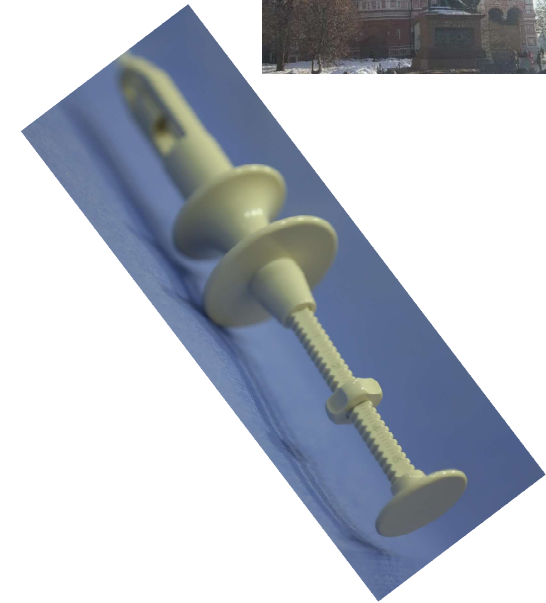
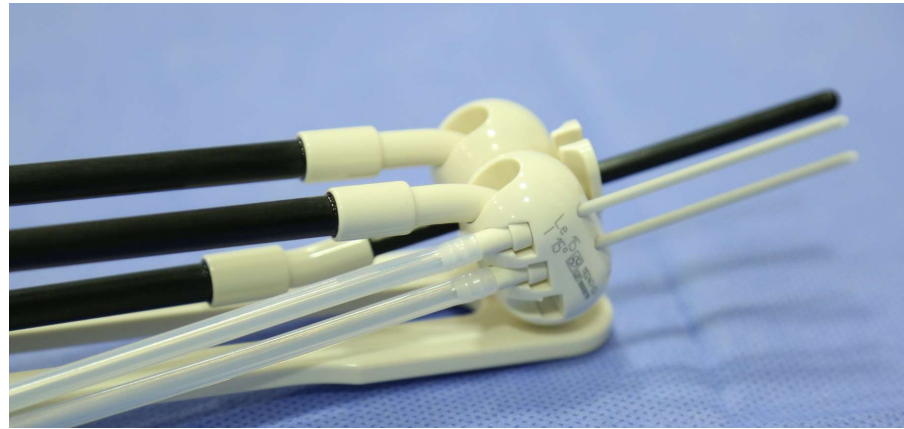
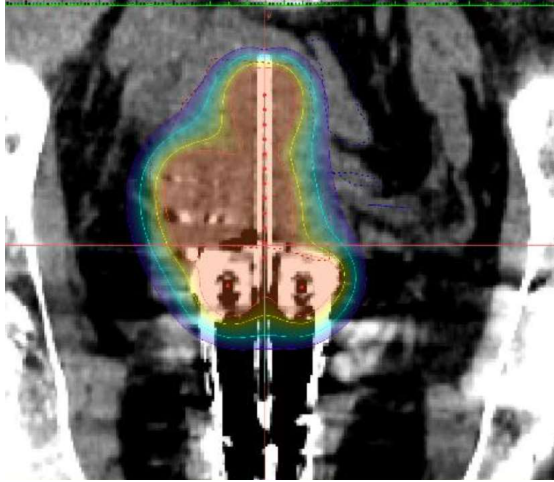
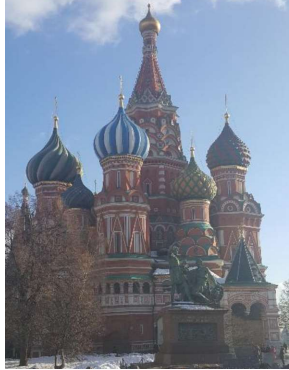


# Interstitial Paracervical Applications with Utrecht

Moskova-2019



Merdan Fayda, MD  
Prof of Radiation Oncology  
Liv Hospital, Istanbul



İSÜ | İSTİNYE  
ÜNİVERSİTESİ  
İ S T A N B U L

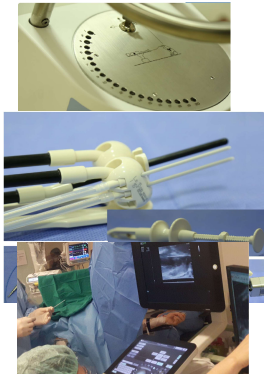
# Liv Hospital – Ulus – Istanbul – Turkey



1 Linac  
-600 ptnt/year  
(150 with Radiosurgery)

1 Flexitron  
200 ptnt/year

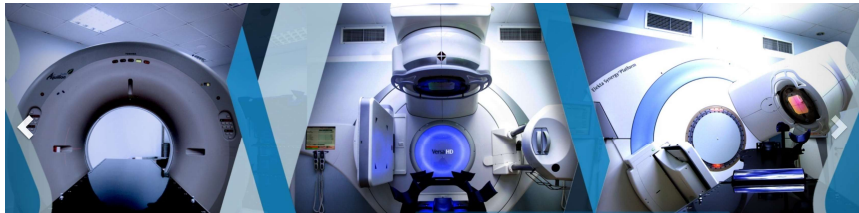
Intraoperative  
RT –kv  
20 ptnt /year



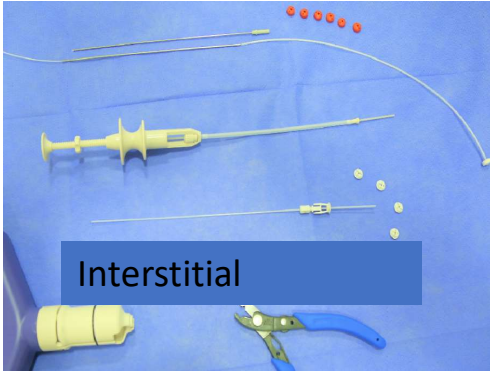
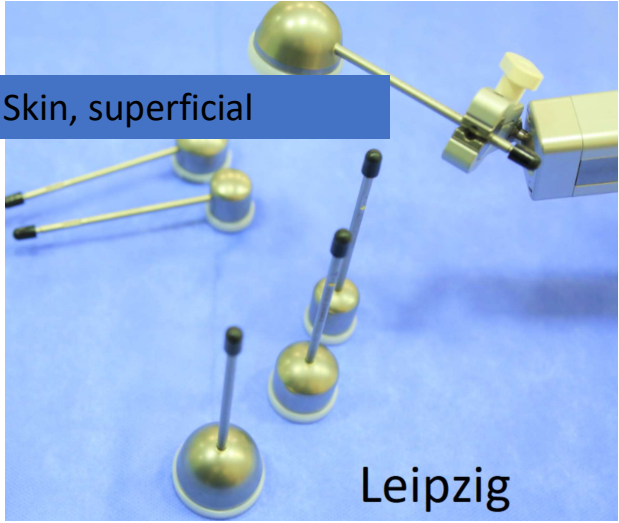
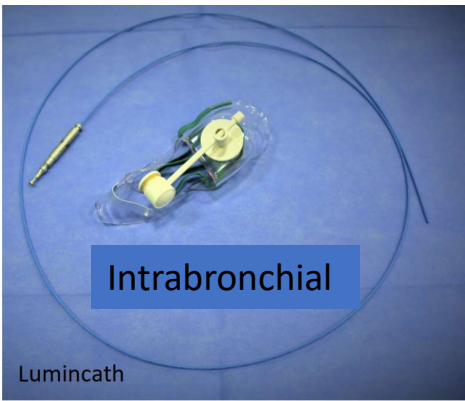
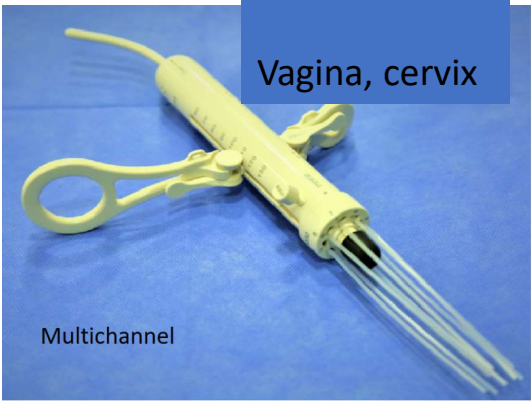
# Liv Hospital Radiation Medicine Center – Tbilisi - Georgia



1 Versa HD  
1 Synergy  
-750 ptnt/year



# What kind of applicator we have

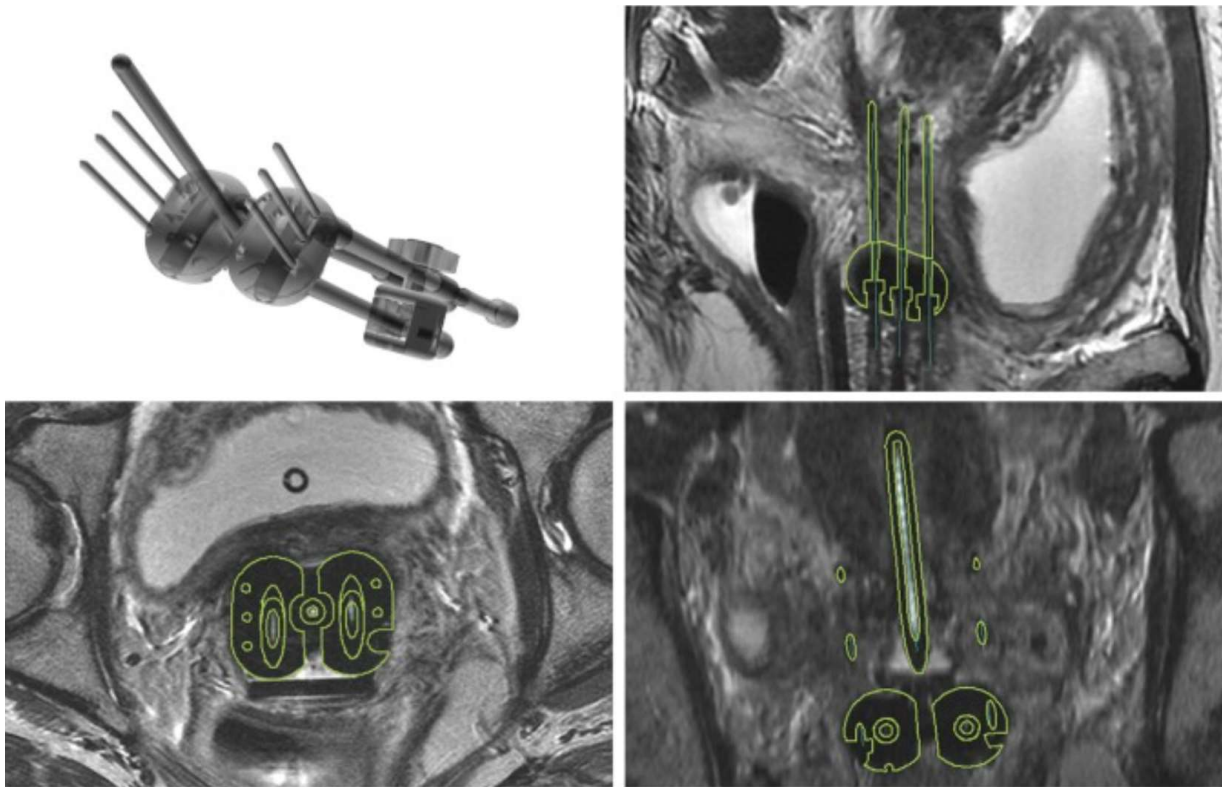


## Brachy patient distribution since april 2018

| Diagnosis   | Intracavitary                 | Interstitial                 | Superficial           |
|-------------|-------------------------------|------------------------------|-----------------------|
| Gyn         | 56 ptnt<br>(243 applications) | 15 Ptnt<br>(58 applications) |                       |
| Bronchus    | 2 ptnts<br>(2 appl.)          |                              |                       |
| Soft tissue |                               | 2 ptnts<br>(9 appl.)         |                       |
| Skin        |                               |                              | 5 ptnts<br>(37 appl.) |
| Prostate    |                               | 1                            |                       |

