

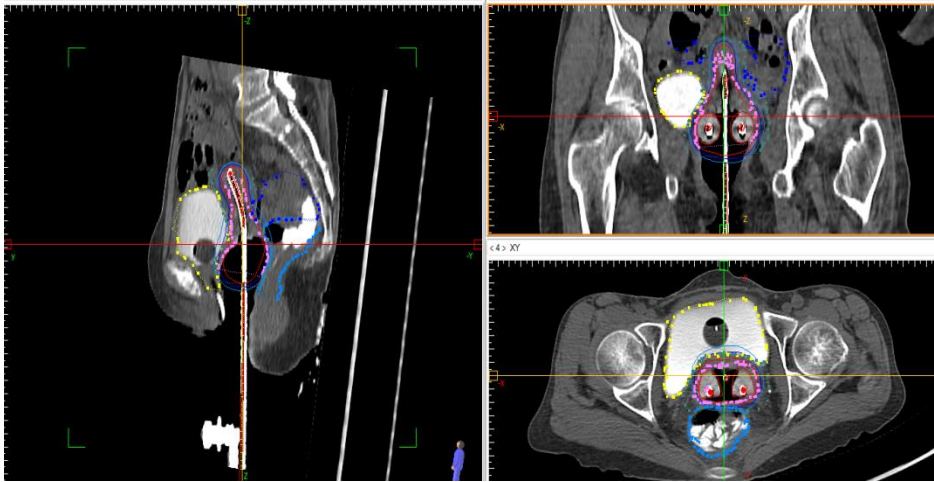
Interstitial Brachytherapy in Cervix- Advancements

Dr Manur Gururajachar Janaki
Prof and Head
Ramaiah Medical College
Bengaluru



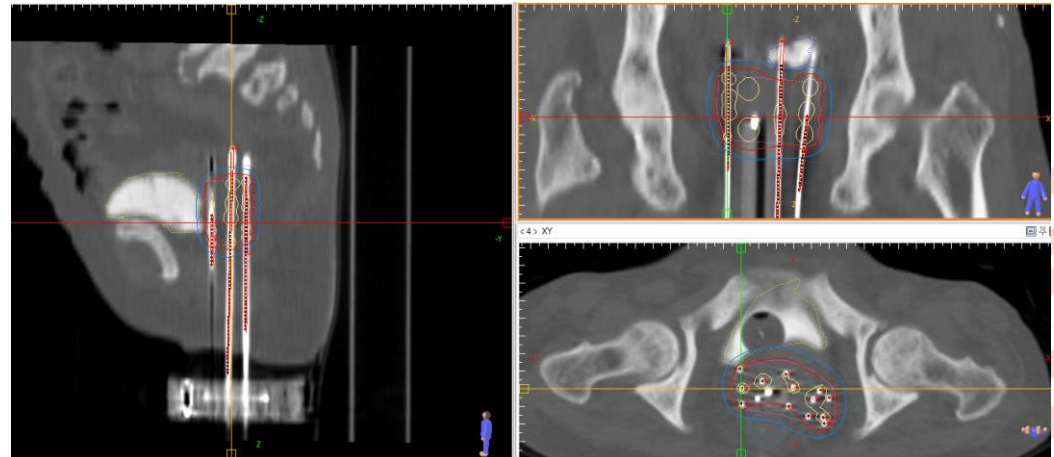
Objectives of the teaching session....

- To understand the concept of ISBT
- To list the Indications of ISBT
- To identify different applicators available
- To know the procedure, plan evaluation
- To understand the benefits with ISBT



Intracavitary
Brachytherapy

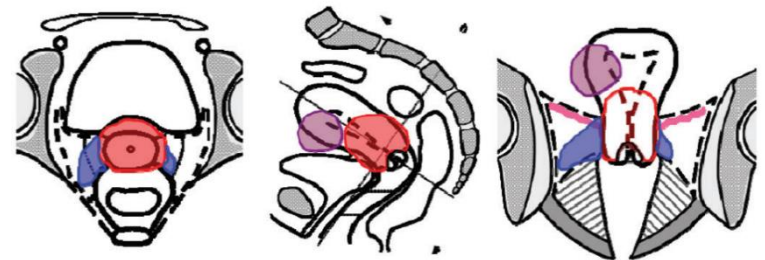
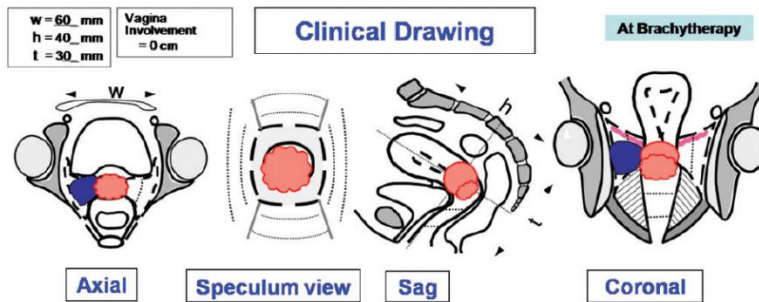
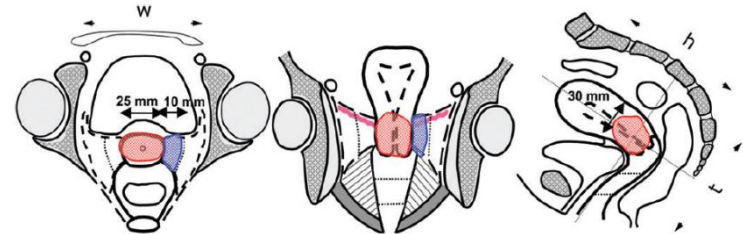
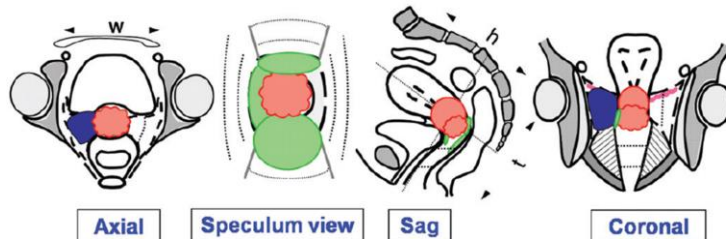
Interstitial
Brachytherapy



Indications for ISBT

- Ca Cervix IIB & beyond
 - If Partial Response
 - Post Op + Parametrium Positive
- Anatomic variations
 - Distorted Goemetry (obliterated fornices)
 - Narrow Vagina
 - OS not identifiable
- Bulky Parametrial Disease
- Vault Recurrences
- Reirradiation

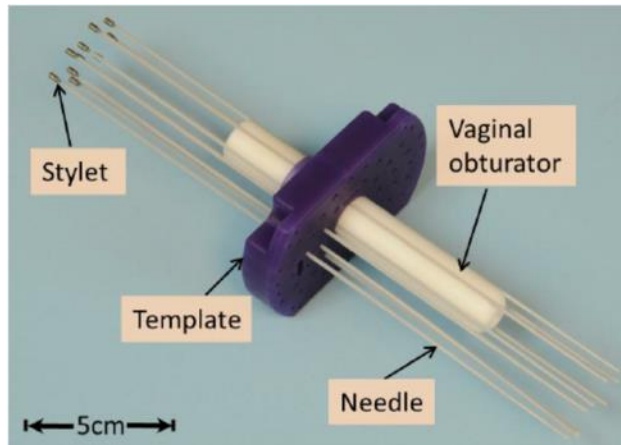
Very important.....



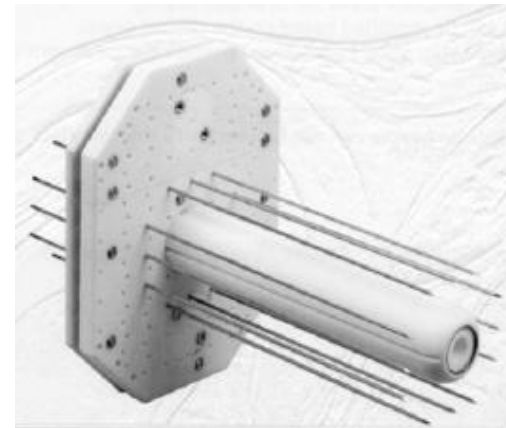
Different applicators available



- Syed-Neblette Universal



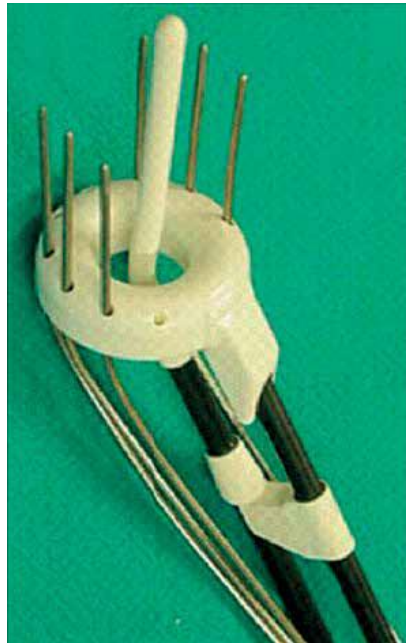
MUPIT (Martinez Perineal Interstitial Template)



Vaginal mould
brachy..impression
after EBRT



Vienna Ring



Tandem ovoids
with freehand
needles



Tulip applicators....add on with...

