

25 Breast and Cervix

Nodal doses during image-guided adaptive brachytherapy for cervical cancer and implication to simultaneous integrated boost

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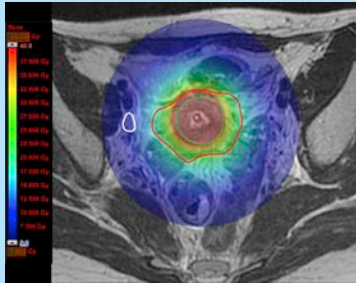
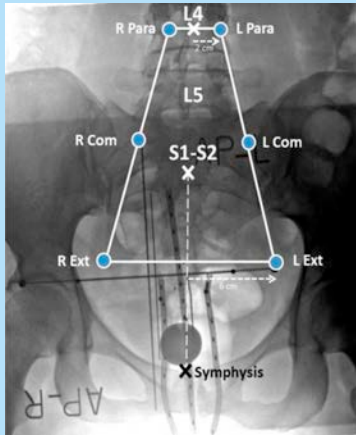
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CONTEXT



Intensity modulation

Image-guidance
 Interstitial techniques



PURPOSE

- To investigate the nodal dose contribution of IGABT to the different pelvic nodal regions
- To propose region-specific dose-fractionation for nodal SIB

METHODOLOGY

Case selection

- Retrospective
- Node-positive cervical carcinoma
- Treated curatively with chemoRT and IGABT
- No prior hysterectomy

Nodal staging

- Abdominopelvic CT and pelvic MRI
- PET-CT

METHODOLOGY

Treatment

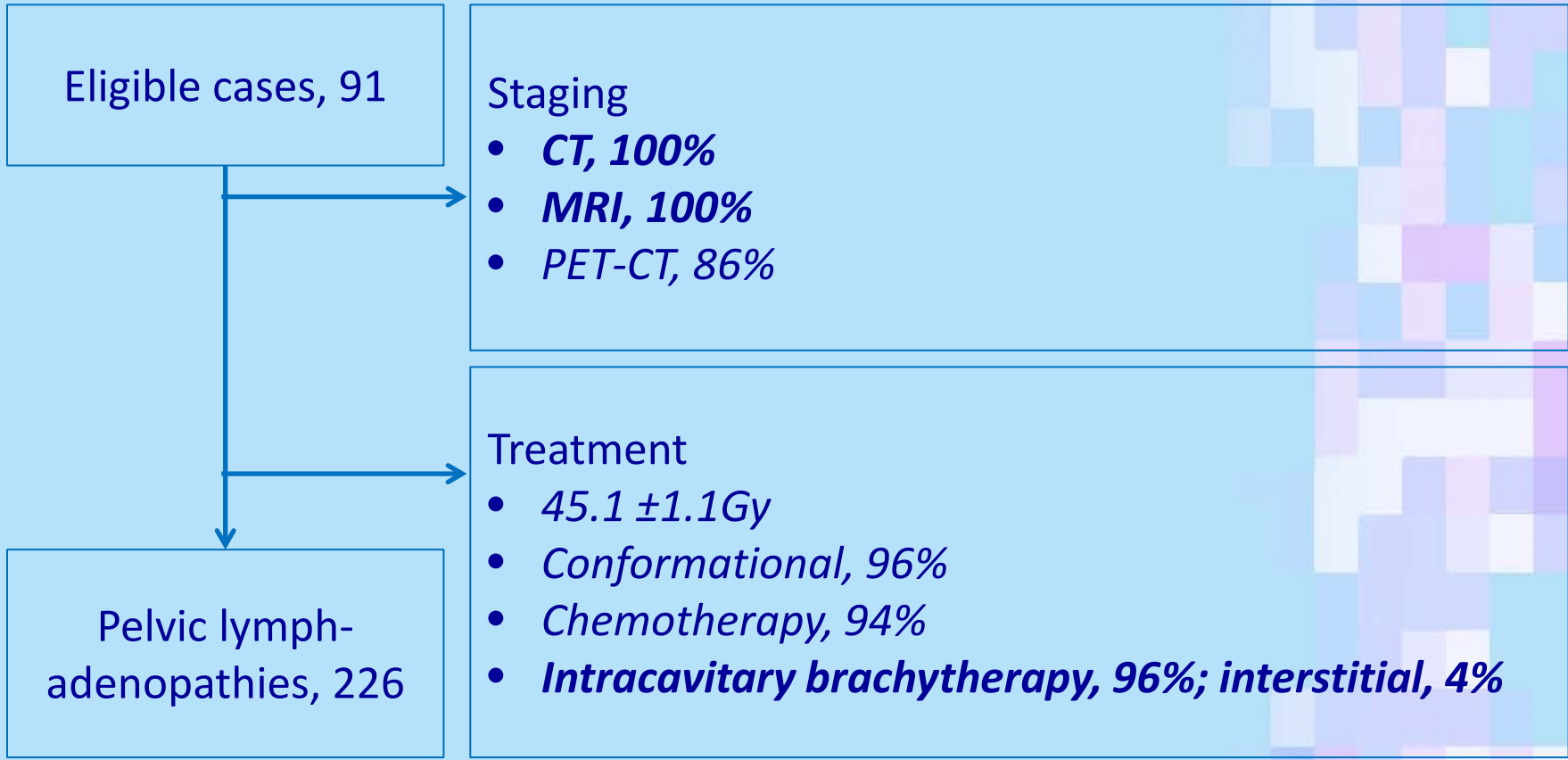
- Chemoradiation : conformal, 45-46Gy with concurrent cisplatin
- PDR - IGABT : $CTV_{HR} D_{90} \geq 85Gy$; $CTV_{IR} D_{90} \geq 60Gy$ using personalized vaginal molds
- \pm Nodal boost : conformal, cumulative dose 60Gy, sequentially or as simultaneous integrated boost

