Palliative RT in Ovarian cancer

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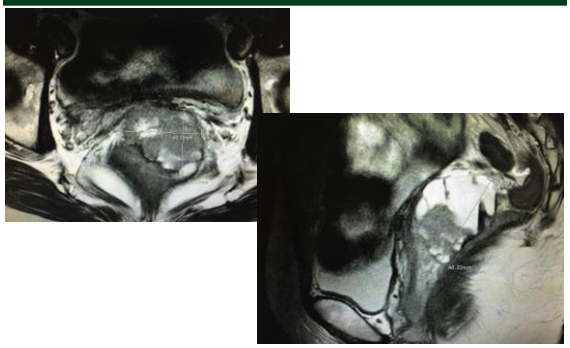
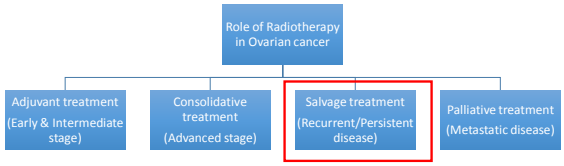
Outline

- Case discussion
  - Salvage treatment
  - Palliative treatment
- Radiation Techniques

Case discussion



Role of RT in ovarian cancer



Salvage treatment

- Adding radiotherapy for localized disease after chemotherapy or after a complete remission may help in improving the outcome in selected patients.

Asian Pac J Cancer Prev, **15 (12)**, 4759-4763

Involved-Field Radiation Therapy for Locoregionally Recurrent Ovarian Cancer

Aaron P. Brown, M.D.[a], **Anuja Jhingran, M.D.**[a], **Ann H. Klopp, M.D., Ph.D.**[a], **Kathleen M. Schmeler, M.D.**[b], **Pedro T. Ramirez, M.D.**[b], and **Patricia J. Eifel, M.D.**[a]

102 women, treated with a definitive RT dose of ≥45 Gy

Sites treated with RT, no (%)	
Pelvis	
Pelvic LN	10 (10)
Vaginal cuff	21 (21)
Other pelvic mass	23 (23)
Abdomen	
Paraaortic LN	27 (26)
Abdominal wall mass	2 (2)
Other abdominal mass	6 (6)
Inguinal LN	10 (10)
Supraclavicular LN	2 (2)
Mediastinal LN	1 (1)

Histology, no (%)	
Serous	55 (54)
Mixed	17 (17)
Endometrioid	10 (10)
Clear cell	8 (8)
Mucinous	5 (5)
Other	7 (7)

RT indication, no (%)	
Treatment of gross disease	73 (71)
Postoperative treatment	16 (16)
Consolidation after chemotherapy	13 (13)

Gynecol Oncol. 2013 August ; 130(2): 300–305.

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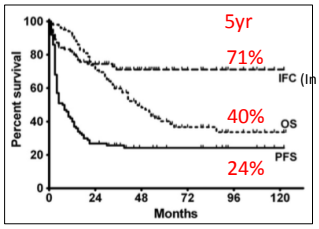

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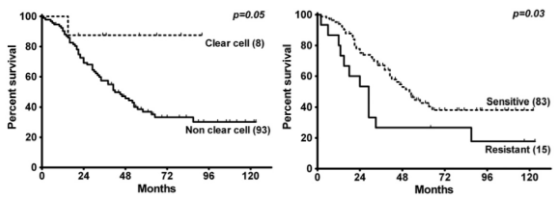

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Pathology	Site of recurrence	Radiation dose (Gy)	Month of none evidence of recurrence after salvage therapy
Serous	Vaginal cuff mass	56 Gy	87
Serous	Vaginal cuff mass	64.4 Gy	79

patients continuously disease free after involved-field RT (n=25)

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- Definitive IFRT can yield excellent local control, protracted disease-free intervals, and cures in carefully selected patients.
- Patients with clear cell histology may be particularly good candidate for definitive treatment.
  - In fact, of 13 patients disease free for at least 5 years after IFRT, 11 had serous or mixed histologies.
- Surgery may be useful for patients with large-volume disease.
- Definitive RT should be strongly considered if complete resection is unlikely since anything less than complete resection.