# What is Utrecht Aplicator

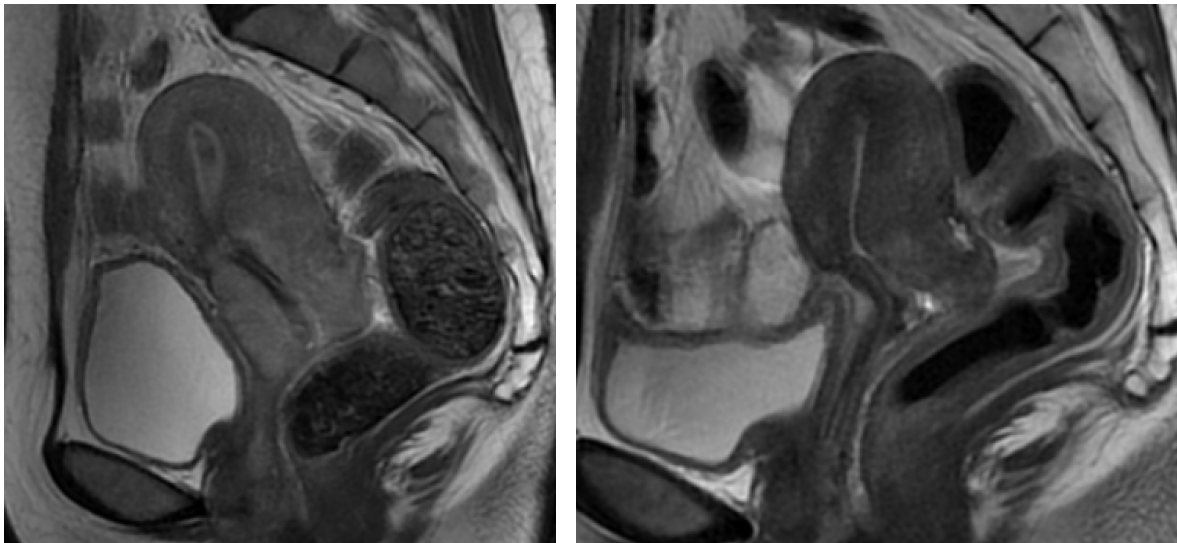
- Kind of Fletcher with parametrial needles



Richart, Rep. of Pract. Oncology & Radiotherapy, 2018

# Selecting patient for Utrecht

- Case with narrow vagina (i.e.: not fit for Ring)
- Residual parametrial disease or asymmetric regression
- Retrovert uterus

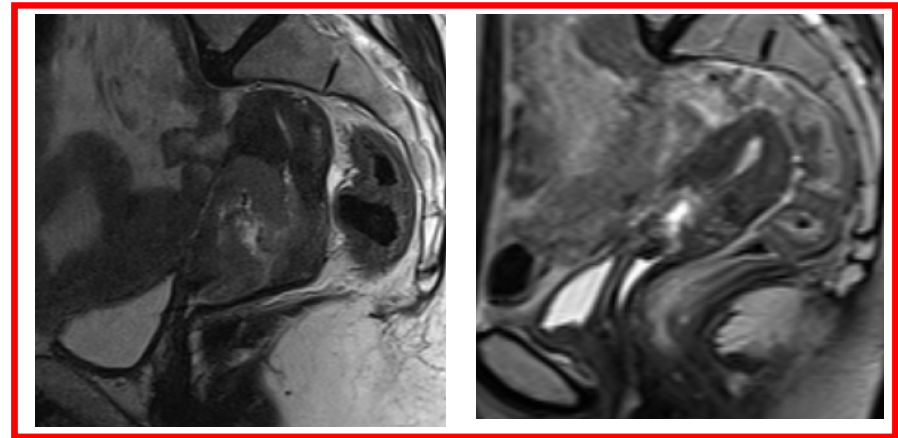
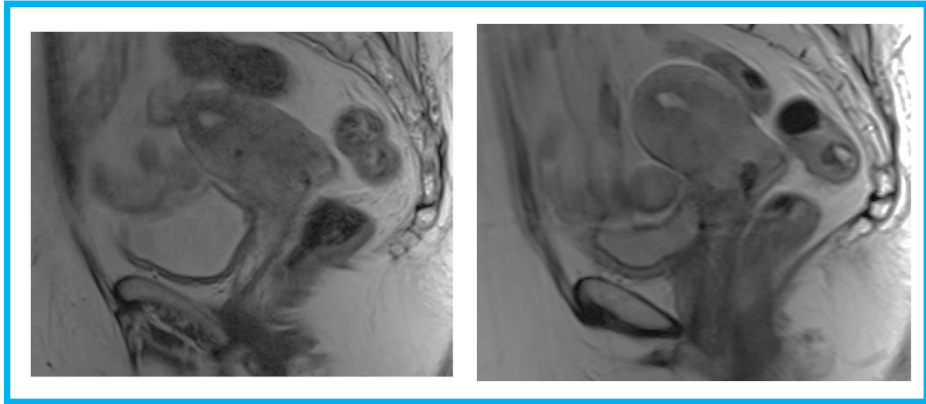
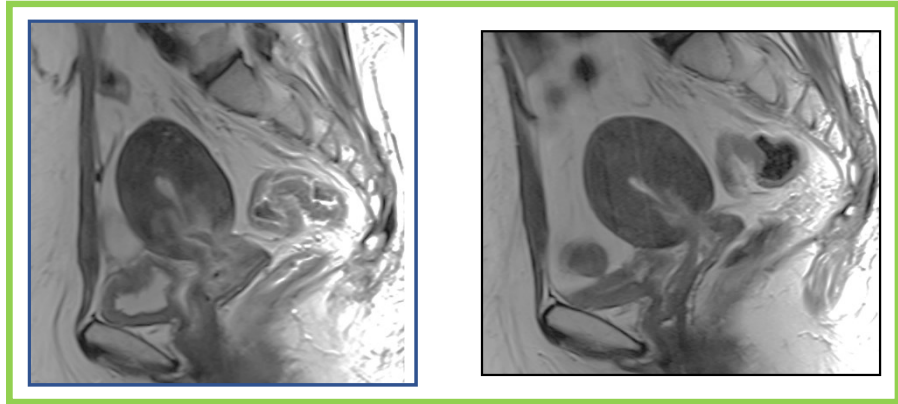
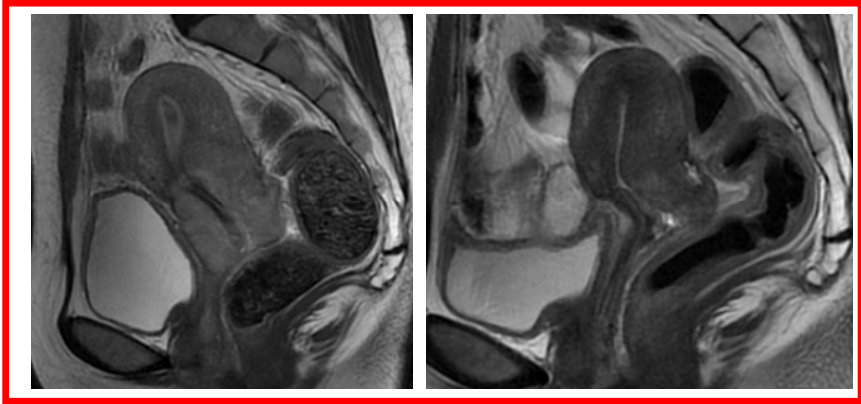


