Nov 17. doi: 10.1111/j.1464-410X.2011.10734.x. [Epub ahead of print]

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- PHS has the ability to identify and locate prostate cancer and consequently may aid in pre-treatment and pre-surgical planning, particularly for perianal biopsy
- PHS enables improved targeting, allowing better risk stratification to obtain more representative needle biopsies
- Critical Point: verification of the blinded phase

Advantages of Prostate HistoScanning™

- standardized data input
- independent data assessment
- 3D analysis and data output
- user friendly reports
- fast examination
- low costs
- individual treatment
- Creating costs for
 - target-orientated biopsies
 - prevention of saturation biopsies
 - surgical strategy
 - monitoring active surveillance

PubMed Searching

Searching for

- prostate HistoScanning brachytherapy
- prostate HistoScanning interstitial therapy
- HistoScanning brachytherapy
- HistoScanning interstitial therapy

No items found

Outlooks

- Economical workflow
- Creation of adequate cost scenes
- Improvement of the database
 - central registry
 - Quality management/control
- increase the therapeutical tools
- Interdisciplinary use
- Real-time Biopsy
- Prostate HistoScanning™ Workshop at Prostate Center Leverkusen

Thank you for your attention!