Fletcher



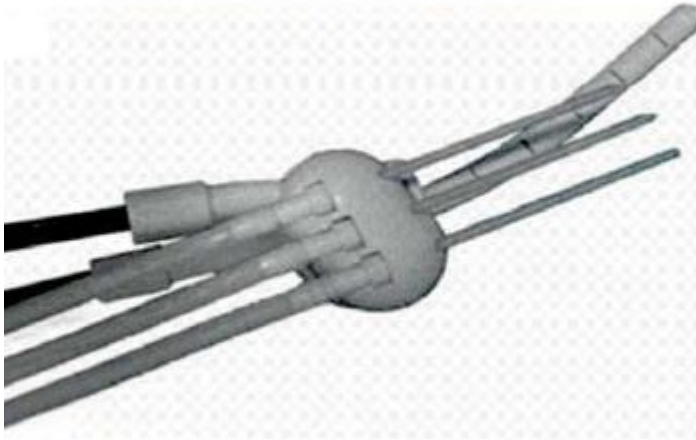
Henschke



Ring



Utrecht applicator



Venezia applicator



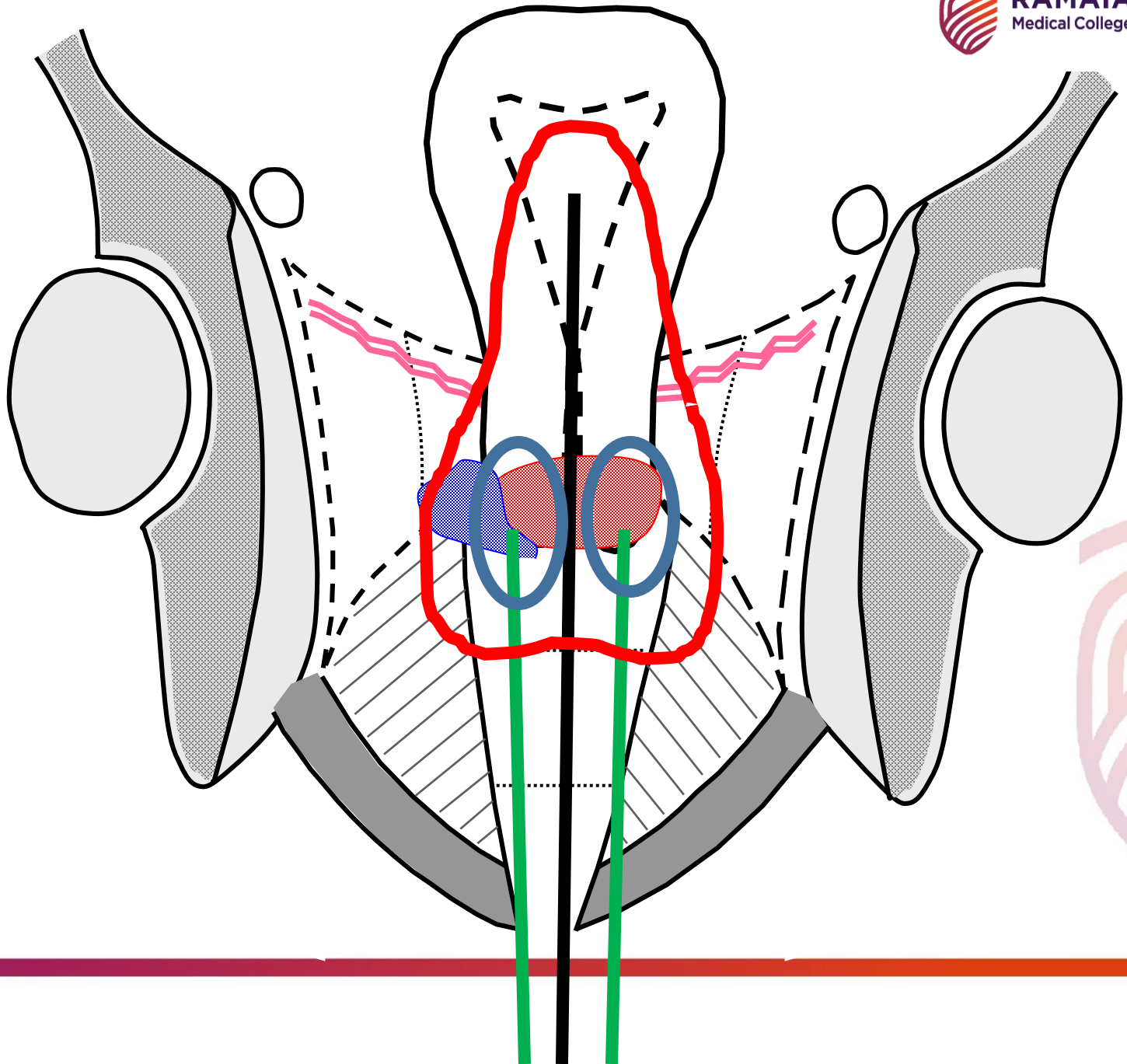


RAMAIAH

Selection of the applicator system



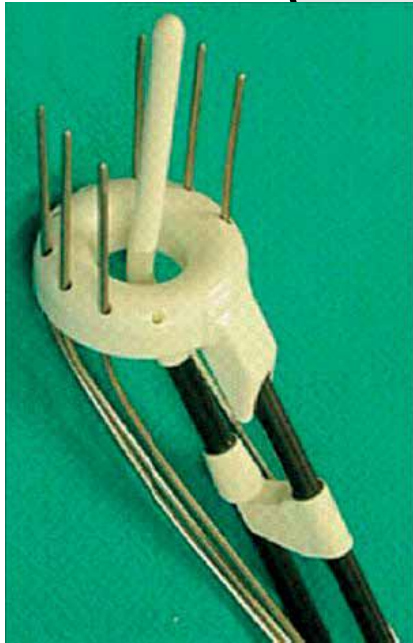
Medial third
parametrial
involvement



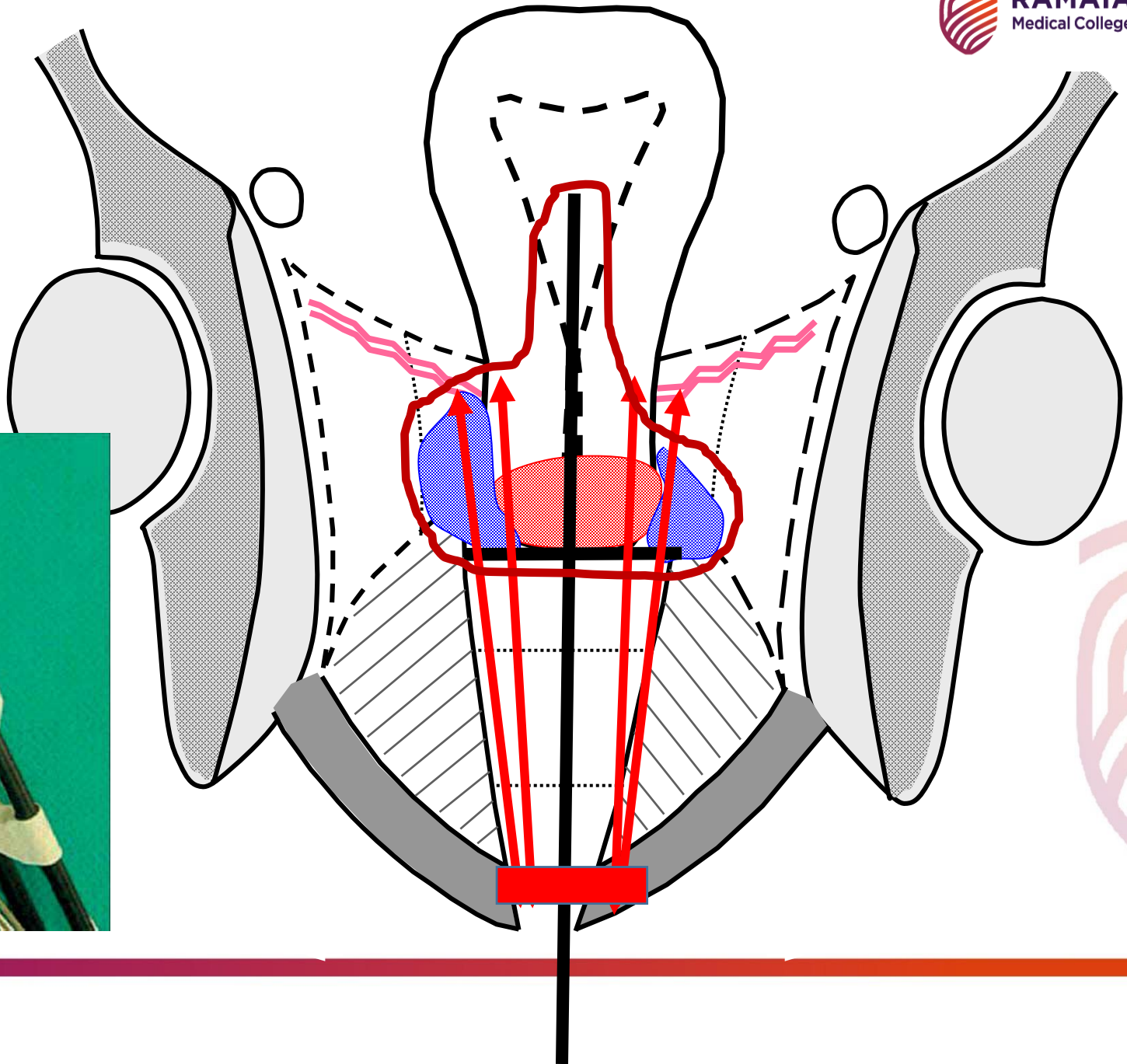


RAMAIAH

Tandem ring
with straight
needles

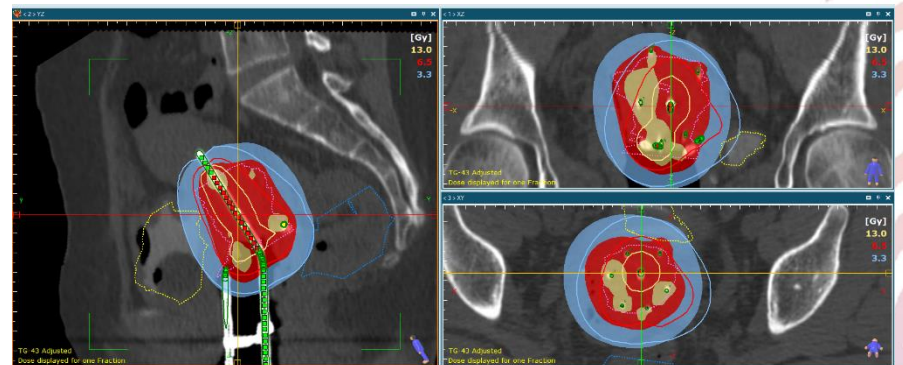
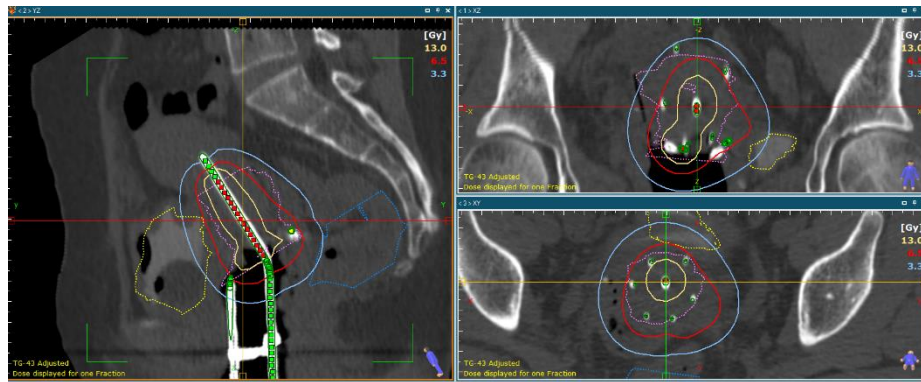


