



Target Volume Definition

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Personalized Medicine

“is the tailoring of medical treatment to the individual characteristics of each patient”

Radiation Oncology has been doing this for a long time

...But we do need to risk adapt our
Clinical Target Volumes

...It is more difficult to reduce

...IMRT allows us to extend

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ELSEVIER

Rectal cancer guidelines

International consensus guidelines on Clinical Target Volume delineation in rectal cancer



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International Consensus on Clinical Target Volume

Valentini et al R and O 2016



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Extent	Meso-rectal	Pre Sacral		Lateral LN		Ext Iliac nodes	Ischio - Rectal	Inguinal nodes	Sphincter Ccomplex
		Pelvic	Abdom	Post	Ant				
cT3			When LN+		If N2				
cT4 (ant pelvic organ)			When LN+					If lower 1/3 vag +	
cT4 (anal sphincter)			When LN+				IRF+ or Ext sph		
cT3 with extra-mr LN			When LN+						

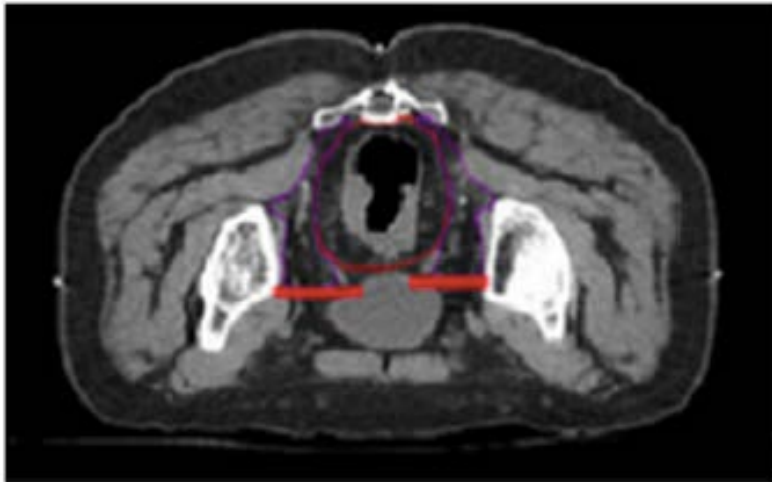


Fig. 1. Anterior border of the posterior lateral node (purple), when the ureters join the bladder (red line).

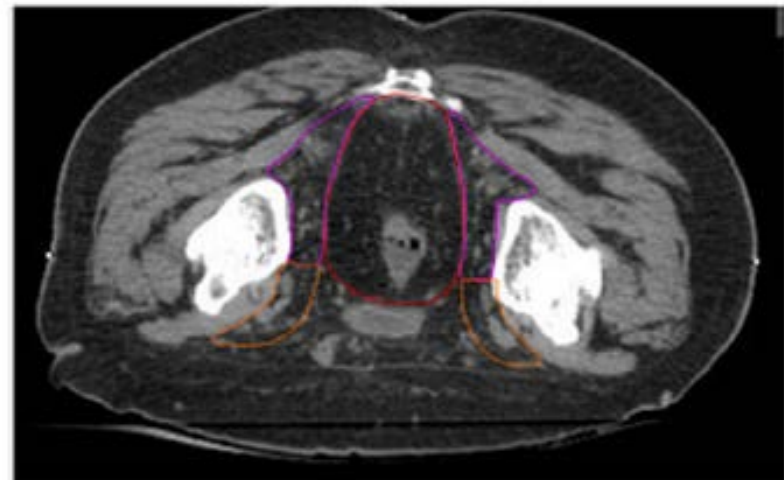


Fig. 2. Caudal border of the external iliac nodes (orange), where the deep circumflex vein crosses the external iliac artery.



FOR DEBATE

Total Mesorectal Irradiation: The “Next Step” in the Multidisciplinary Management of Rectal Adenocarcinoma?