# Patient Preparation

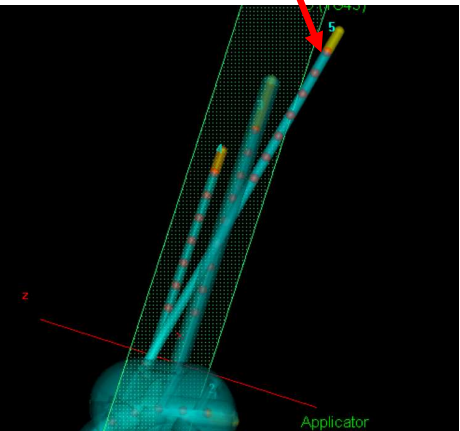
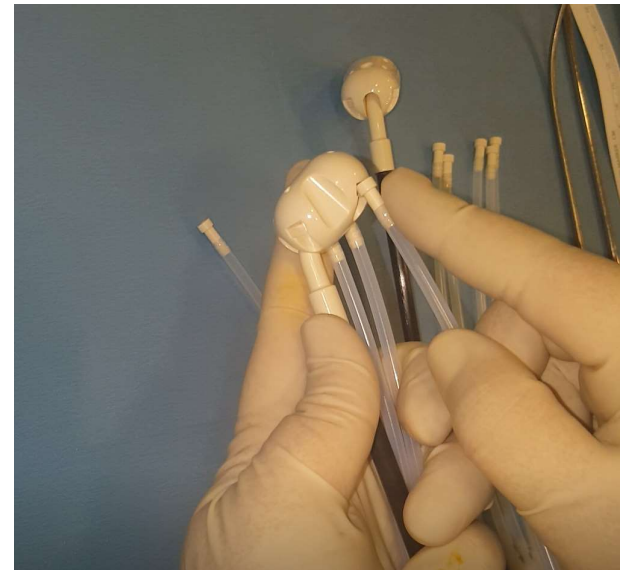
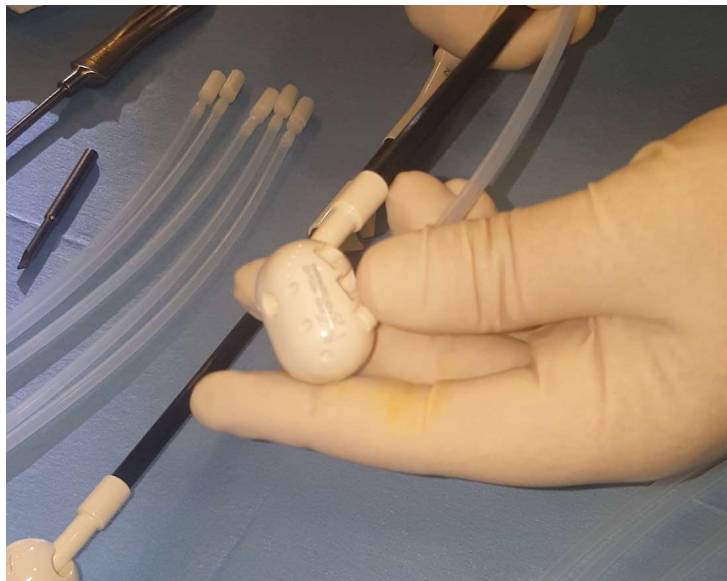
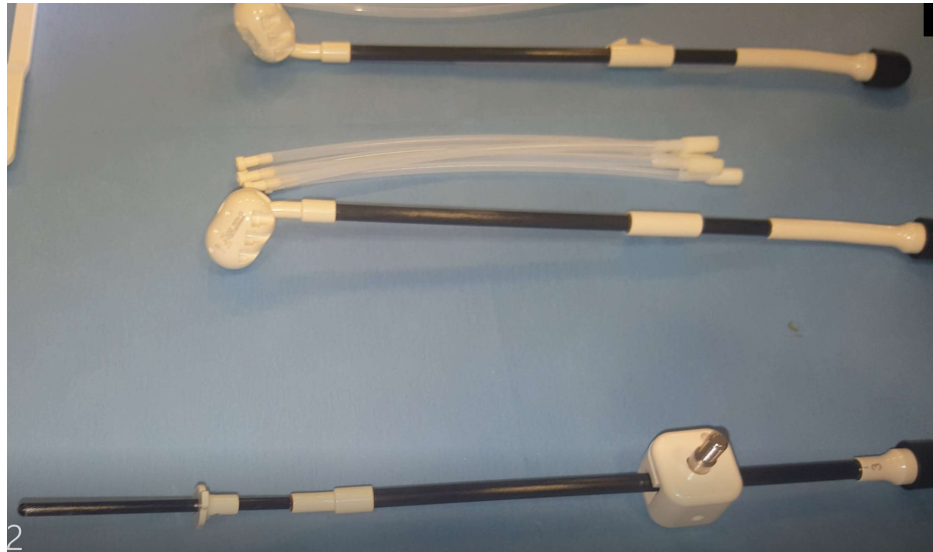
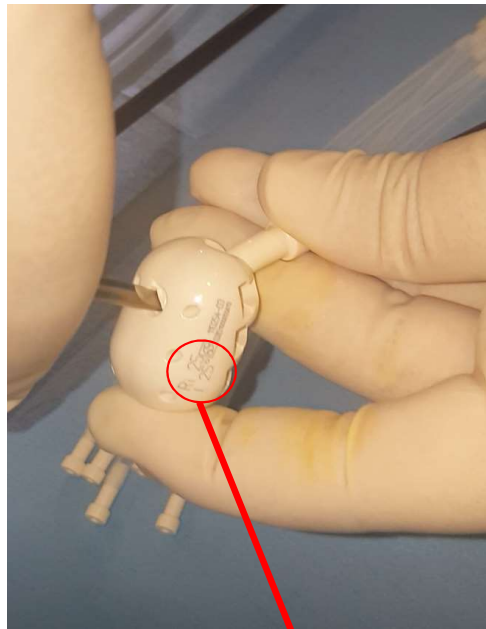
- Typical brachy timing is after EBRT (EBRT+brachy time < 8 weeks)
- Blood tests:
  - Plt: 100.000/more (<80.000 postpone)
  - Neutrophil 1000/ more
    - Between 500-1000 we did procedure but continue on ciprofloksasine 500 mg 2x1 after the procedure
  - Hgb 10 gr / dL more (< 9g/dL, we advice Erithrocyte infusion)
- Bowel: Rectal enema 1 time prev. night, 1 time procedure morning
- We used profilactic antibiotics (i.e. Ceftriaxon 500mg. during procedure)
- Sedo-Analgesia

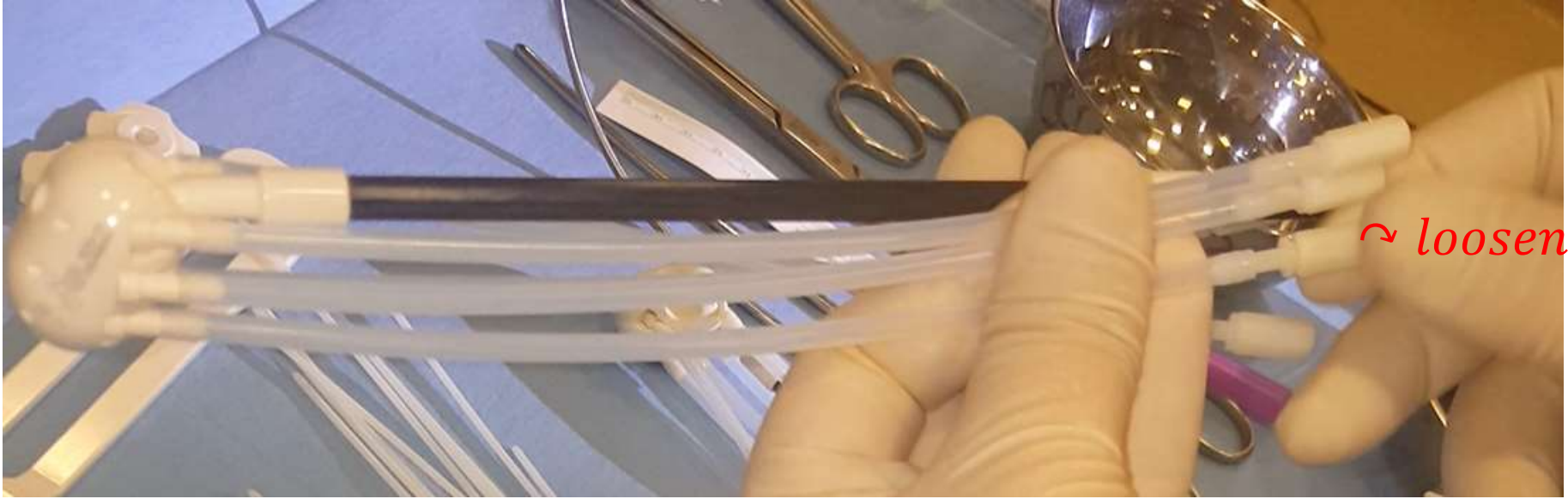
|                     | Midazolam | Aldolan (Petidin) |
|---------------------|-----------|-------------------|
| Aplicator Insertion | 2-3 mg    | 40-60 mg          |
| Needle Insertion    | 1mg       | 10-20 mg          |

# Pre EBRT and Post EBRT MRI

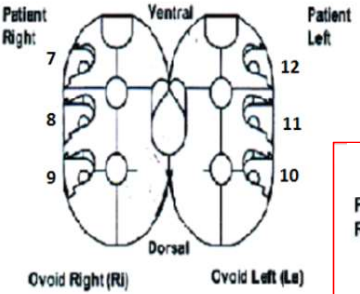




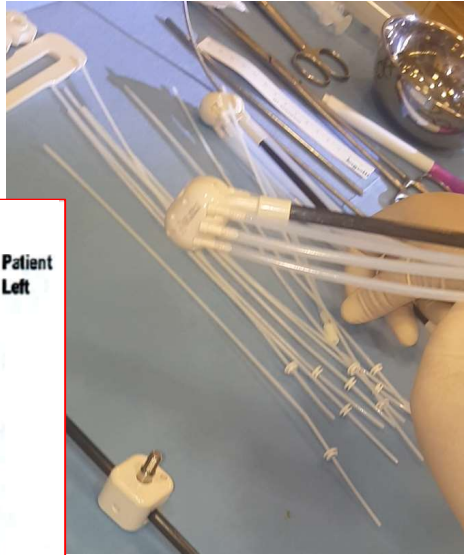
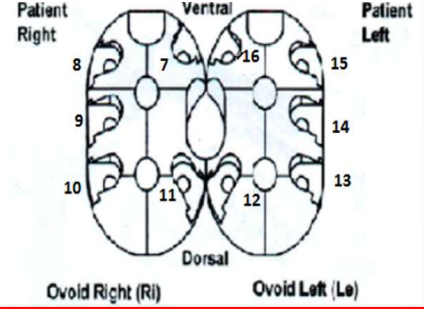




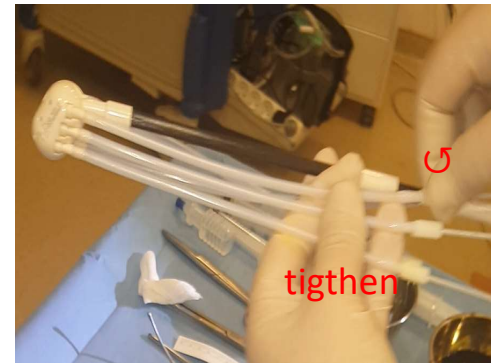
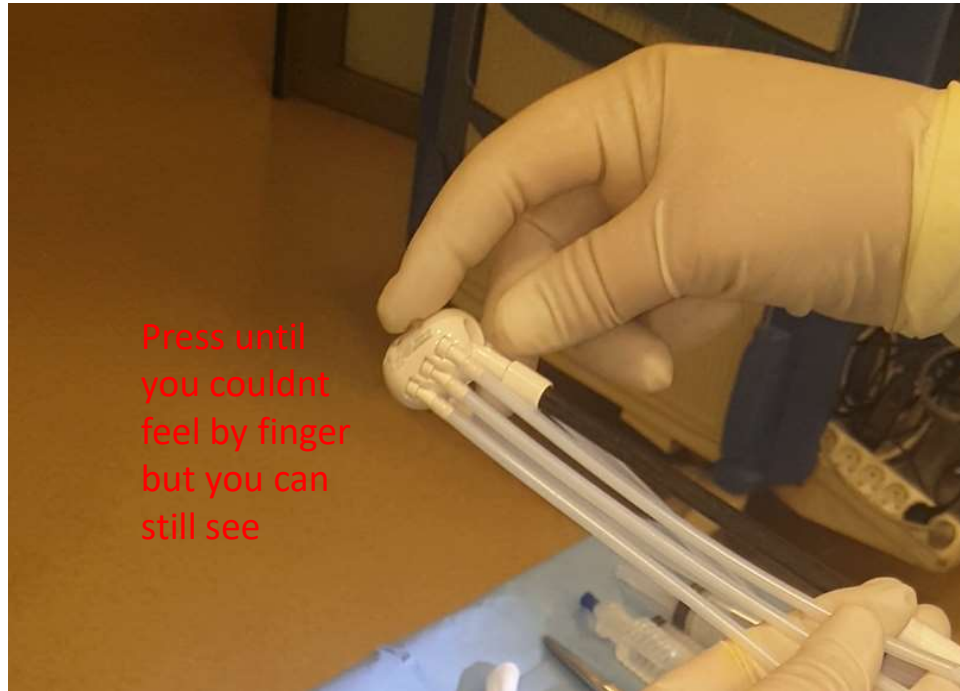
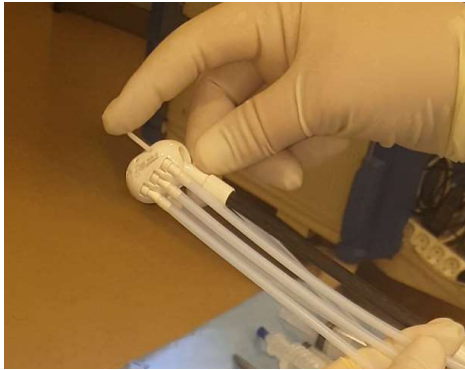
**Ovoid Diam. 15mm**