RAMAIAH
Medical College Hospital





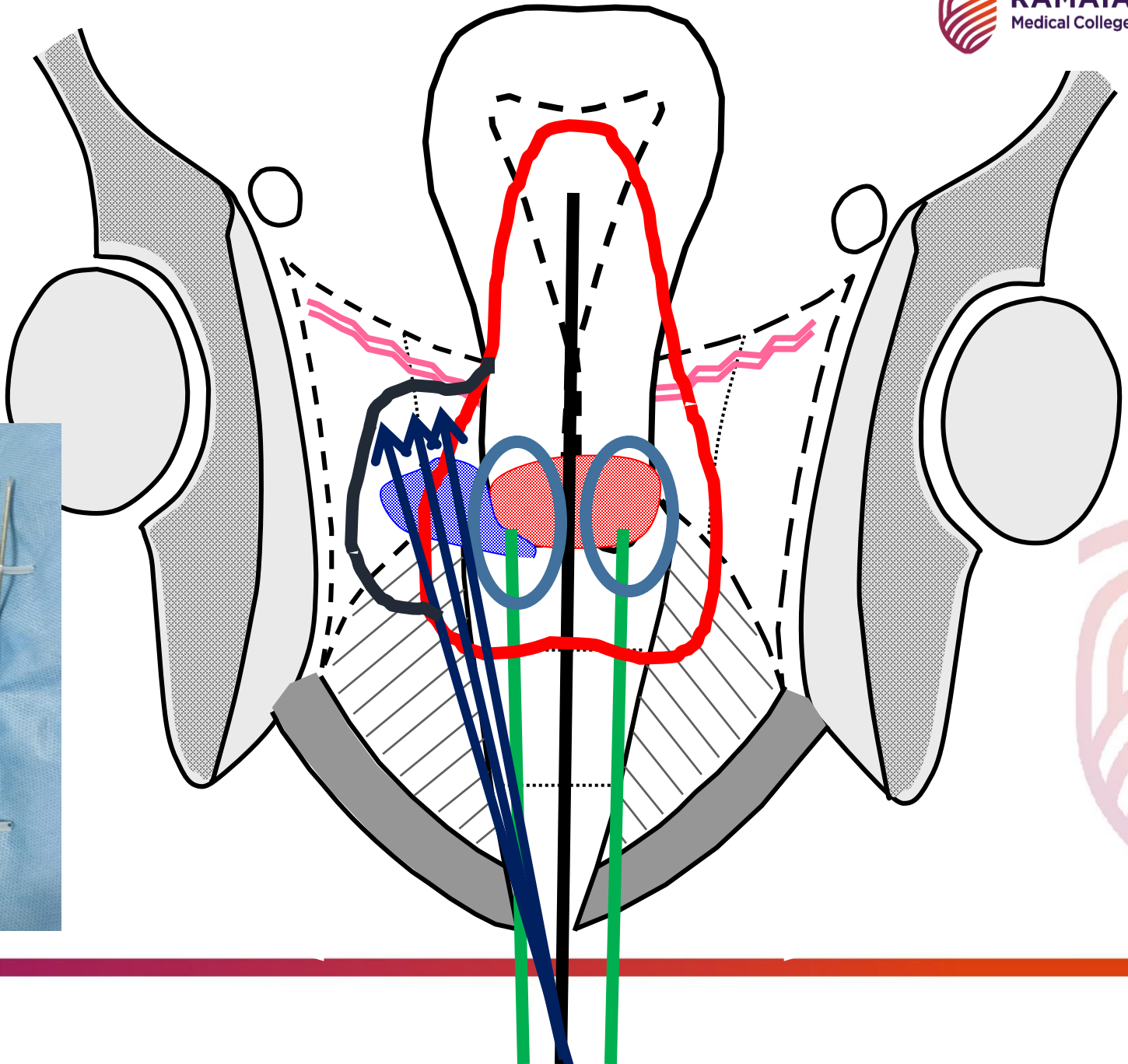
RAMAIAH





RAMAIAH

Tandem
ovoids with
freehand



RAMAIAH
Medical College Hospital



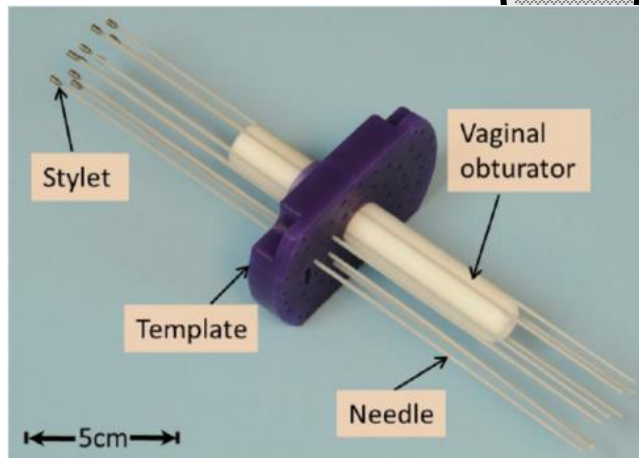
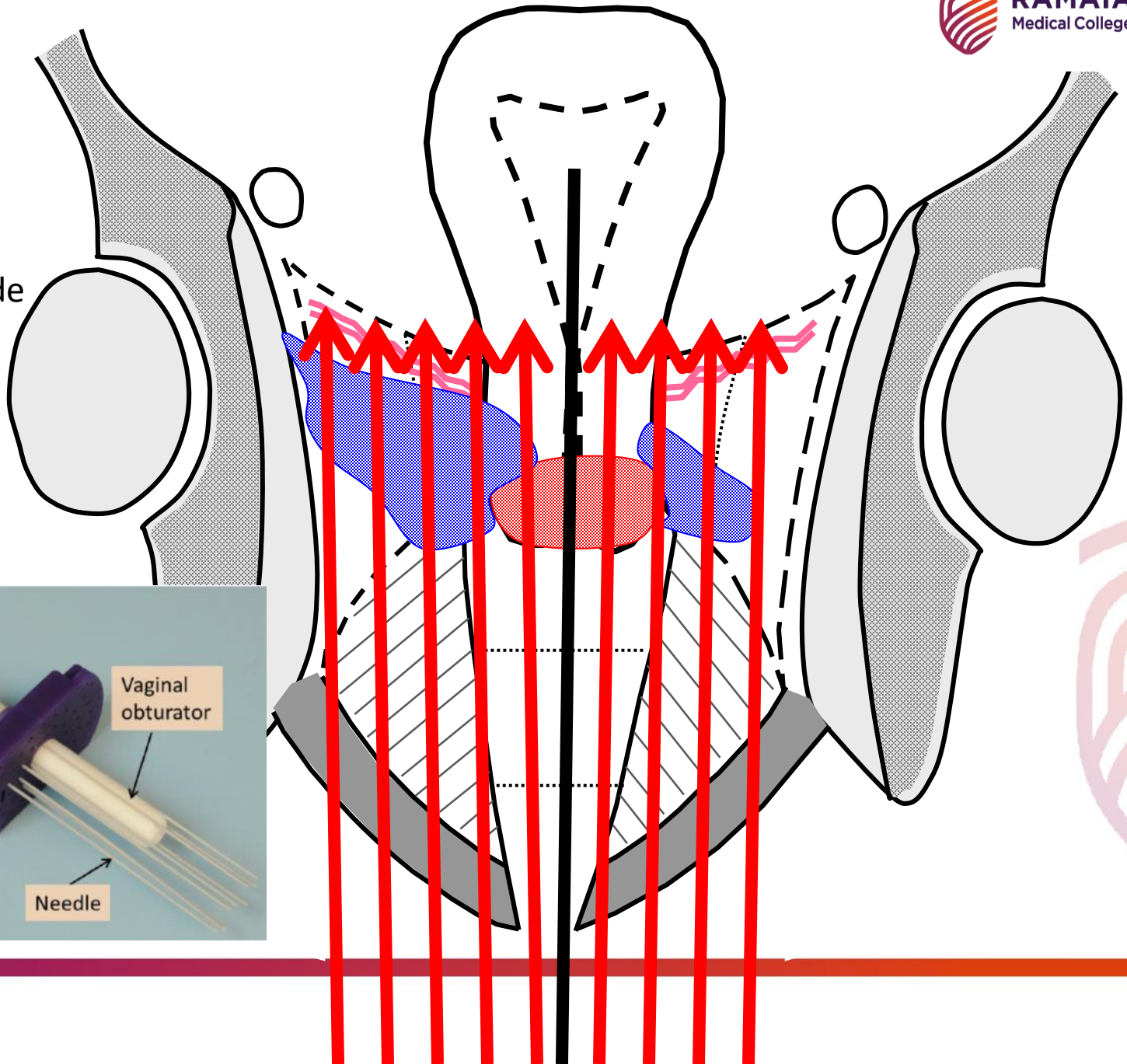