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Epithelial ovarian cancer: definitive radiotherapy for limited recurrence after complete remission had been achieved with aggressive front-line therapy

Katsuya YAHARA[1], Takayuki OHGURI[1,*], Hajime IMADA[2], Shinsaku YAMAGUCHI[1], Toshinori KAWAGOE[3], Yusuke MATSUURA[3], Toru HACHISUGA[3] and Yukunori KOROGI[1]

Site(s) of the limited recurrence	
One site	19 (70)
Paraaortic LN	8 (36)
Douglas' pouch	5 (19)
Vagina	4 (15)
Iliac LN	2 (7)
Two sites	8 (30)
Iliac and paraaortic LN	4 (15)
Douglas' pouch and inguinal LN	1 (4)
Douglas' pouch + paraaortic LN	1 (4)
Vagina + liver	1 (4)
Douglas' pouch and spleen	1 (4)
Recurrent tumor size (cm)	
Median (range)	3.0 (1.0–6.1)
Histological type	
Serous adenocarcinoma	16 (59)
Non-classified adenocarcinoma	6 (22)
Clear cell carcinoma	5 (19)
Radiotherapy	
External irradiation alone	25 (93)
Median total dose (Gy, range)	60.0, 50.0–61.2
Median daily dose (Gy, range)	2.0, 1.8–2.0
External irradiation plus brachytherapy	1 (4)
Brachytherapy alone	1 (4)

Journal of Radiation Research, 2013, 54, 322–329

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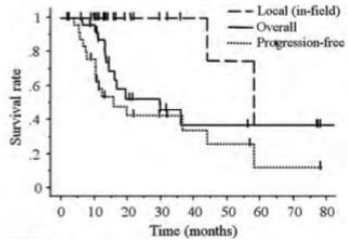

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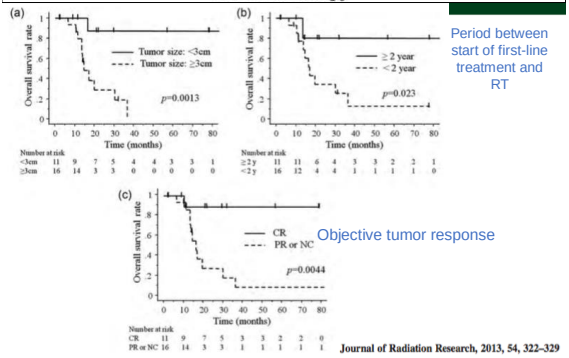

Period between start of first-line treatment and RT

Objective tumor response

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- In conclusion, definitive RT for limited recurrence of epithelial ovarian cancer achieves a better local control rate without severe toxicity, and it may therefore be a potentially effective modality for inducing long-term survival in selected patients.
  - The tumor size(< 3 cm),
  - period between front-line therapy and RT (≥2 year) and
  - objective tumor response (CR) were significant prognostic factors of the overall survival rate.

Journal of Radiation Research, 2013, 54, 322–329

Radiation Techniques

Type of Radiotherapy

- Source of radiation

Source	Type	Example
Radioactive	• Gamma rays • Beta rays	• Cobalt-60 • Iridium-192 • Cesium-137
Machine	• X rays • Particle beam	• Linear accelerator (Linac) • Cyclotron

Megavoltage irradiation

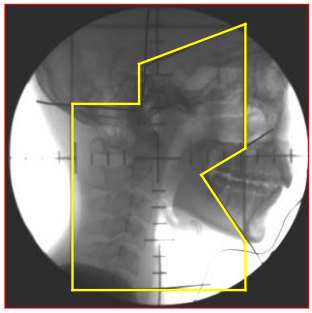
Cobalt-60

Linac

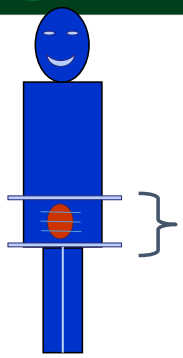
เทคนิคของรังสีรักษาในปัจจุบัน

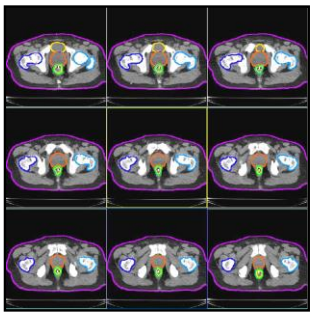
- Conventional RT
- 2 Dimensional RT
- 3 Dimensional Conformal RT (3DCRT)
- Intensity Modulated RT (IMRT)
- Volumetric Modulated Arc Therapy (VMAT)
- Image Guided RT (IGRT)

Conventional RT



3 Dimensional Conformal RT (3DCRT)





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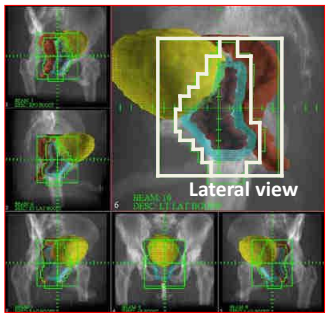