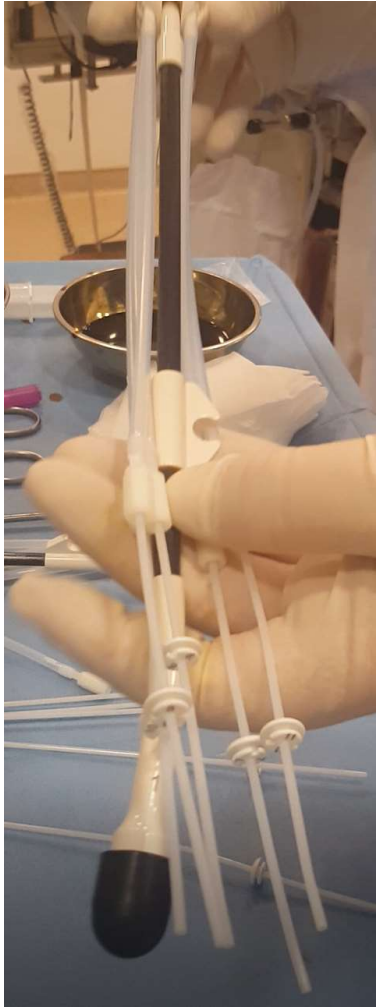


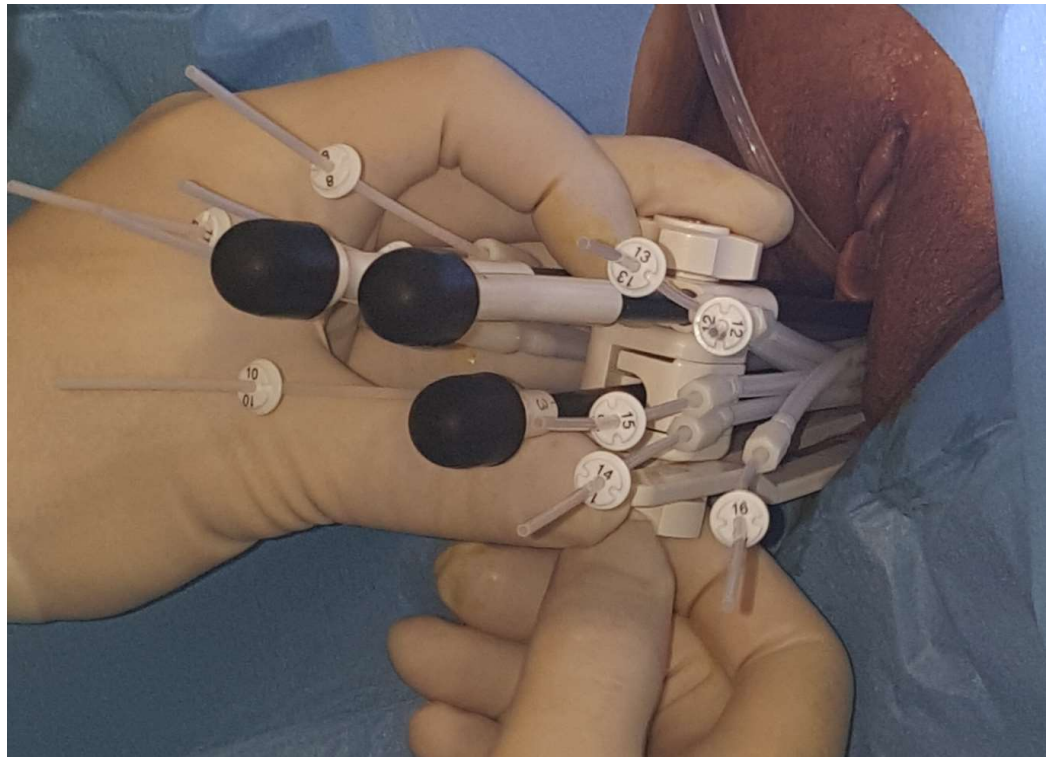
**Ovoid Diam. 20,25,30mm**



We have no experience with Sharp needle

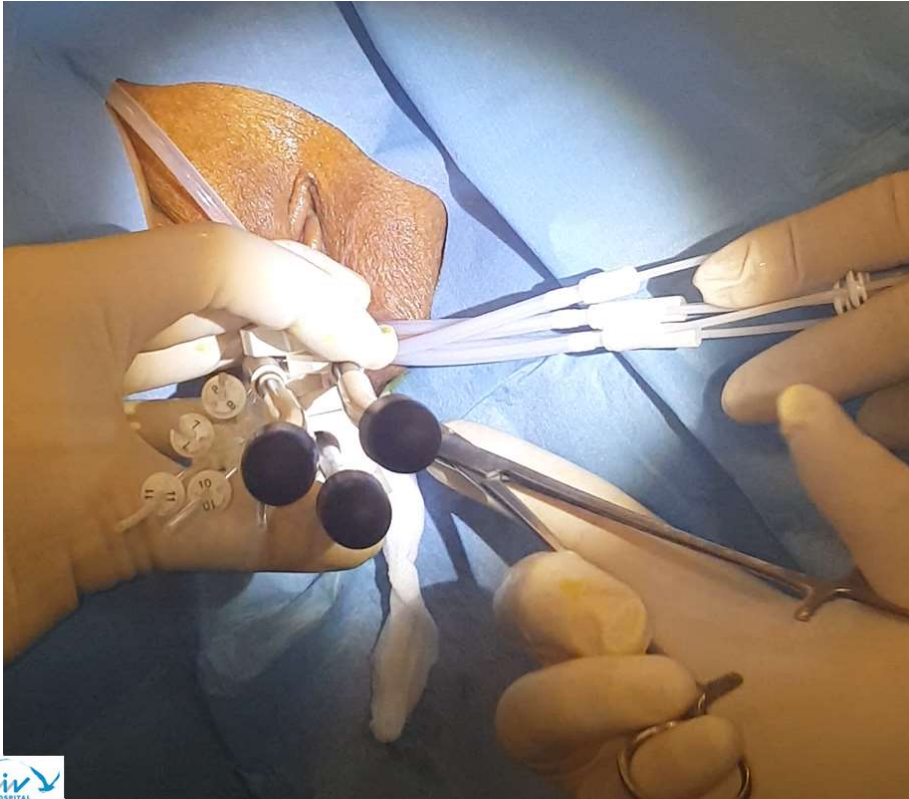






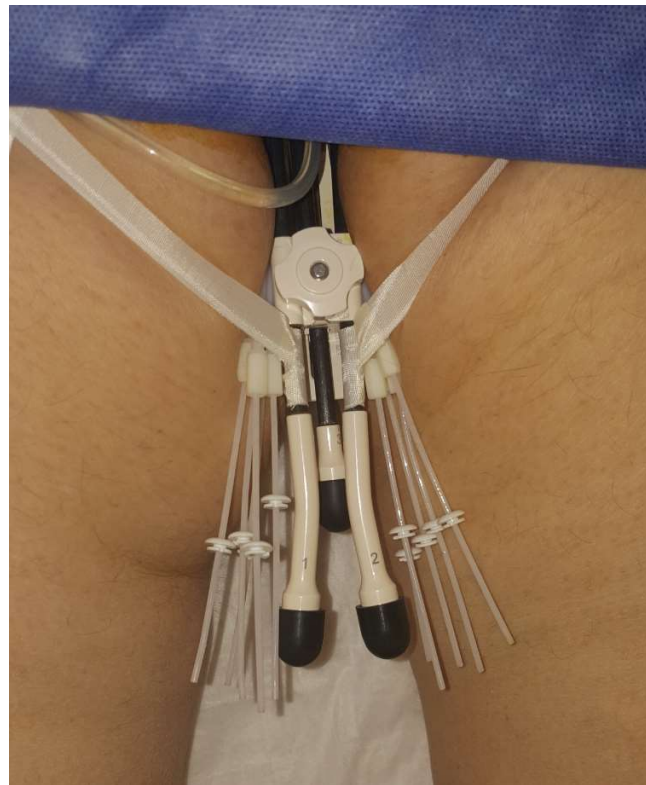
# Packing

- Esp. for vaginal Irradiation

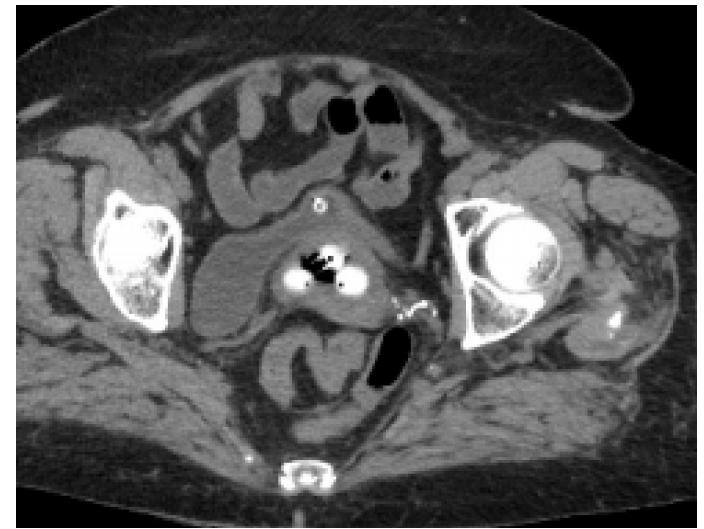
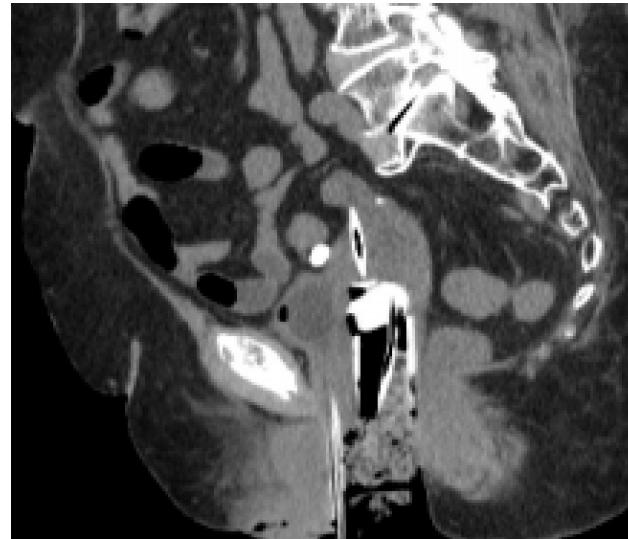