RAMAIAH

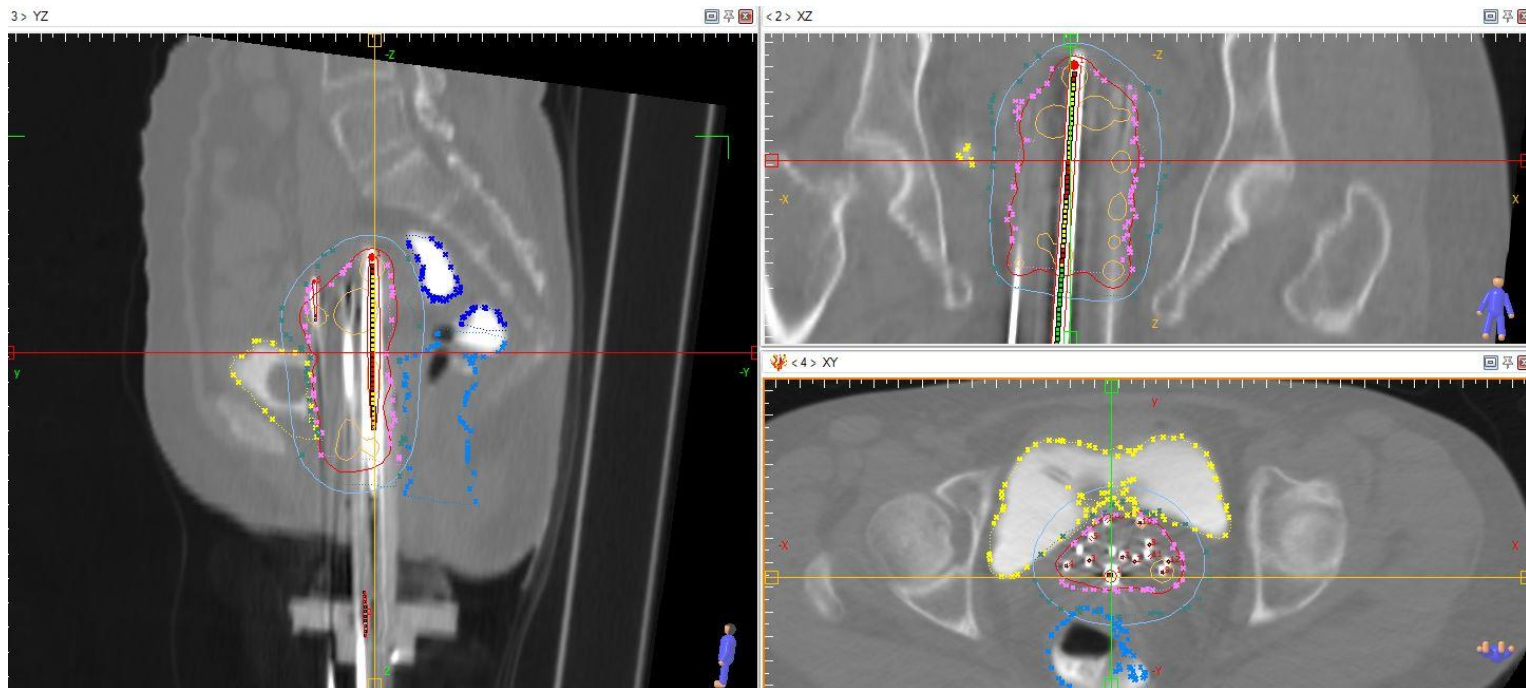


RAMAIAH
Medical College Hospital

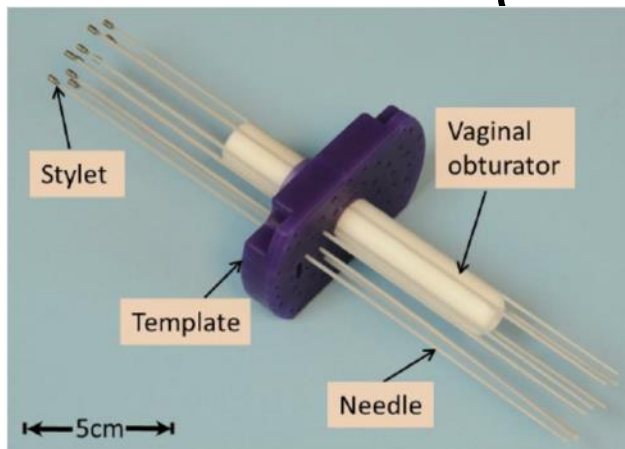
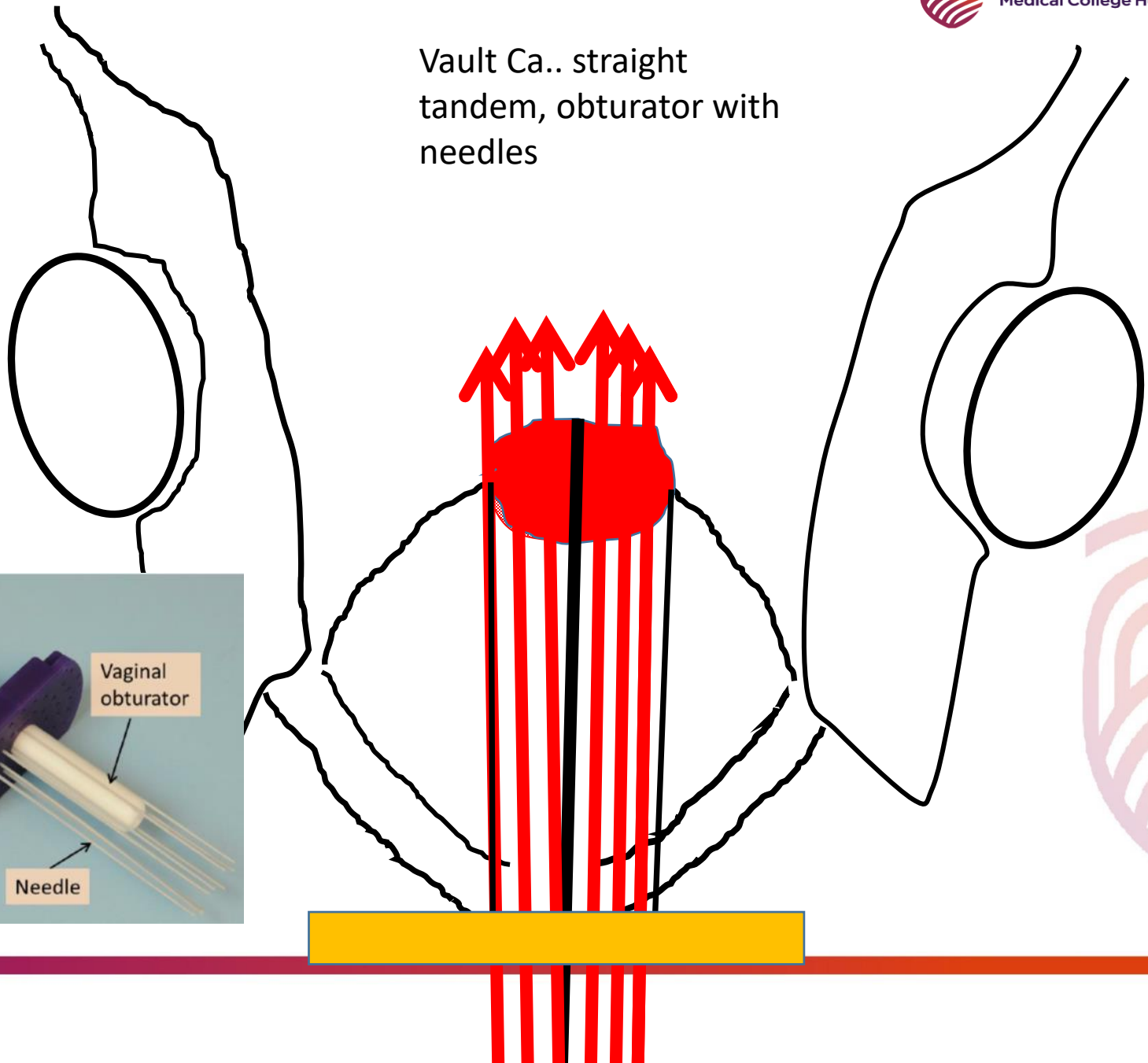
Both para, upto
LPW on one side



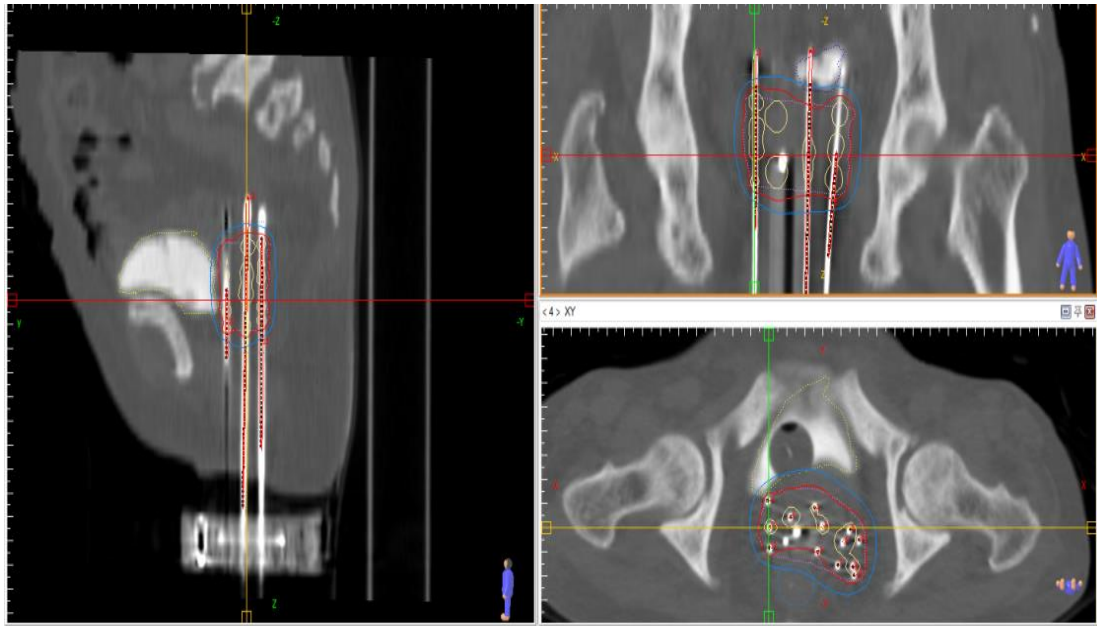
Para involvement on both sides..