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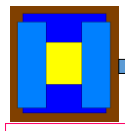
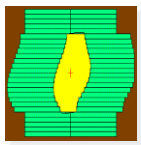
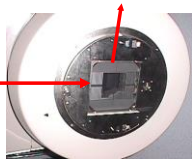


Conventional blocking



Multileafs collimator



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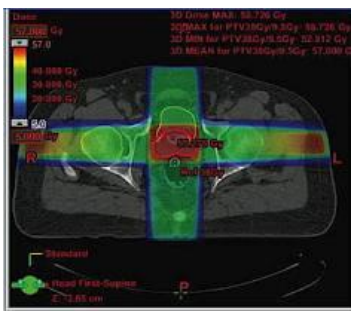
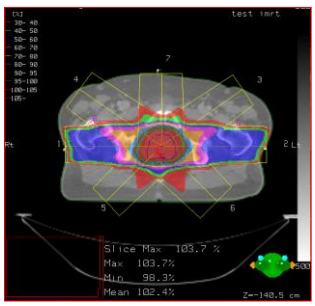


Intensity Modulated Radiotherapy (IMRT)



Volumetric Modulated Arc Therapy (VMAT)

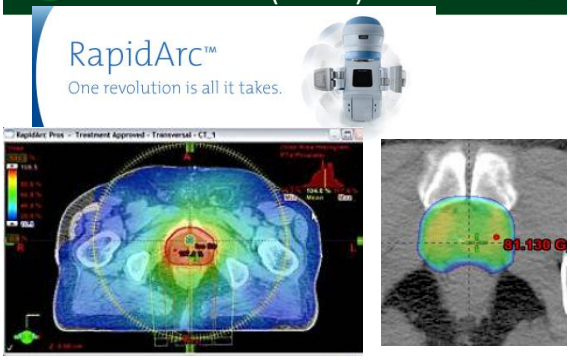


Image Guided RT (IGRT)

On-board Imaging (OBI)

Stereotactic Body Radiotherapy (SBRT)

Cyberknife

Basic Principle of Brachytherapy

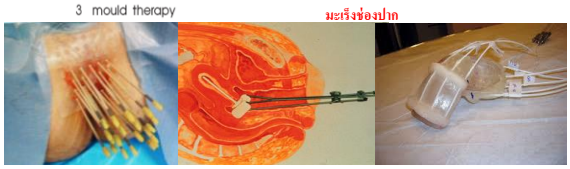
เทคนิคในการรักษาด้วยรังสีระยะใกล้

สำหรับเทคนิคในการรักษาด้วยรังสีระยะใกล้หรือ brachytherapy สามารถแบ่งออกตามเทคนิควิธีการใช้ได้ ดังนี้

1 implantation หรือ interstitial radiation มะเร็งต่อมลูกหมาก

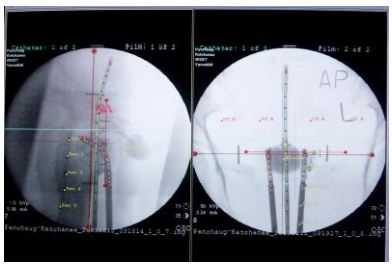
2 intracavitary มะเร็งปากมดลูก

3 mould therapy มะเร็งช่องปาก



Brachytherapy techniques

- Conventional technique

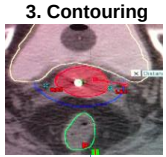


Process of 3D brachytherapy

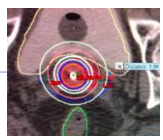
1. Applicators Insertion

2. Imaging: CT/MR

3. Contouring



4. Planning and Dose constriants



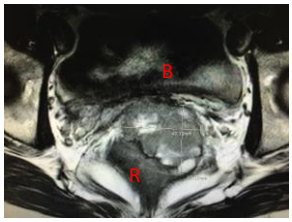
5. Delivery

HDR Procedure

5. Treatment delivery

Case discussion

- Definitive IFRT should be considered a tool in the curative management of locoregionally-recurrent ovarian cancer in carefully selected patients.
  - Clear cell histology
  - Sensitive to chemotherapy
  - After complete remission
  - The tumor size(< 3 cm)
  - Period between front-line therapy and RT (≥2 year)



VMAT+/-BT: at least 60Gy

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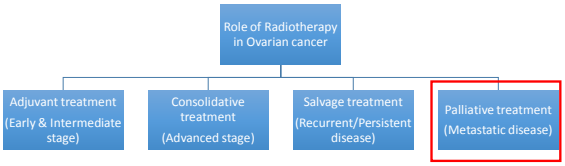
Role of RT in ovarian cancer



Palliative treatment

- Women may often present with pain, bleeding, abdominal symptoms which are usually unmanageable with chemotherapy alone.
- Radiotherapy has been used in the palliation of symptoms in advanced recurrent ovarian tumors.