# Aplicator Immobilization

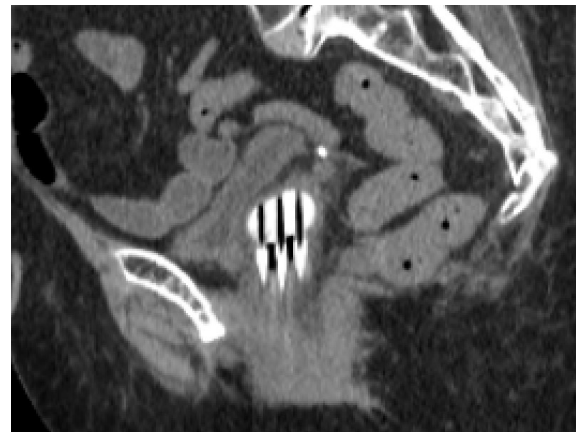
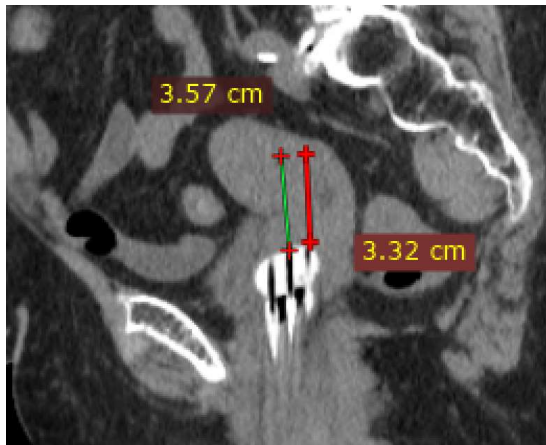
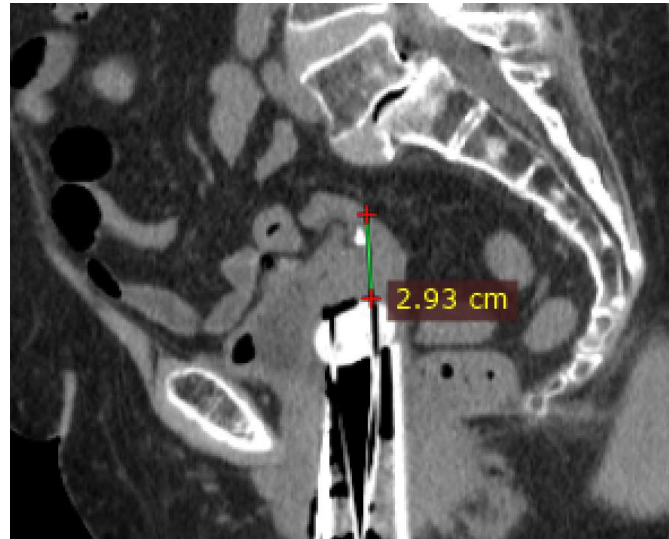
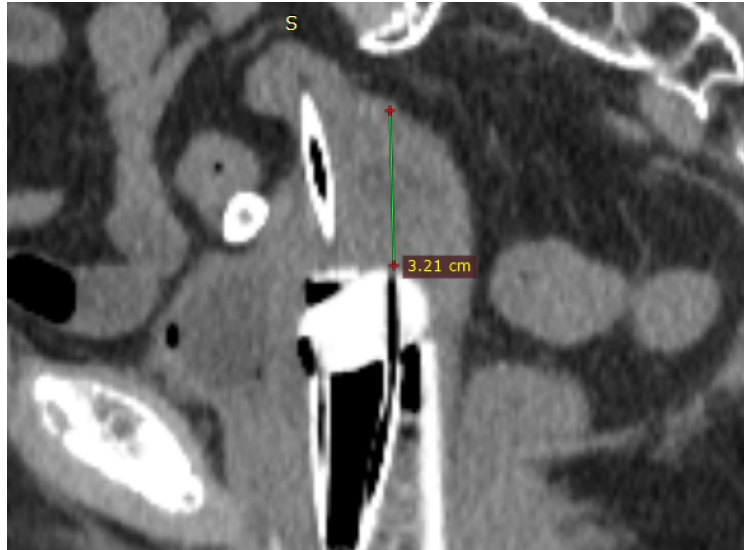
- We are using band fixation



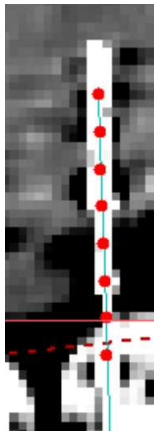
# Patient transferred to CT on the Roll-board





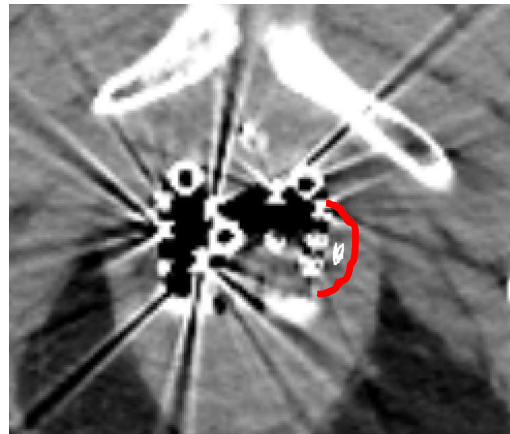
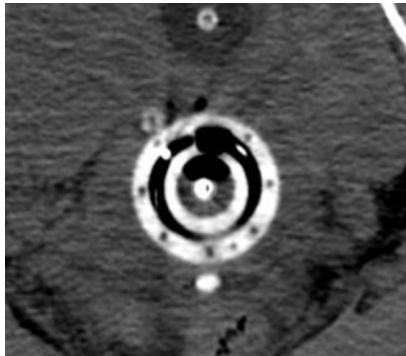


Don't forget off-set  
The distance  
between tip of the  
needle and first  
dwell pos.  
 $\approx 6$  mm but  
individual QA is  
mandatory



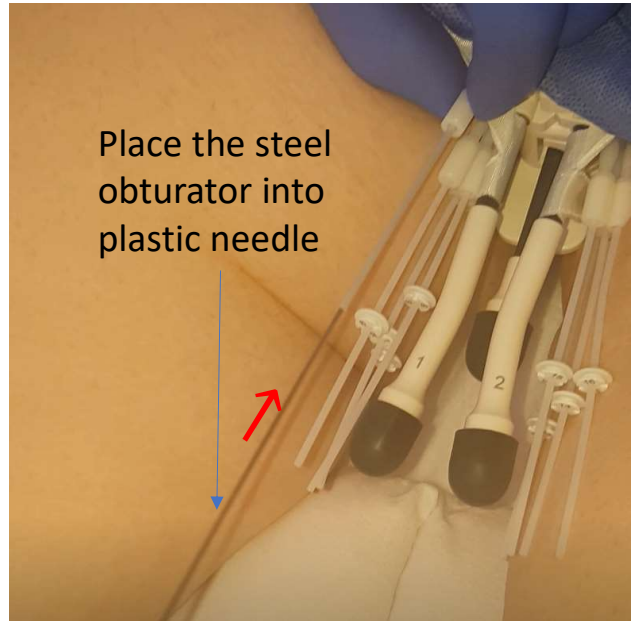
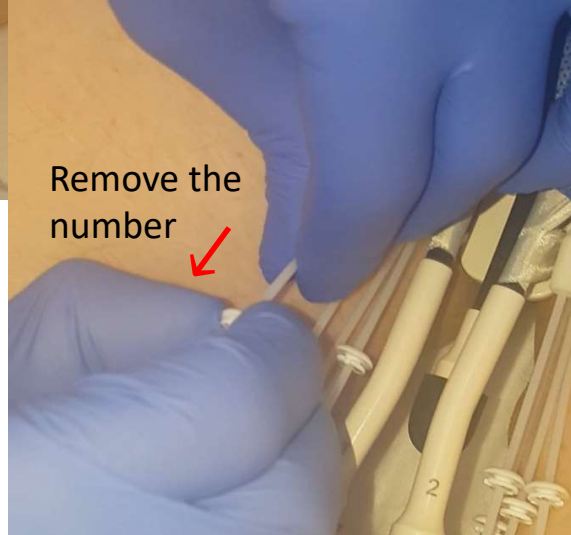
# Possible vaginal involvements