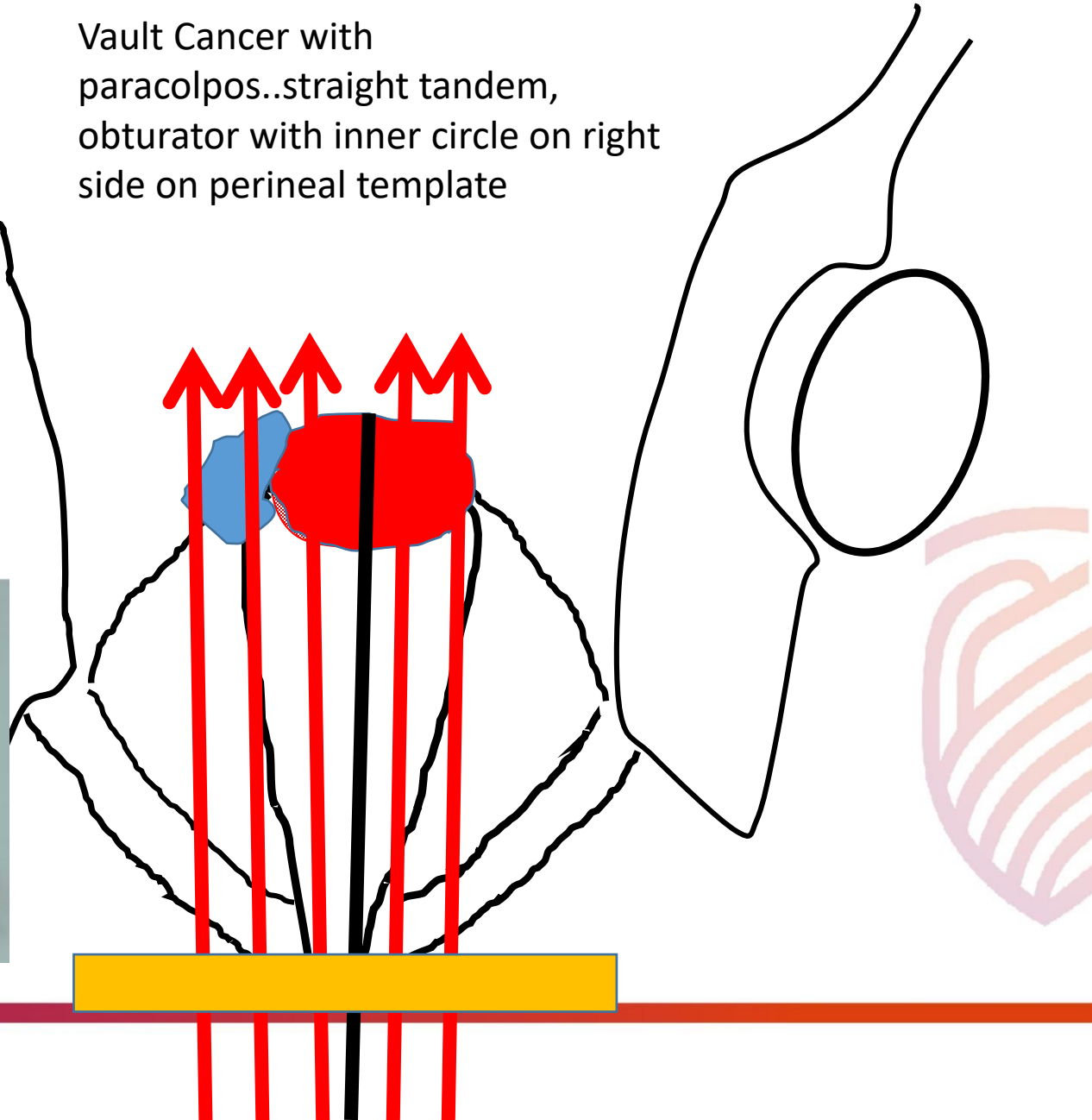
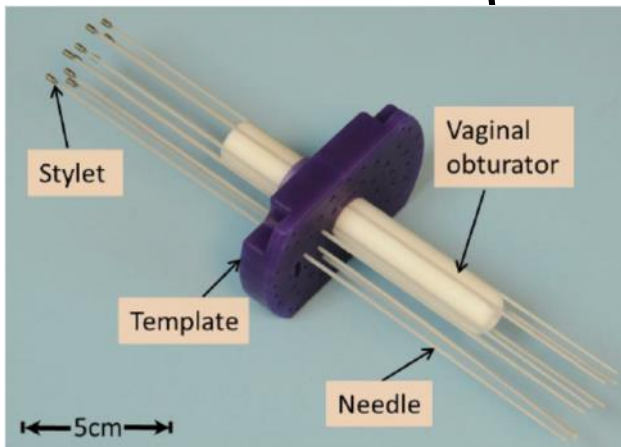
Vault Ca.. straight
tandem, obturator with
needles



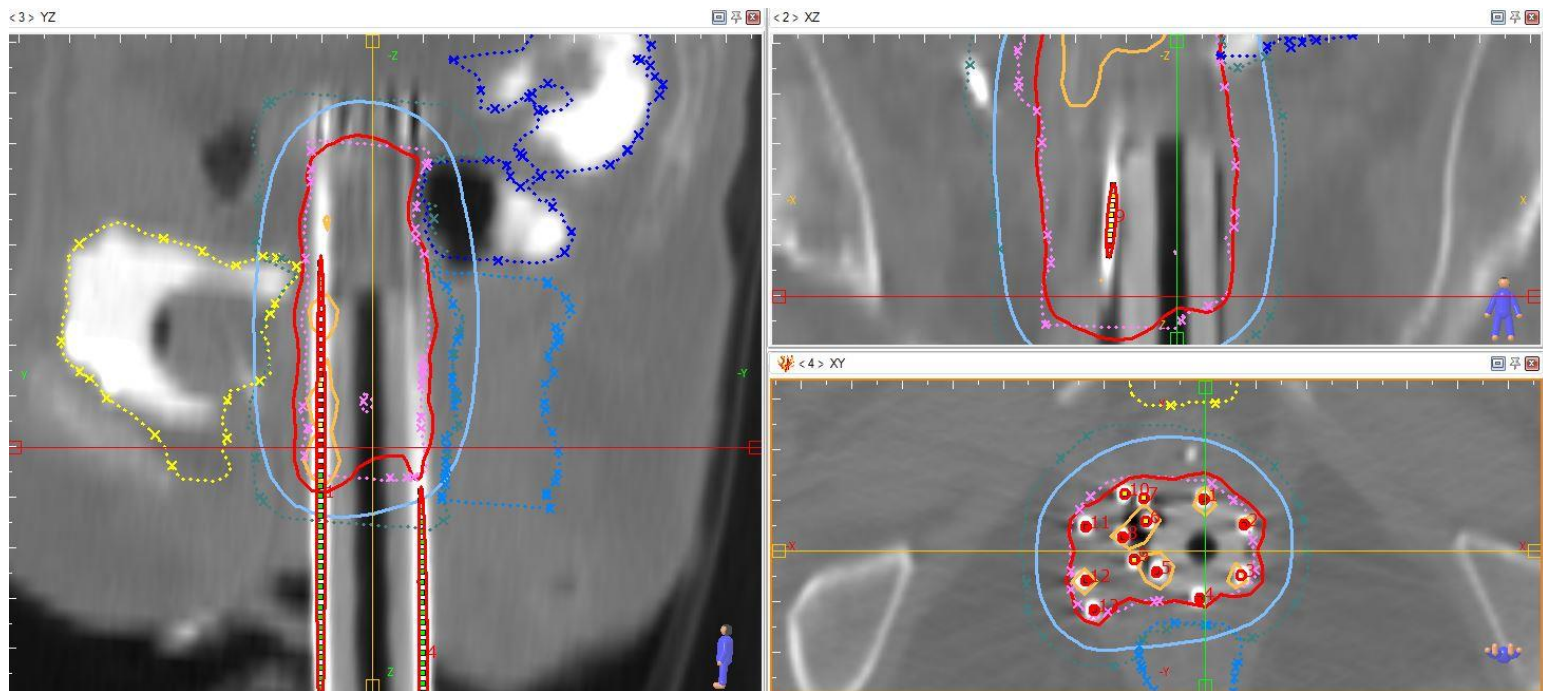
Postop/Vault Ca



Vault Cancer with
paracolpos..straight tandem,
obturator with inner circle on right
side on perineal template

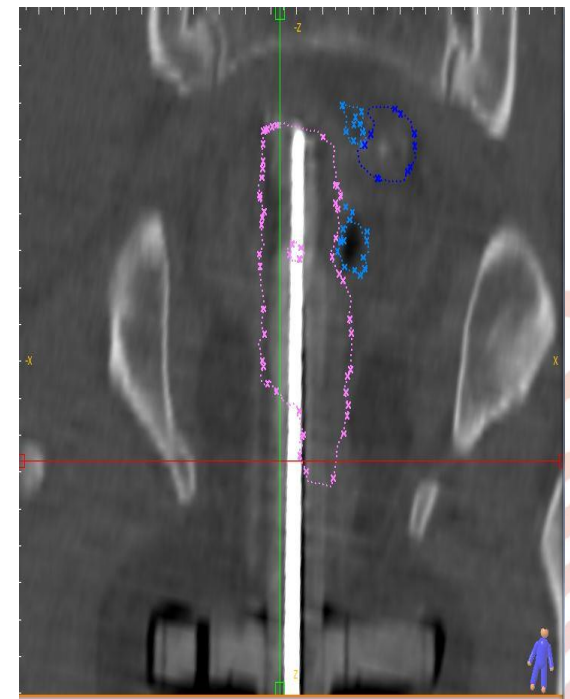
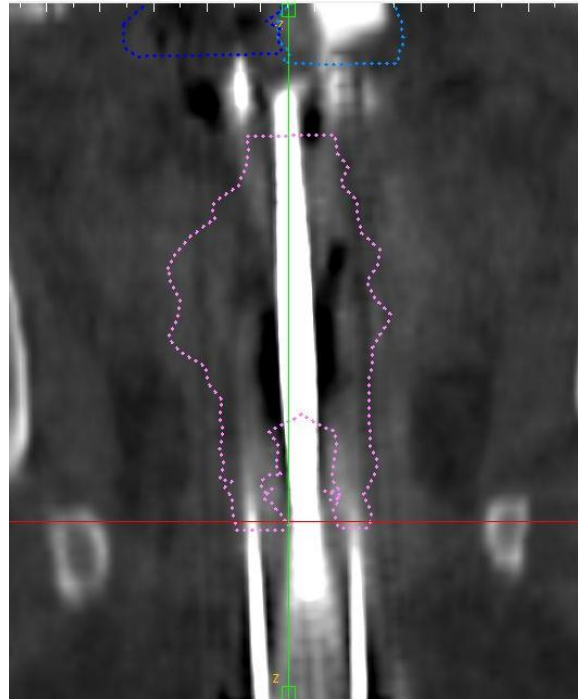
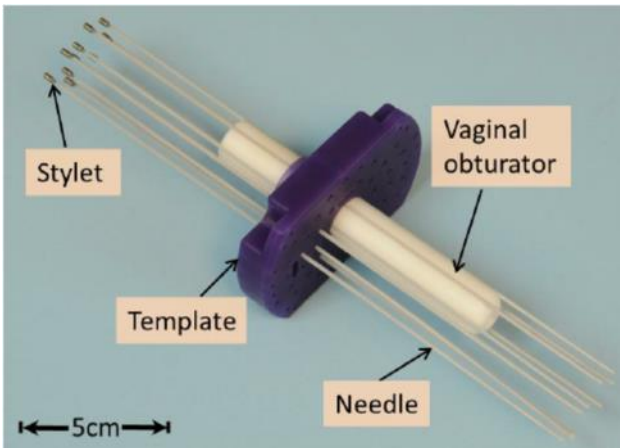