Oriol Pares, M.D.¹ • Ines Santiago, M.D.² • Carlo Greco, M.D.¹ • Richard Heald, M.Chir.³

Dis Colon Rectum 2016; 59: 1222–1226

DOI: 10.1097/DCR.0000000000000689

Early Stage Rectal Cancer

- TREC (UK)

- TME vs **SCPRT** then TEM
- T1-2N0 <3cm
- Feasibility achieved
- Encouraging efficacy

- CARTS (Netherlands)

- **CRT** then TEM
- T1-T3 N0
- Feasible
- Encouraging efficacy



STAR TREC

- T1-3b N0 V0 <4cm
- W and W for CCR
- Selective TEM
- **Novel mesorectal IMRT**



UK, Netherlands, Denmark

- Leeds

- Mark Teo
- Ane Appelt
- David Sebag-Montefiore

- Leiden

- Femke Peters
- Ellen Kerkhof
- Corrien Marijnen

- Denmark

- Camilla Kronberg
- Karen-Lise Garm Spindler
- Lars Nyvang

- Principles

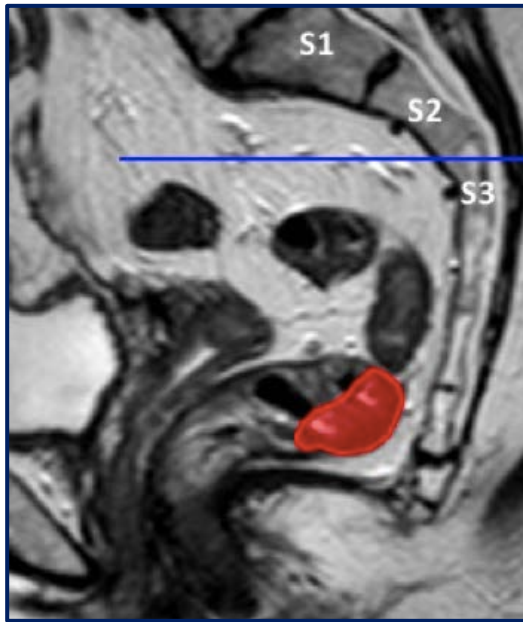
- Early stage disease
- Dutch TME data suggests S2/3 for LN- margin clear
- Lateral pelvic LN involvement rare
- Distal mesorectal spread very uncommon
- Avoidance of anal canal RT important
- Treat supine



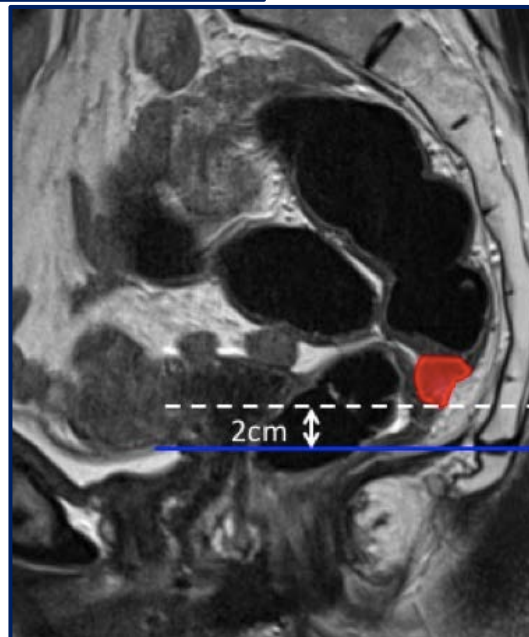
- GTV – contour the macroscopic tumour
normal rectal wall not contoured

- CTV
 - Cranial - S2/3 junction sup
 - Caudal - 2cm inferior margin
 - Contour mesorectum