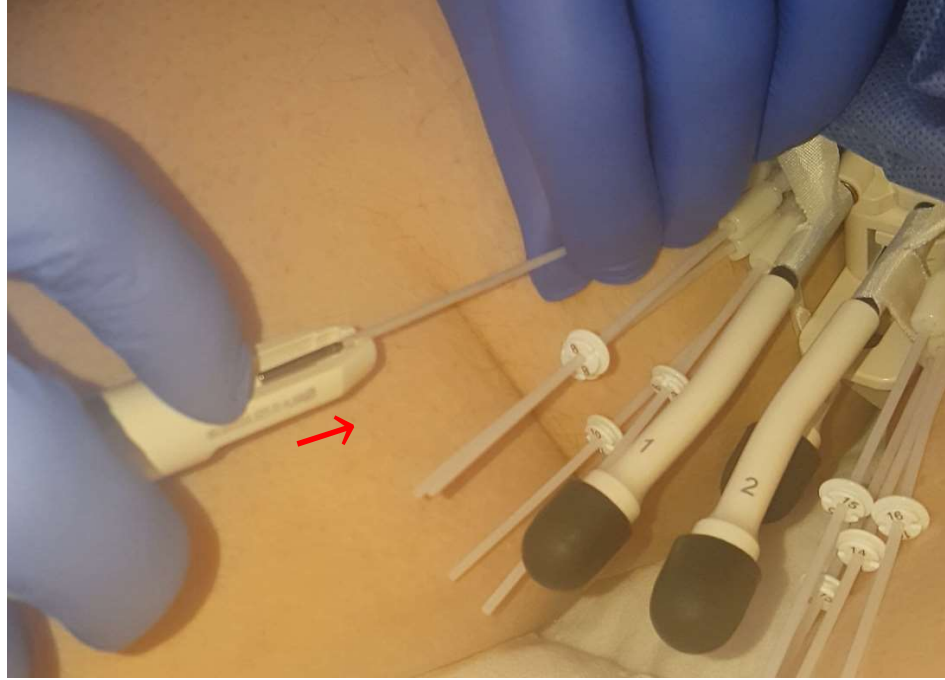
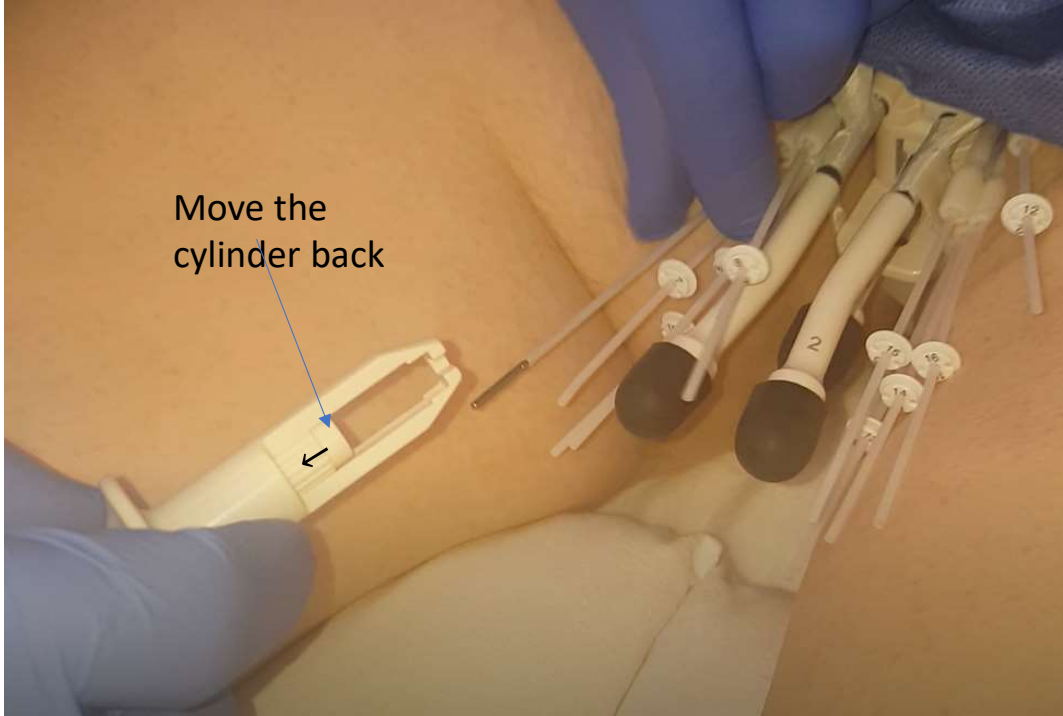
- Could be added by vaginal markers
  - Silver marker
  - Trace IT<sup>®</sup>

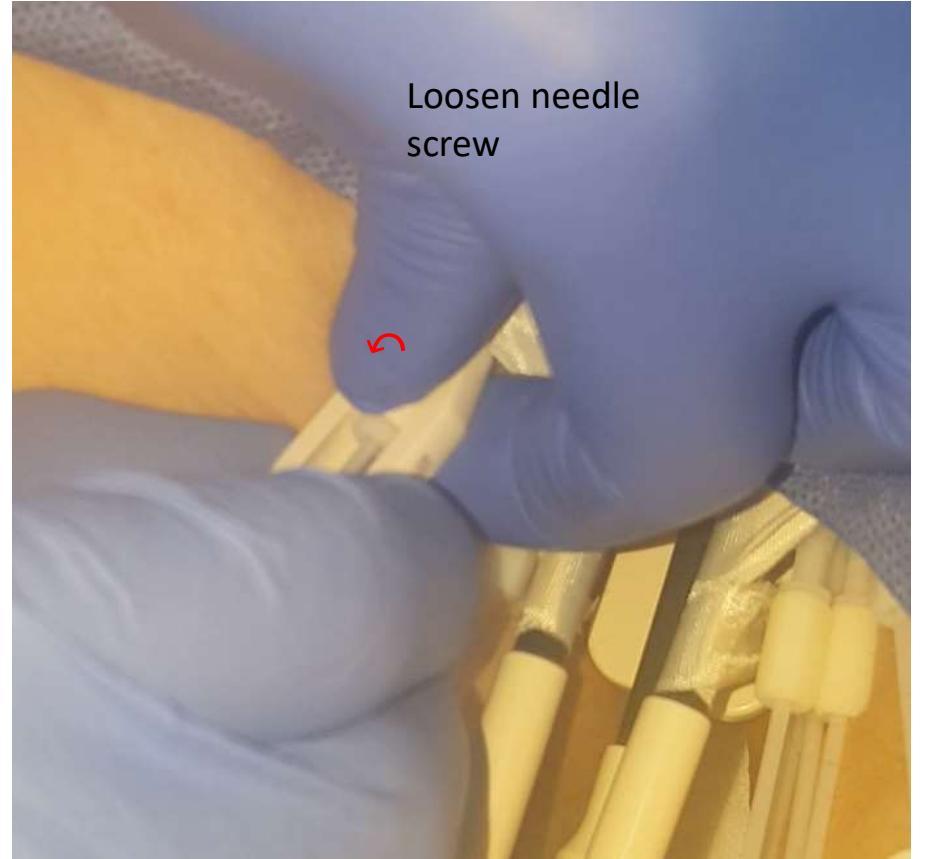
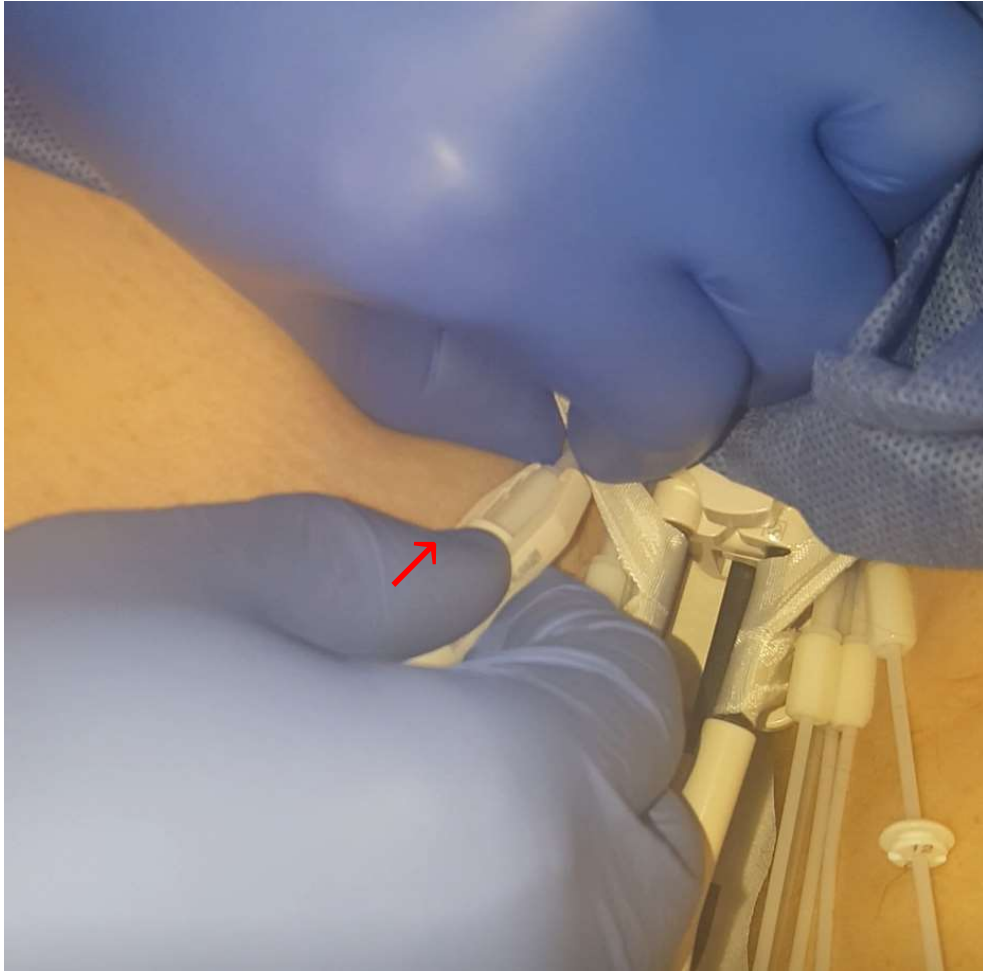