Unilateral paracolpos involved

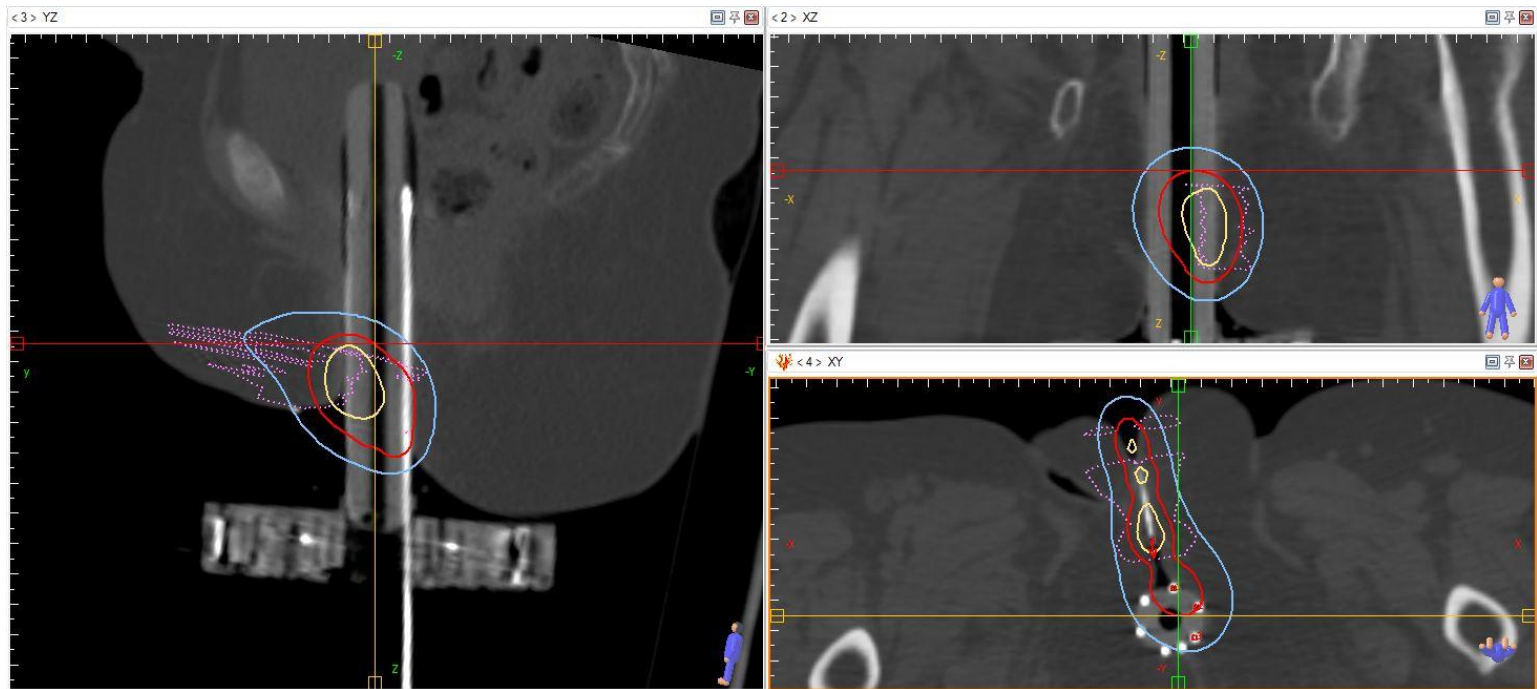




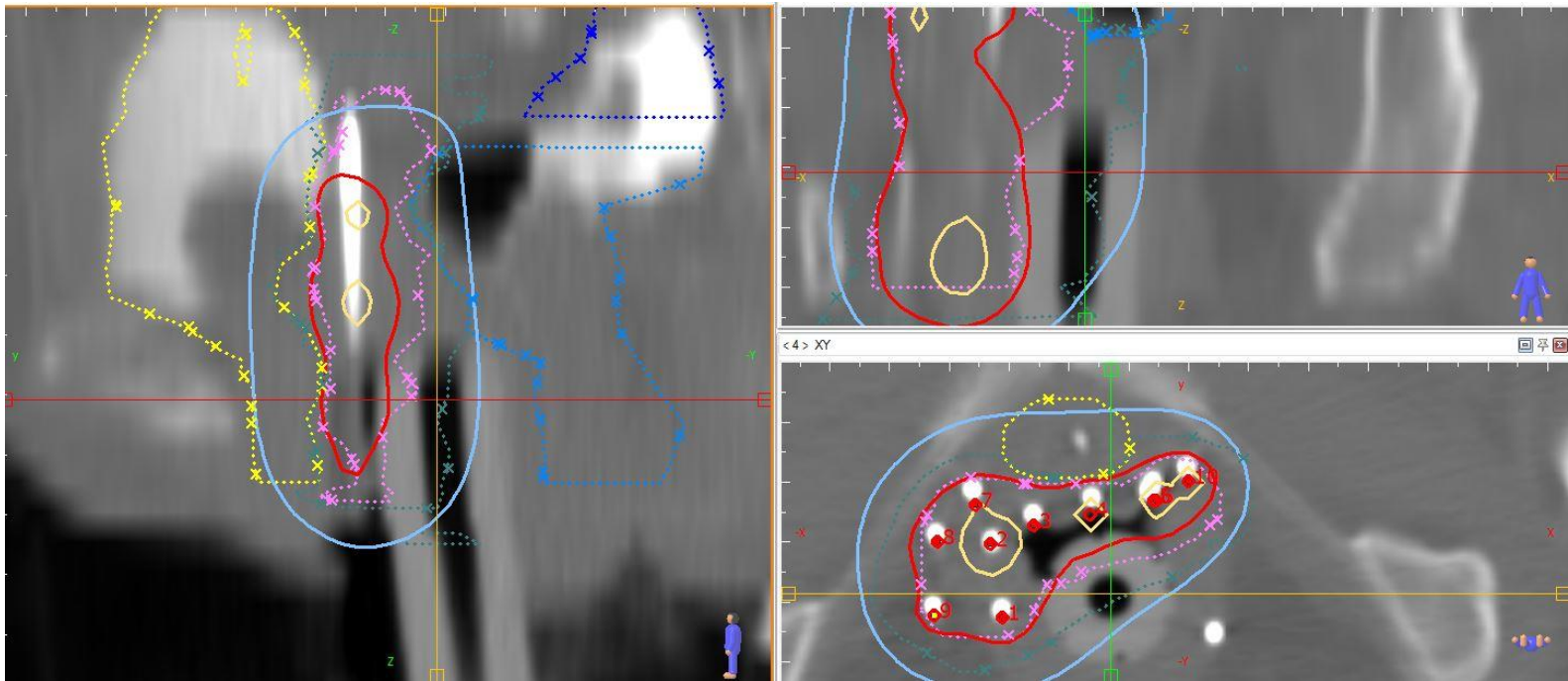
Tandem/obturator...selective vaginal involvement



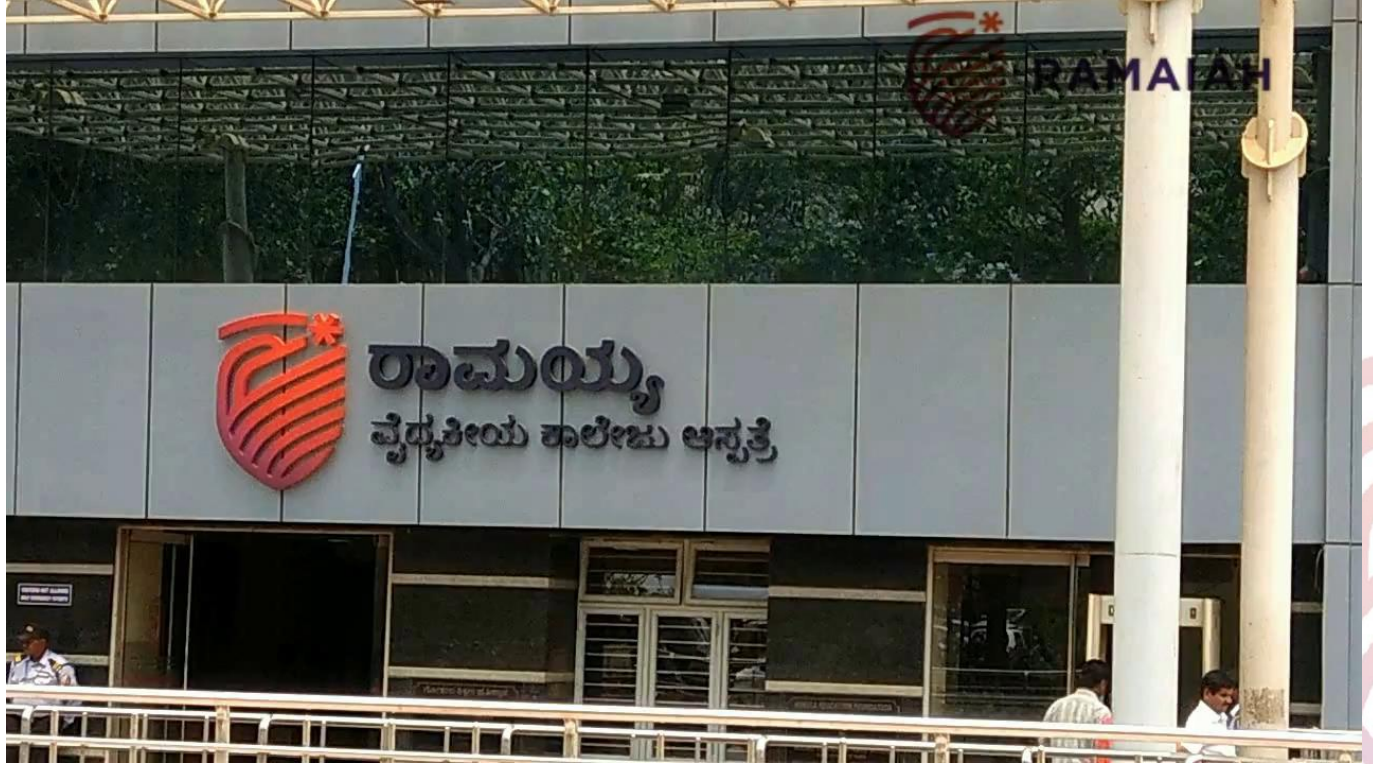
Vulva....obturator with additional wires at introitus



