

## **SURGERY: OPERATING ROOM**

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**Brachytherapy:** Radiation treatment delivered using a radioactive source close to the tissues being treated (usually the tumour).

**Methods of Delivery:** Interstitial e.g., prostate implant  
Intraluminal - e.g., lung and esophagus  
Intracavitary - e.g., vaginal vault  
Surface applicator - e.g., skin cancers

**Purpose:** To delivery a high dose to the tumour while allowing relative sparing of surrounding normal tissue.

HDR: High dose rate

LDR: Low dose rate

### **HDR Treatment for Cancer of the Uterus**

Radiation source - iridium ( $\text{Ir}^{192}$ )

Outpatient procedure

Standard treatment for endometrial cancer with brachytherapy:

- 25 external radiation treatments and 3 HDR treatments given from 3<sup>rd</sup> week of external beam OR:
- 3 HDR treatments given alone (700 cGy x 3)
- Delivered using a cylinder (standard size is 2.6cm diameter)

Potential side effects: cystitis, proctitis, vaginal stenosis

### **HDR Treatment of Cancer of the Cervix**

Radiation source:  $\text{Ir}^{192}$

Done as an inpatient procedure using a general anaesthetic

Standard treatment:

- 25 external radiation treatments concurrent with weekly cisplatin AND:
- 2 insertions, each delivering 2 fractions (separated by a minimum of 6 hours).

Potential side effects: cystitis, proctitis, rectal bleeding, uterine perforation, vaginal stenosis

### **HDR Treatment for Cancer of the Esophagus**

Radiation source:  $\text{Ir}^{192}$

Outpatient procedure with local anaesthetic - applicator #12 nasogastric tube with #6Fr-100cm intraluminal catheter inside.

Standard treatment:

- 3 internal radiation treatments 7 days apart
- Potential side effects: esophagitis, dysphagia

### **Prostate**

Radiation Source: Iodine-125 seeds  
95% of dose delivered over 7 months.  
Done as an outpatient procedure

Treatment criteria: PSA#10  
T1 or T2A  
Gleason #6  
Gland size < 50 cc

General/Spinal anaesthetic

Planning ultrasound - 4 weeks pre-implant

Average # seeds: 90-120

Average # needles: 20-25 (inserted transperineally through the template)

Potential side effects:

- early (1<sup>st</sup> 6 months) - dysuria, frequency, nocturia
- late (> 6 months) - dysuria, frequency (persistent) erectile dysfunction

### **HDR Treatment for Cancer of the Lung**

Radiation source: iridium (Ir <sup>192</sup>)

Outpatient procedure with IV sedation

Bronchoscopy with insertion of 6fr 150-cm intraluminal catheter through tumor site.

Standard treatment:

- 3 internal radiation treatments 7 days apart

Potential side effects - mild esophagitis

### **HDR Treatment for Skin Cancer**

Radiation source - iridium (Ir<sup>192</sup>)

Mould - special mould made in mould room or standard mould available in O.R.

Sources placed on mould and mould placed on skin.

Standard treatment - 5 treatments 7 days apart.

Most commonly done for physically/mentally compromised patients.

Potential side effects: dry to moist desquamation.

### **Gold Grain - for SCC lower hip**

Radiation Source: gold grains (Au <sup>198</sup>)

Outpatient procedure under local anaesthetic

Usual treatment - 10-12 gold grains with a semi-circle implant

Potential side effects - moist desquamation, mucositis