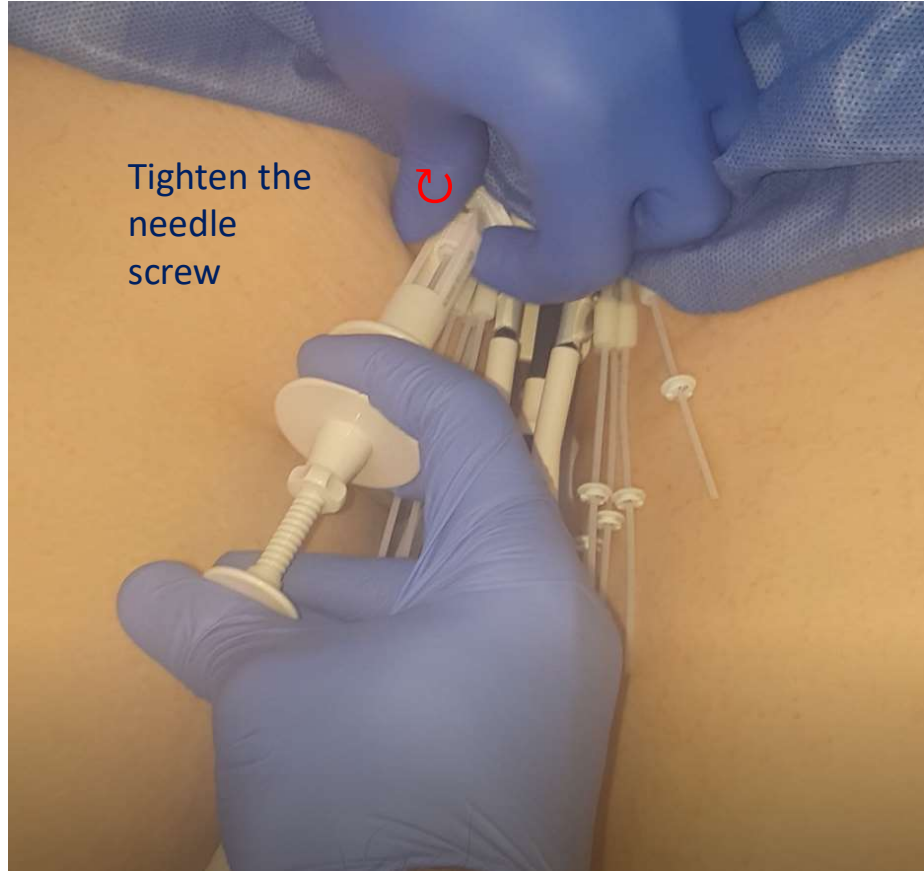
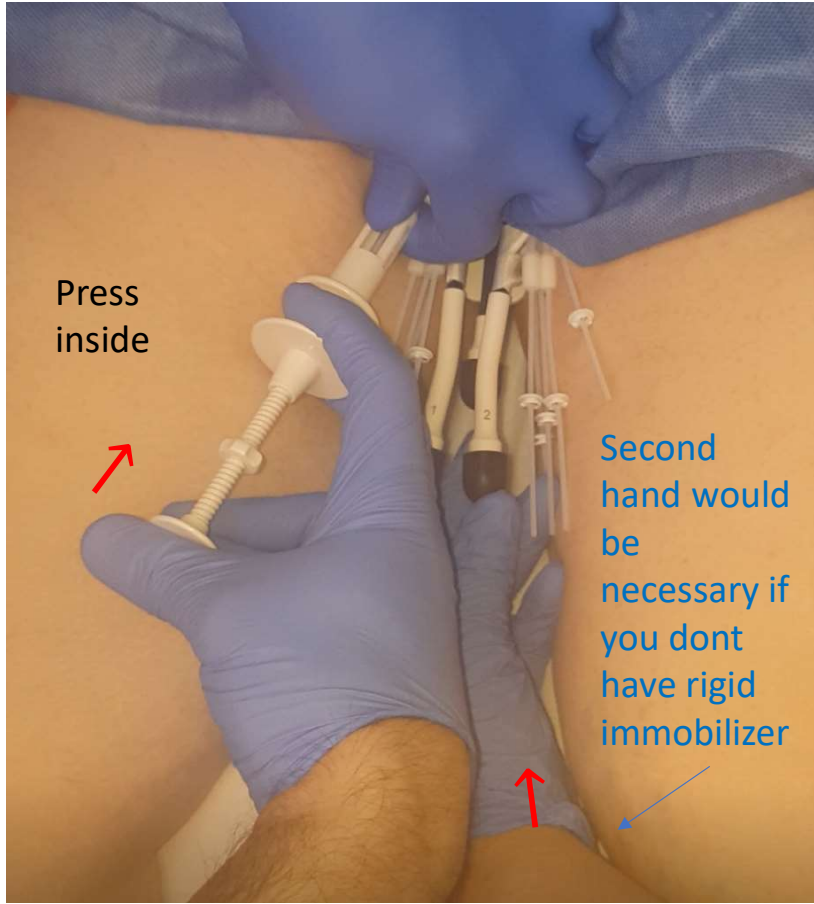
Paracervical needles  
go through vagina

You can give dose to  
vagina if needed

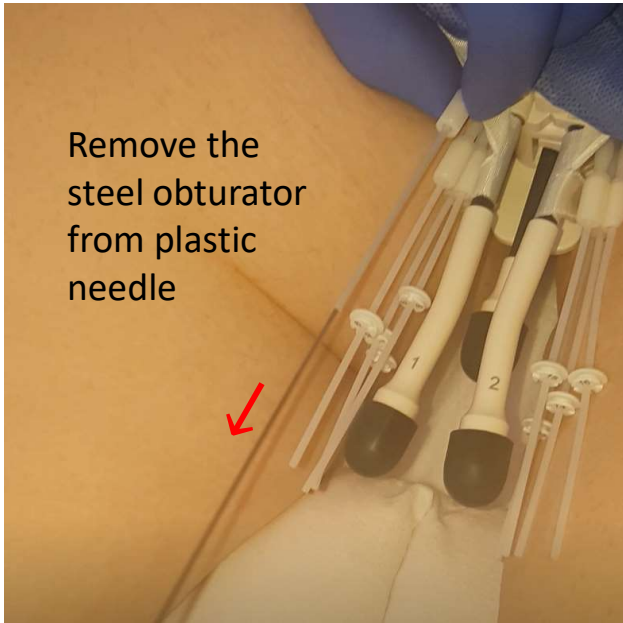




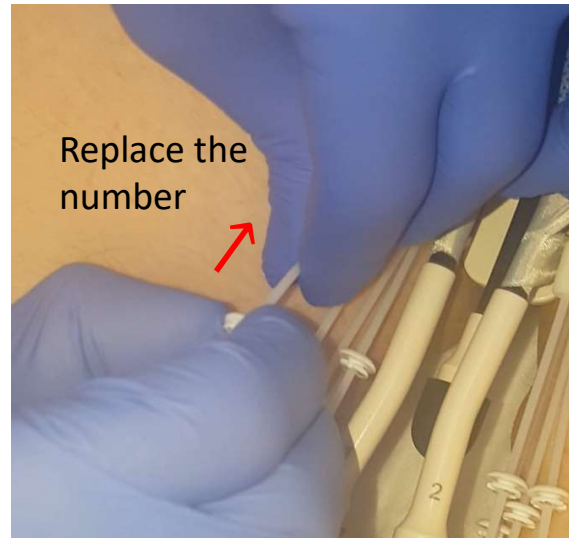




Remove the  
steel obturator  
from plastic  
needle

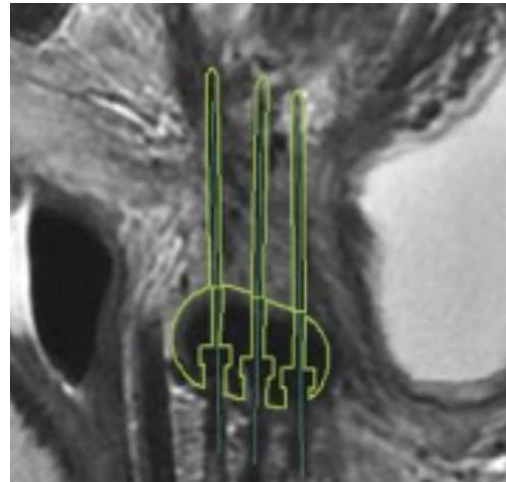
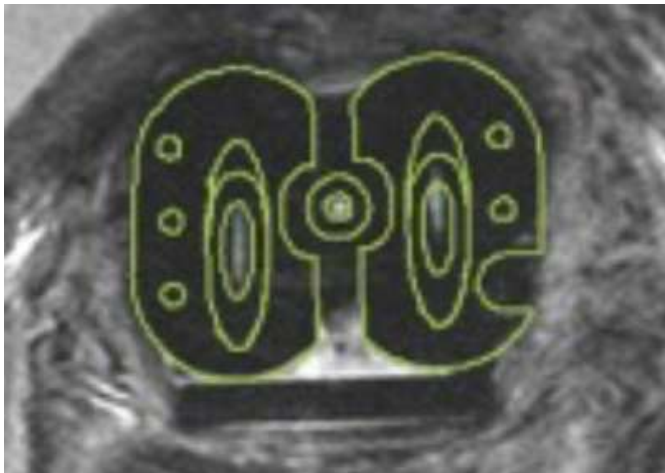


Replace the  
number

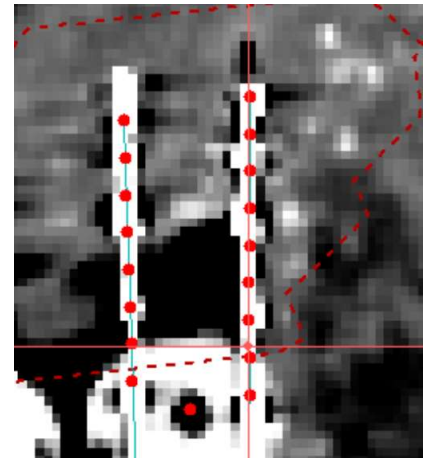
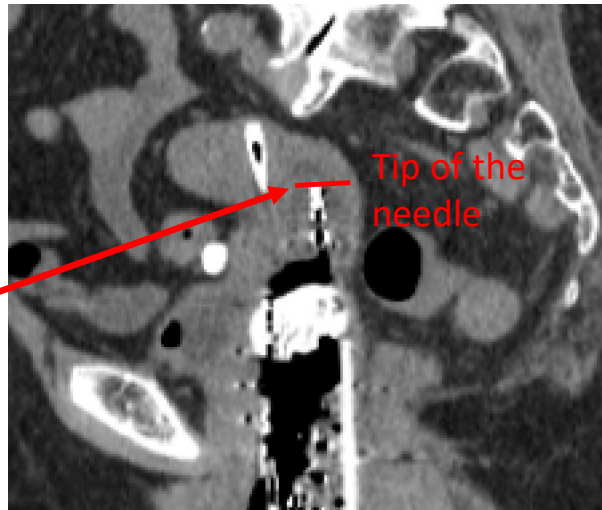
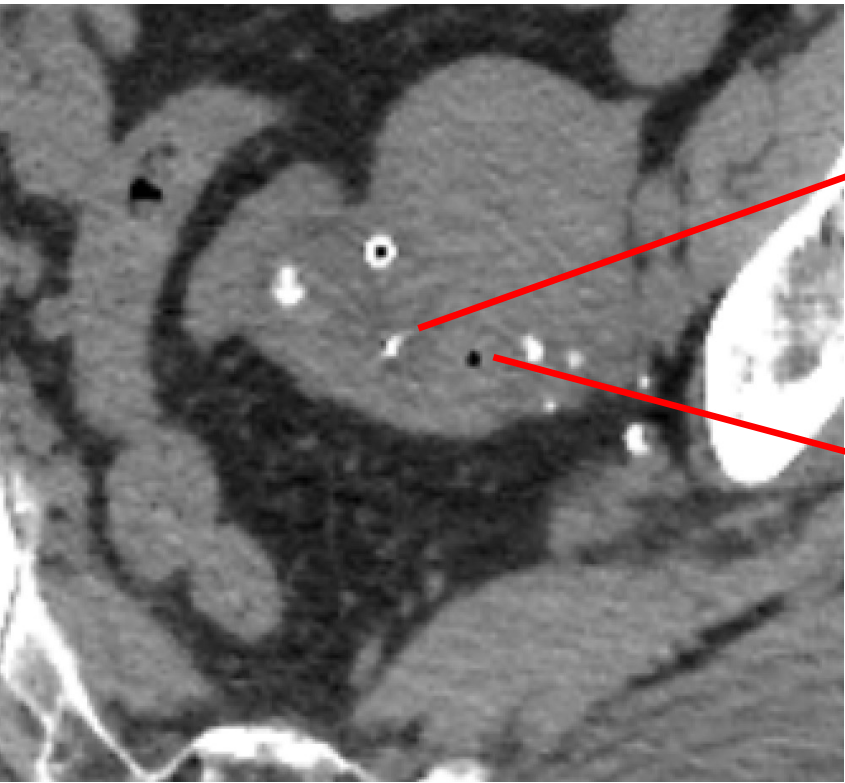