Recurrence in vagina



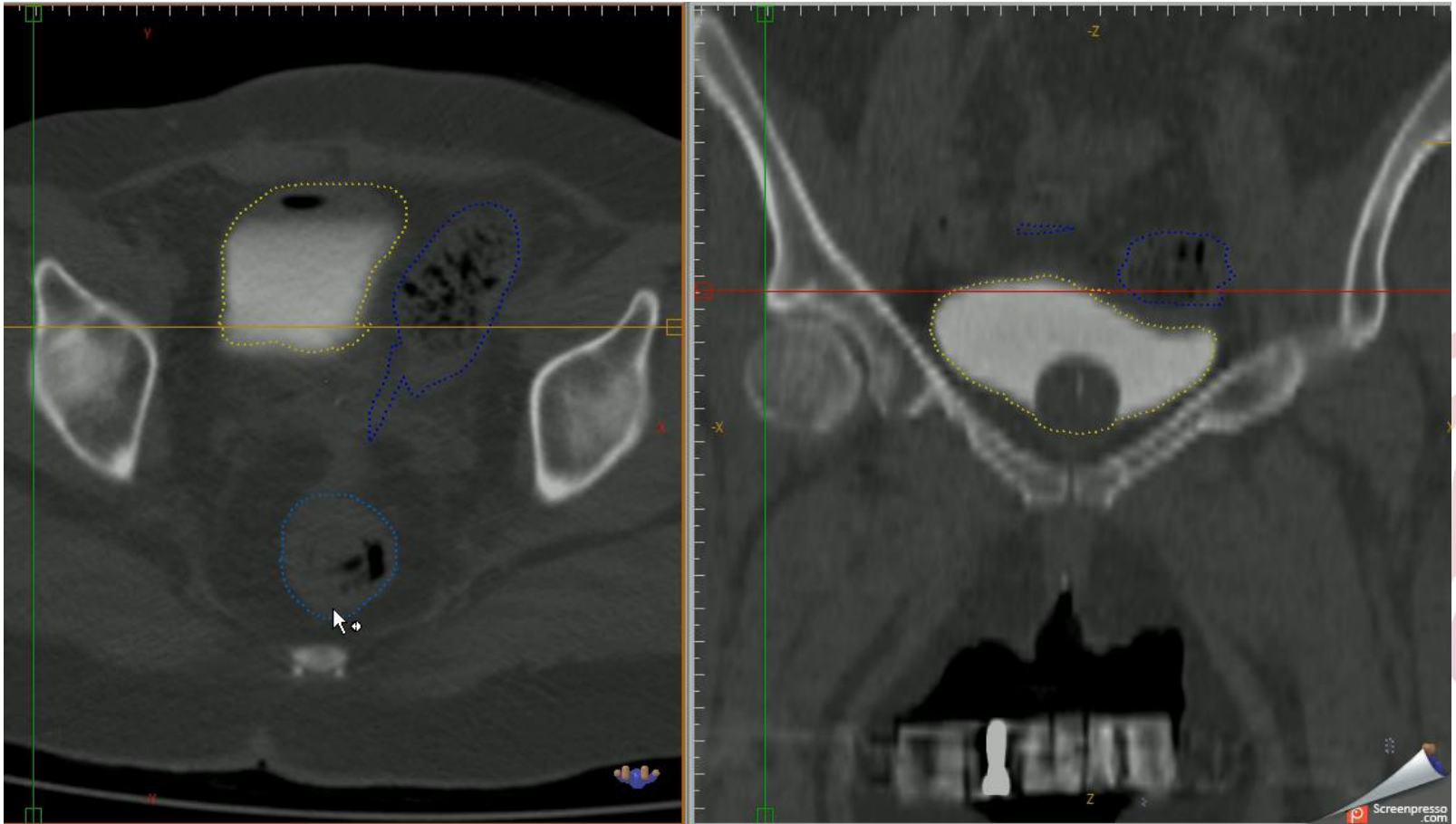
Procedure



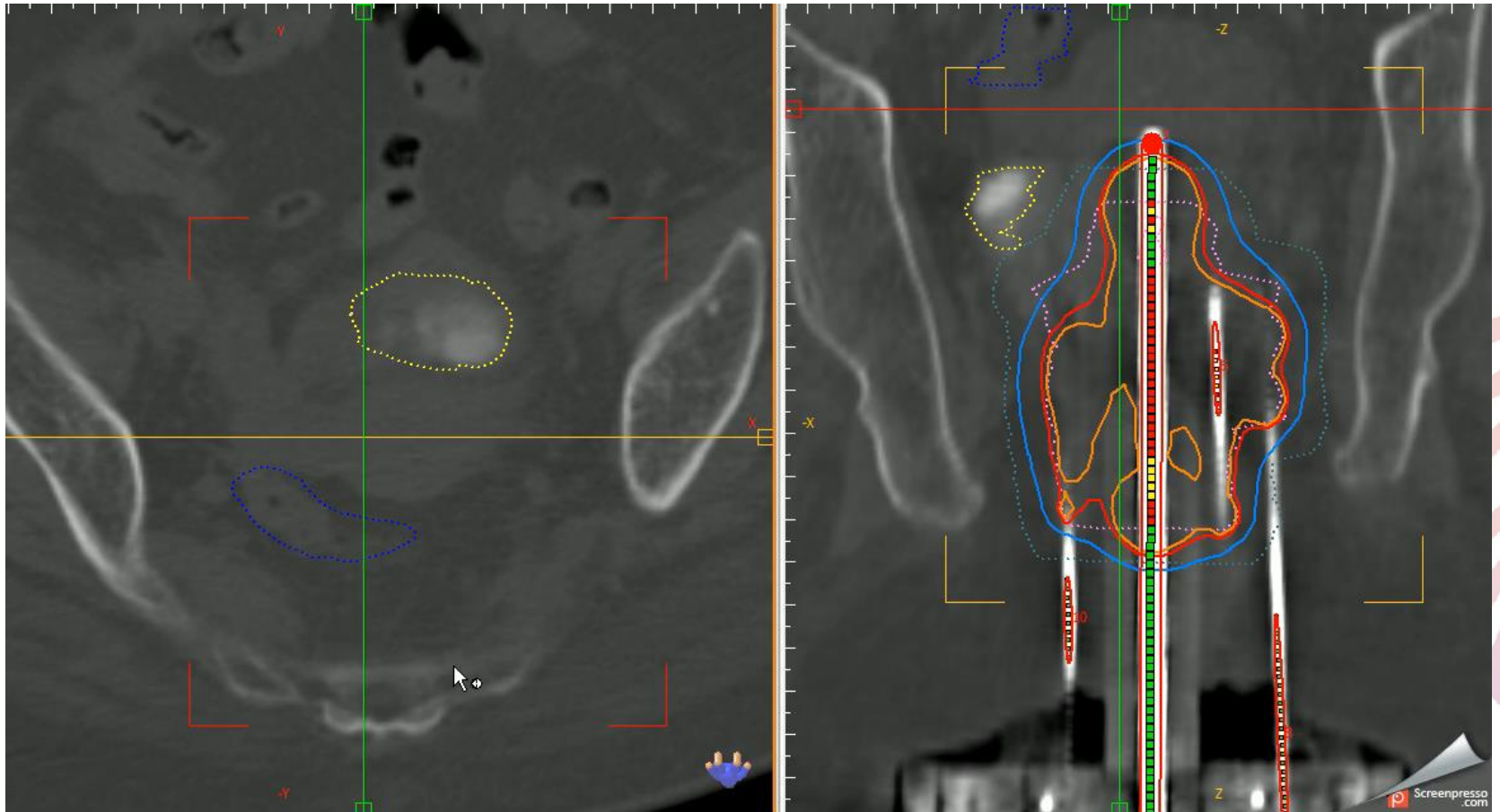
Plan evaluation...