IGABT nodal dose contribution

- Individual nodal volumes
- Physical D100, D98, D90 and D50
- EQD210
- Mean doses to each pelvic region
- Steel-Dwass-Critchlow-Fligner test (XLSTAT 2014)

RESULTS

Disease characteristics



RESULTS

Disease characteristics

Eligible cases, 91

FIGO stage		
IB	24	26.4
IIA	8	8.8
IIB	36	39.6
IIIA	2	2.2
IIIB	16	19.8
IVA	5	5.5
Tumor width		
≤5 cm	37	40.7
>5 cm	54	59.3

Pelvic lymph-adenopathies, 226

Pathologic node distribution		
Common iliac	54	23.9
Presacral	6	2.7
Internal iliac	37	16.4
External iliac	108	47.8
Obturator	10	4.4
Central	7	3.1
Inguinal	4	1.8

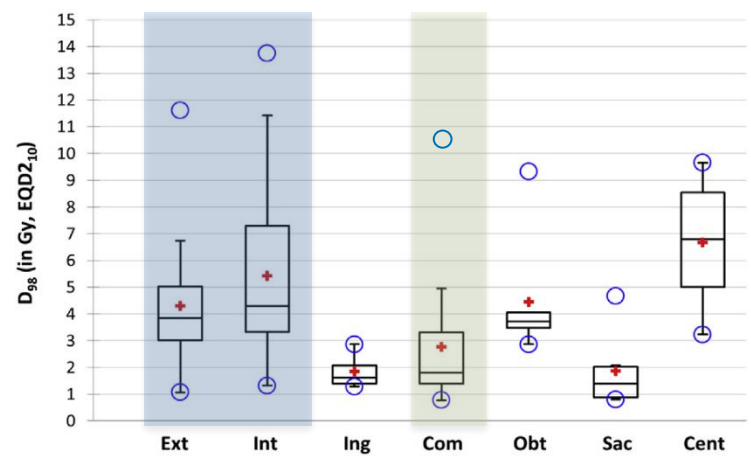
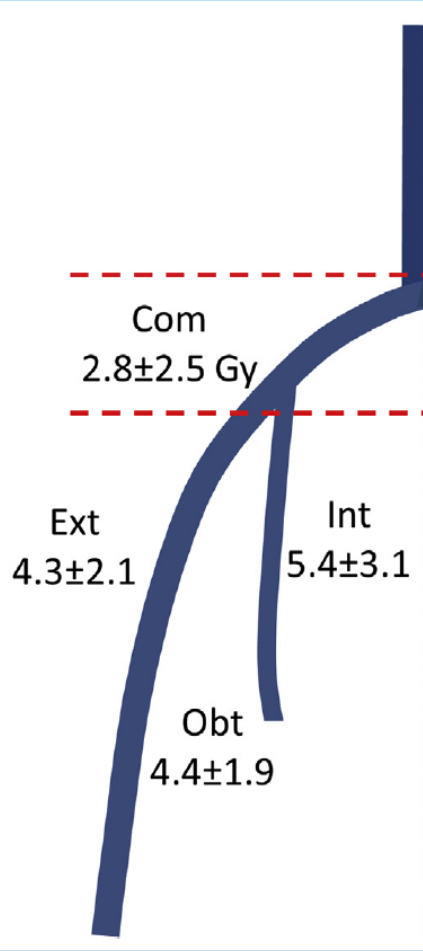
RESULTS