Cranial and Caudal CTV – STAR TREC

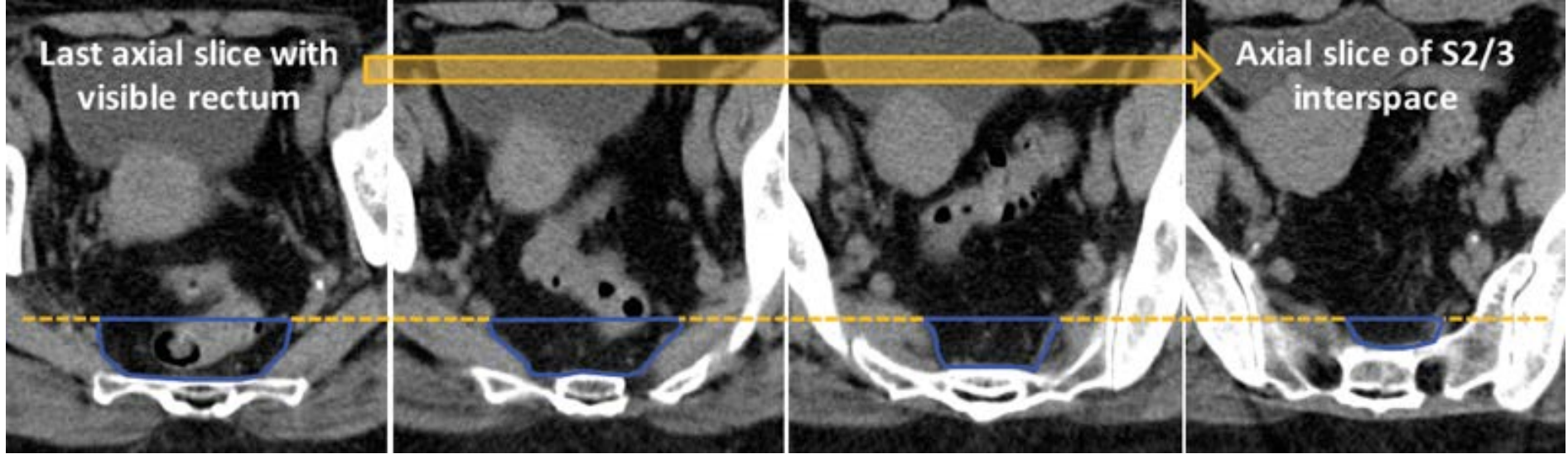
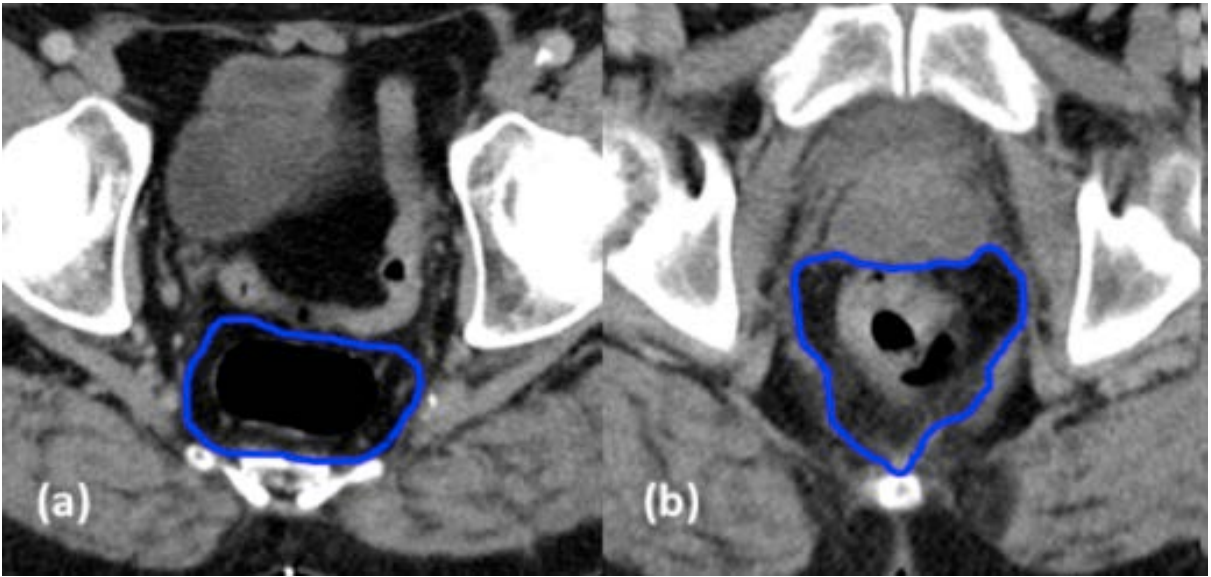