Plan evaluation.. Postop case

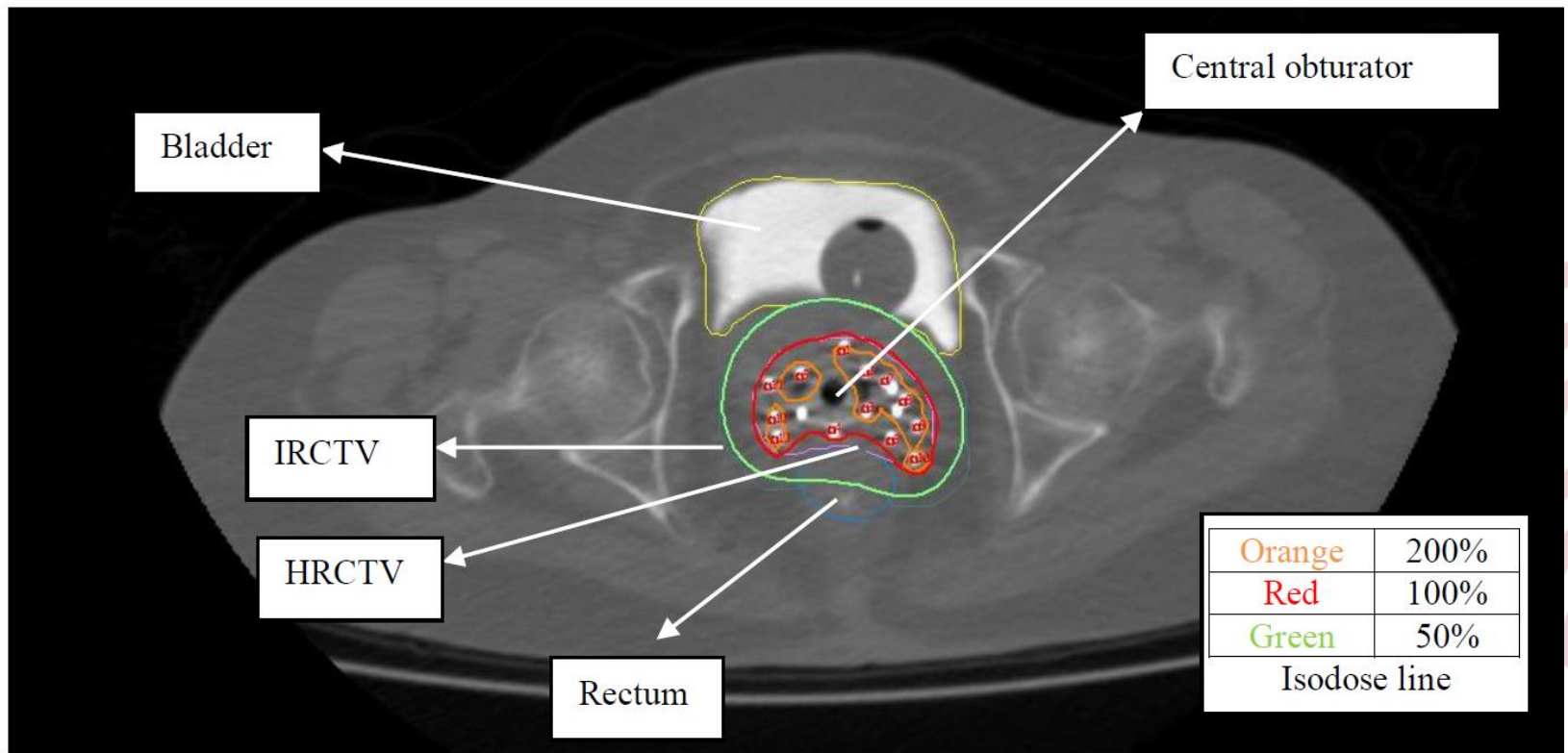


Plan evaluation ..Intact uterus

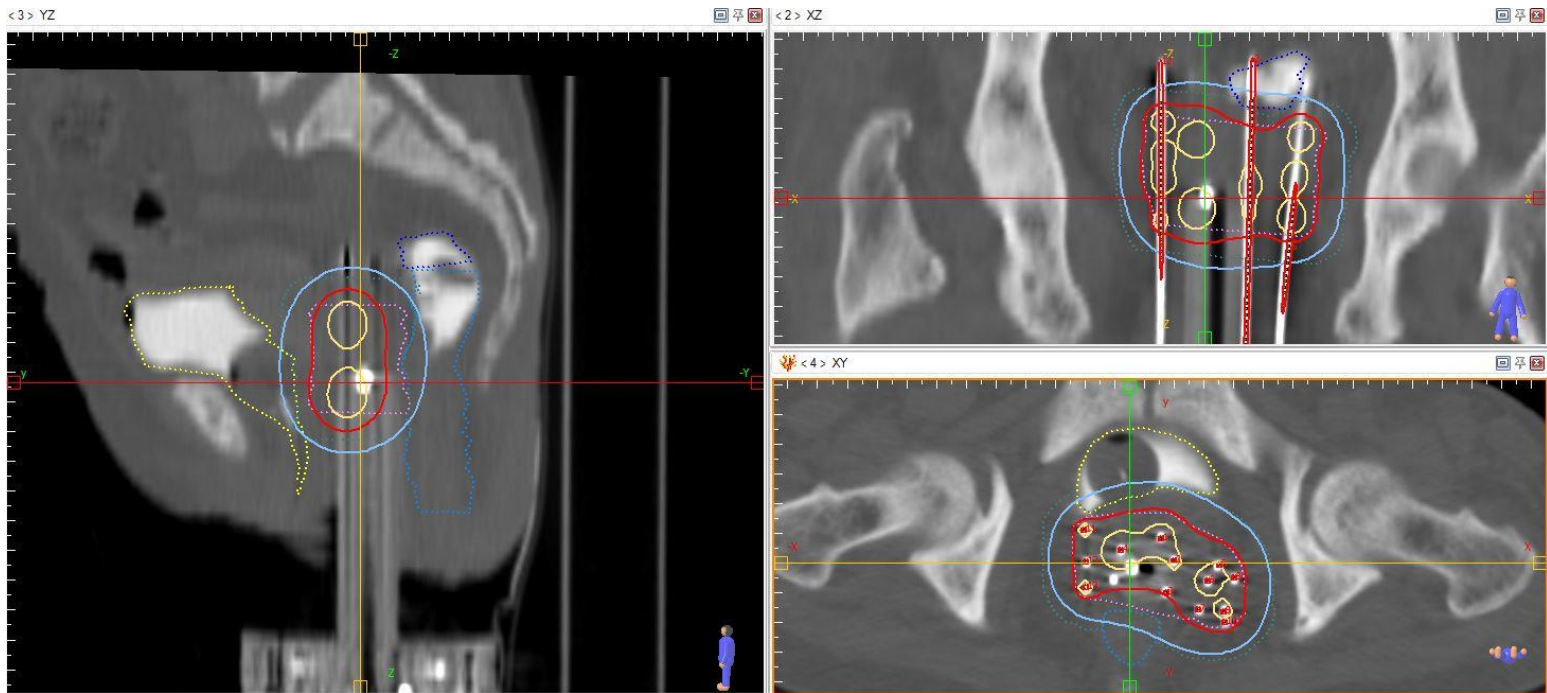




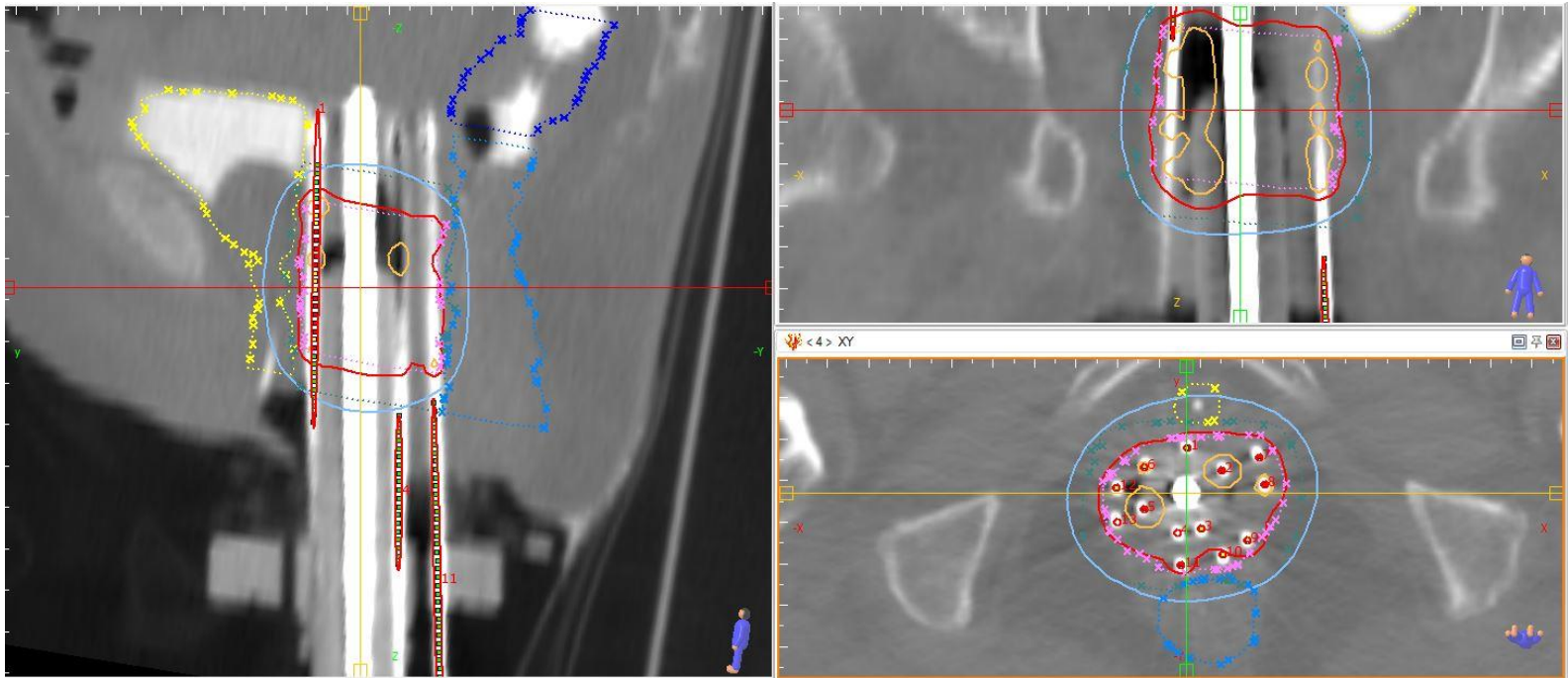
RAMAIAH



Hyperdose sleeve...should not touch each other as much as possible



Rectum and Bladder evaluation..





RAMAIAH

Prescription Dose Rx = 6.50 Gy

Plan Quality Indices

	TR WITHOUT NEEDLES	TR WITH NEEDLES
c1 (V100)	79.0 %	97.1 %
c2	55.3 %	52.7 %
COIN	0.436	0.512

Total Dose Volume for 6.50 Gray

TR WITHOUT NEEDLES	TR WITH NEEDLES
64.58 cm ³	83.52 cm ³

hrctv

Total Volume = 45.4 cm³, 4692 Control Points

	TR WITHOUT NEEDLES		TR WITH NEEDLES	
V90	38.3 cm ³	84.5 Vol%	44.8 cm ³	98.7 Vol%
V100	35.8 cm ³	79.0 Vol%	44.1 cm ³	97.1 Vol%
V150	24.4 cm ³	53.9 Vol%	34.2 cm ³	75.4 Vol%
V200	14.3 cm ³	31.5 Vol%	17.3 cm ³	38.1 Vol%
D90	5.1 Gy	78.9 %Rx	8.1 Gy	124.5 %Rx
D98	3.9 Gy	60.3 %Rx	6.2 Gy	95.1 %Rx
D100	2.7 Gy	41.9 %Rx	4.4 Gy	68.3 %Rx

bladder

Reference Volume = 97.9 cm³, 4746 Control Points

	TR WITHOUT NEEDLES		TR WITH NEEDLES	
D2cm ³	4.0 Gy	61.6 %Rx	4.0 Gy	61.7 %Rx

rectum

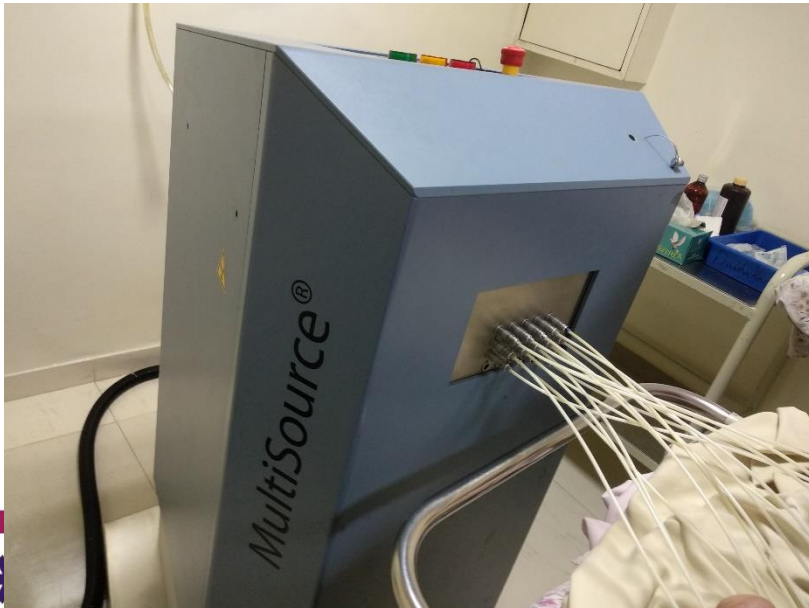
Reference Volume = 46.9 cm³, 4976 Control Points

	TR WITHOUT NEEDLES		TR WITH NEEDLES	
D2cm ³	2.7 Gy	41.6 %Rx	2.7 Gy	41.8 %Rx

hrctv



ISBT Execution



Results with IGBT

- Potter et al ...2007
 - Local control with lesions more than 5 cm..64% vs 82%
 - Survival..28 % vs 58 %
 - Serious complications...10 % vs 2 %
- Potter et al..2011
 - Local control with lesions 2-5 cm- 98% and >5 cm- 92 %
 - Survival..72 % vs 65 %
 - Serious complications...5 % with
 - D90 >85 Gy
 - D2cc rectum/sigmoid <75 Gy
 - D2cc bladder <90 Gy

To Summarise....

- ISBT effectively covers all types of targets for cervical cancer
- Delivers minimal dose to rectum,bladder,Sigmoid
- Applicators have seen tremendous improvement over the years and are patient friendly
- Computerised plans permit quick planning and evaluation
- All the above have resulted in better therapeutic ratio

Thank Youhappy learning.....