IGABT nodal doses

Brachytherapy contribution in 2-Gy equivalent (EQD2₁₀) according to node region

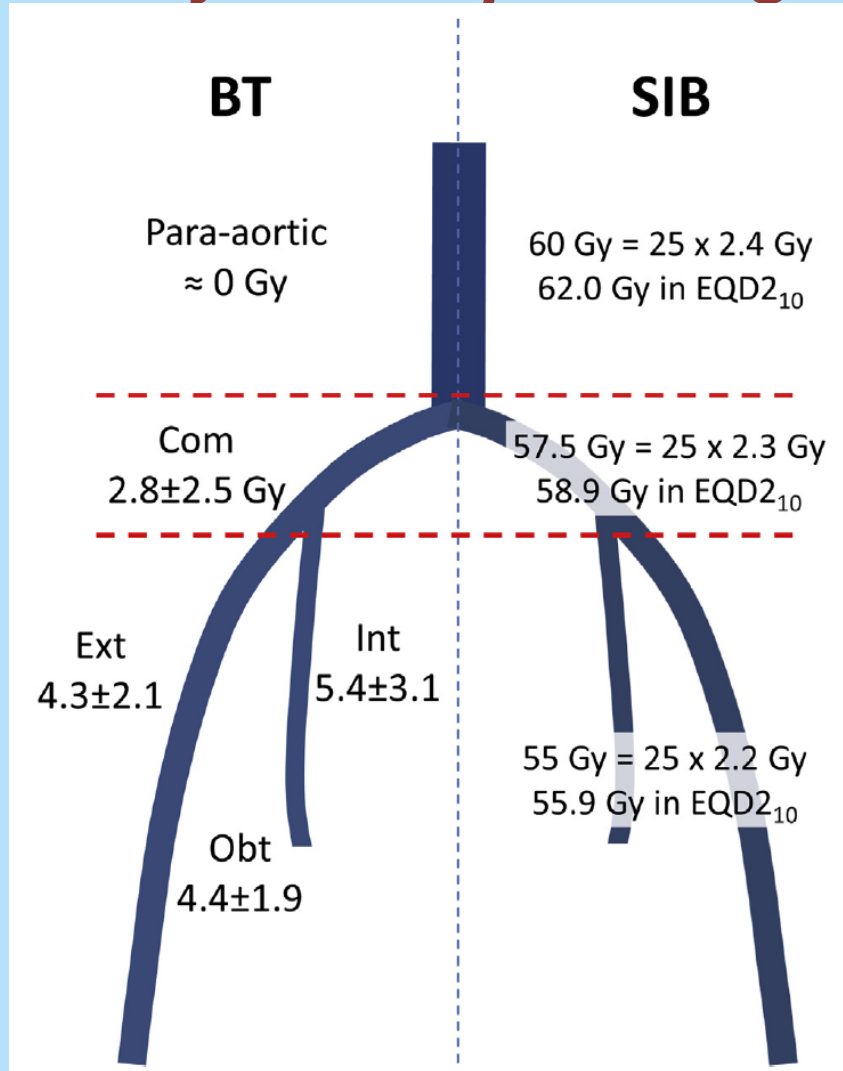
	<i>n</i>	<i>D</i> ₉₈		<i>D</i> ₉₀	
		Range	Mean ± SD	Range	Mean ± SD
Obturator	10	2.9–9.3	4.4 ± 1.9	3.0–10.0	4.8 ± 2.1
Internal iliac	37	1.3–13.7	5.4 ± 3.1	1.5–33.9	6.4 ± 5.5
External iliac	108	1.1–11.6	4.3 ± 2.1	1.2–13.3	4.6 ± 2.3
Common iliac	54	0.8–16.7	2.8 ± 2.5	0.9–9.7	2.6 ± 1.7
Presacral	6	0.8–4.7	1.8 ± 1.4	0.9–4.9	2.0 ± 1.4
Inguinal	4	1.3–2.7	1.8 ± 0.6	1.4–3.1	2.1 ± 0.7
Other ^a	7	3.2–9.7	6.7 ± 2.2	4.4–10.3	7.4 ± 2.2

n = number; SD = standard deviation.
^a Pararectal and parametrial nodes.

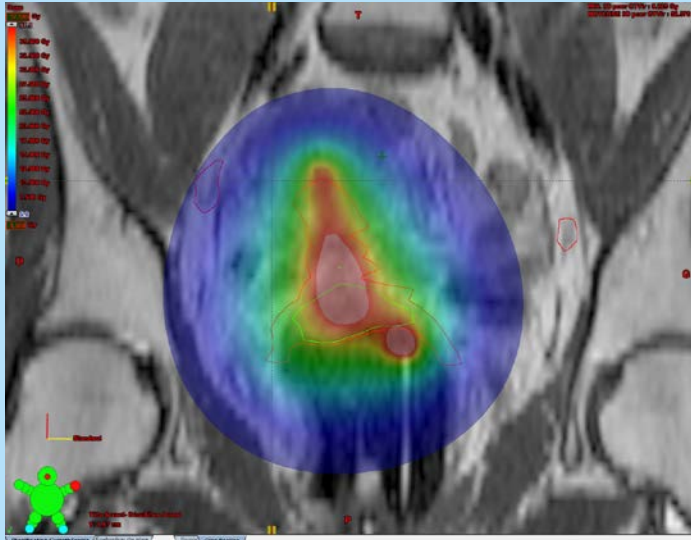


DISCUSSION

Utility in SIB planning



TAKE HOME MESSAGE



- IGABT contributes significantly to nodal doses to varying extent depending on the pelvic region.
 - Nodal dose maps may be useful in planning SIB.
 - Actual cumulative nodal dose after chemoRT-SIB and IGABT needs to be confirmed individually.*