Cranial



Caudal

Mesorectal CTV – STAR TREC



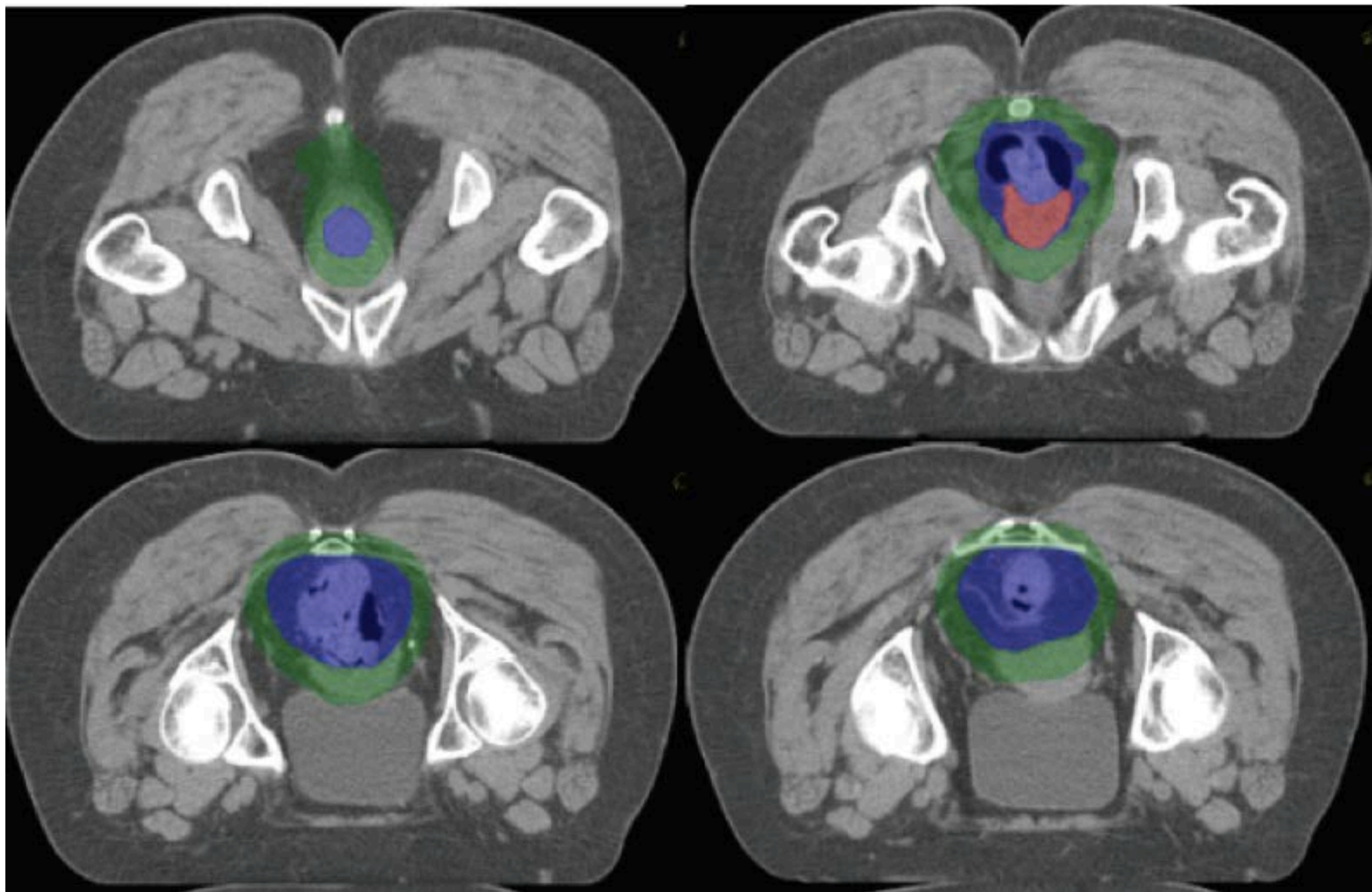
Planning Target Volume (PTV) is defined as the CTV with a:

- 1 cm margin applied superiorly
- 1 cm margin applied inferiorly
- 1 cm margin applied posteriorly
- 1 cm margin applied laterally
- 1.5 cm margin anteriorly

Target Volumes – STAR TREC



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- Risk adapted clinical target volume definition
- Patterns of failure data very important
- Mesorectal CTV for early stage disease (STAR TREC)