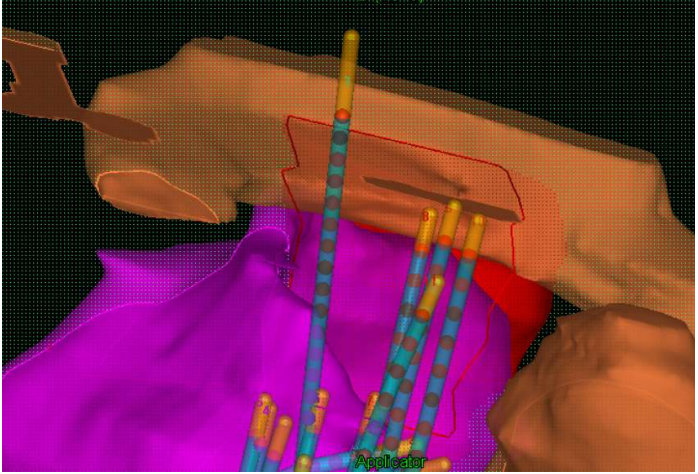
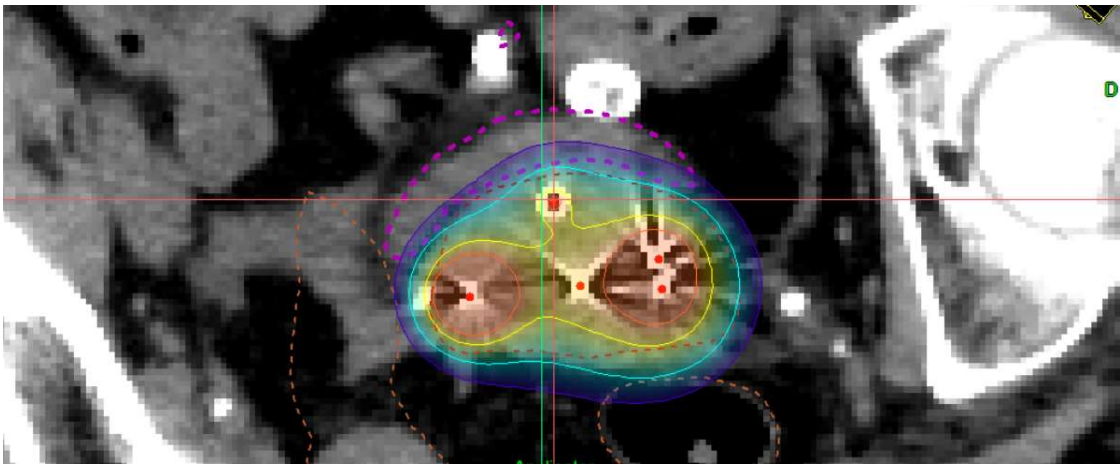
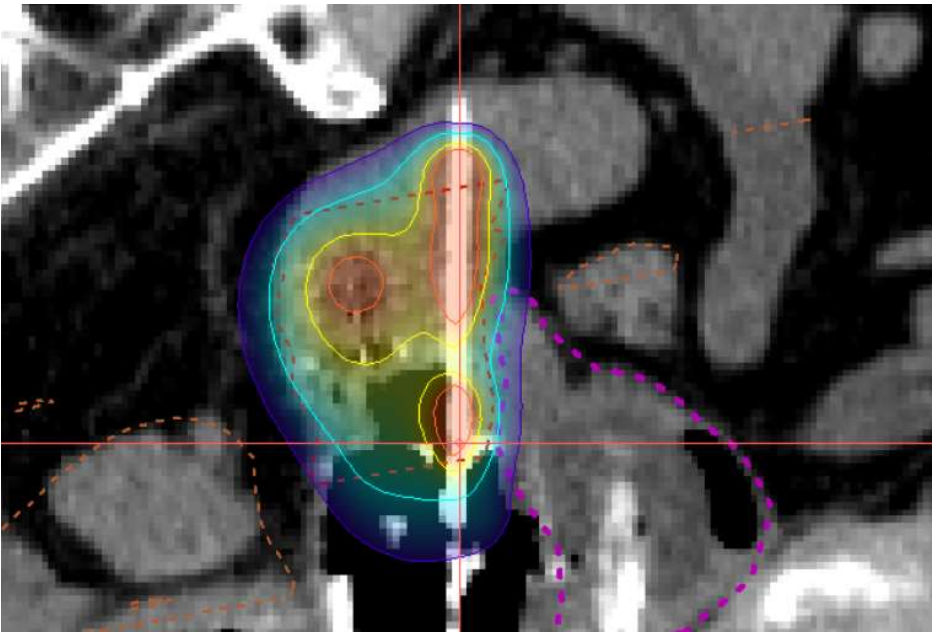
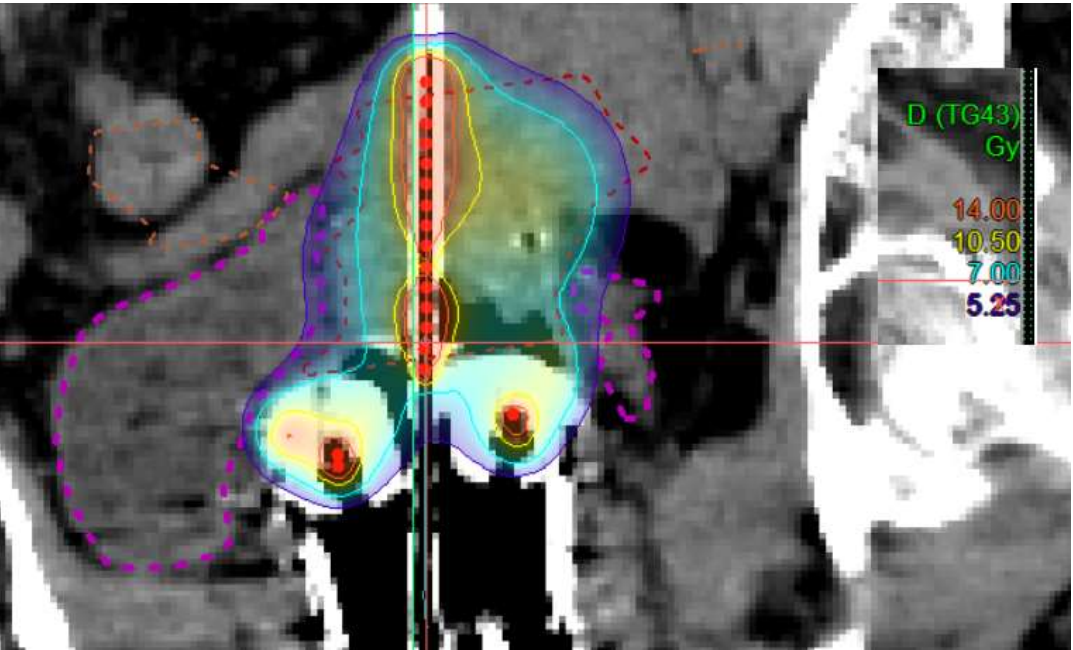
# Aplicator Library

- We used Library for applicator reconstruction
- But needles should be reconstructed by Physicists manually









We try to get EMBRACE values

CTV HR D90 EQD2 >85

rectum/sigmoid 2cc EQD2 <70

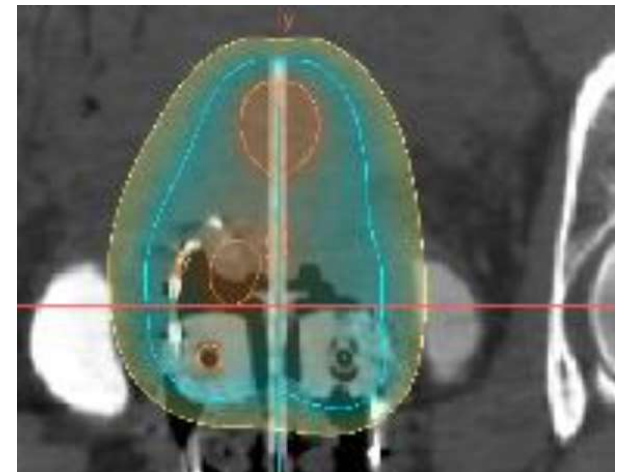
Bladder 2cc EQD2 <90

Total 15 cases with 57 applications

|      | Number of needles/fr | Dose/fr Gy | Number of fr | External+Brachy CTV HR D90 EQD2 ( $\alpha/\beta : 10$ ) | Bladder 2cc EQD2 ( $\alpha/\beta : 3$ ) | Rectum 2cc EQD2 ( $\alpha/\beta : 3$ ) | Sigmoid 2cc EQD2 ( $\alpha/\beta : 3$ ) |
|------|----------------------|------------|--------------|---|---|--|---|
| Mean | 4                    | 7          | 4            | 88  | 79,6                                    | 66                                     | 75                                      |
| Min  | 1                    | 6          | 3            | 75,06   | 59,63                                   | 55,27                                  | 57,47                                   |
| Maks | 10                   | 8,5        | 4            | 95,36   | 88,9                                    | 81                                     | 83,53                                   |

# Complications (15 cases with 57 app. )

- Hemorrhage
  - No arterial, some case has venous drops.
    - 1 case pressure was needed for venous hemorrhage
    - No level of Hgb changes.
- Infection
  - None (we continue on antibiotics if neutrophyl 500-1000)
- Perforation
  - None
- Bending of the needle 3 of 193 needles





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# Radiotherapy and Oncology

journal homepage: [www.thegreenjournal.com](http://www.thegreenjournal.com)



## Needle use and dosimetric evaluation in cervical cancer brachytherapy using the Utrecht applicator

Milena Smolic\*, Chèrita Sombroek, Monique C.W.M. Bloemers, Baukelien van Triest, Marlies Anton Mans

*Department of Radiation Oncology, The Netherlands Cancer Institute, Amsterdam, The Netherlands*



- Mid ventral needles may not necessary unless gros reziduel disease
- Bigger CTV (<30cc vs >30 cc) needs more needles
- Average needle intensity 22% (17% for smaller 29% for bigger CTV)
- Average number of needles is 4.8

# Conclusion

- Utrecht paracervical interstitial applicator is an effective and safe brachy method
- Still blind sending is being done whole world, the CT guidance during the needle sending is reasonable (i.e. Prevent for perforation)
- It could be helpful
  - to increase the coverage for asimetric and difficult targets
  - to decrease the OAR

Thank you

Спасибо

Teşekkürler



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[merdanfayda@yahoo.com](mailto:merdanfayda@yahoo.com)

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