EFFECTIVE PALLIATIVE RADIATION THERAPY IN ADVANCED AND RECURRENT OVARIAN CARCINOMA

ALFRED TINGER, M.D.,* TANISHA WALDRON,* NANCY PELUSO, B.S.,* MICHAEL J. KATIN, M.D.,* DANIEL E. DOSORETZ, M.D.,* PETER H. BLITZER, M.D.,* JAMES H. RUBENSTEIN, M.D.,* GRACIELA R. GARTON, M.D.,* BRUCE A. NAKFOOR, M.D.,* STEPHEN J. PATRICE, M.D.,* LINUS CHUANG, M.D.,† AND JAMES W. ORR, JR., M.D.‡

	n
Indications*	
Mass	23
Pain	22
Obstruction	12
Brain metastases	11
(+) Second look	9
Ascites	8
Vaginal/rectal bleeding	7
Lymphedema	3
Skin metastases	1
Sites of radiation	
Abdomen/pelvis	62
Brain	11
Bone	3
Peritoneum (P-32)	2
Chest	1
Skin	1

Int. J. Radiation Oncology Biol. Phys., Vol. 51, No. 5, pp. 1256–1263, 2001

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Table 4. Summary of response rates

Response rates	
Complete	28%
Partial	45%
Stable disease	16%
Progressive disease	11%
Response rates by symptoms	
Mass (n = 23)	74%
Pain (n = 22)	77%
Neurological symptoms (n = 13)	92%
Obstruction (n = 12)	75%
+ Second look (n = 9)	88%
Ascites (n = 8)	25%
Bleeding (n = 7)	100%
Lymphedema (n = 3)	0%
Skin involvement (n = 1)	100%

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Effective palliative radiotherapy for symptomatic recurrent or residual ovarian cancer

Choan E [a,b,c,*], Matthew Quon [c], Victor Gallant [a,b], Rajiv Samant [a,b,c]

Histology	Serous	24 (45%)
	Endometrioid	12 (23%)
	Mucinous	2 (4%)
	Mixed	2 (4%)
	Undiff	9 (17%)
	Other	4 (5%)
Symptom treated	Bleeding	25 (40%)
	Pain	23 (37%)
	Neurological	5 (8%)
	Edema	5 (8%)
	Respiratory	2 (3%)
	Other	2 (3%)

Gynecologic Oncology 102 (2006) 204 – 209

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Response rate

Symptom (pts)	Complete response	Partial response
Bleeding (25)	22 (88%)	3 (12%)
Pain (23)	15 (65%)	8 (35%)
Neurological (5)	4	1
Edema (5)	0	5
Respiratory (2)	1	1
Others (2)	0	2

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Effective palliative radiotherapy for symptomatic recurrent or residual ovarian cancer

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Studies of palliative radiotherapy for ovarian cancer

Study	Year	No. pts	RT courses	Prior chemo?	Time of RT	RT dose	Response rate
Hodson [10]	1983	1	1	N/A	1977–1981	10 Gy × 3 f, monthly	Bleeding 1/1
Adelson [11]	1987	42	42	40 pts	1977–1984	10 Gy × 1–3 f	Bleeding 15/21, pain 11/20, edema 1/5
May [12]	1990	26	43	All	1977–1987	N/A	Bleeding 4/5, pain 12/18, dyspnea 3/4, GI obstruction 7/11, lower extremity edema 0/2, neurological 2/3
Corn [14]	1994	33	47	All	1987–1993	8–40 Gy	Bleeding 9/10, pain 15/18, respiratory 3/4
Geiblum [15]	1998	33	33	All	1980–1995	3–59 Gy	Bleeding 9/9, pain 5/5, dyspnea 1/1, leg edema 1/1, ureteric obstruction 1/1
First [16]	2001	23	23	~50%	1971–1996	41–63 Gy	Vaginal bleeding 8/8, 79% overall
Tinger [17]	2001	72	72	~100%	1983–1989	4.5–57.6 Gy	Bleeding 7/7, pain 22/22, lymphedema 0/3, obstruction of hollow organ 9/12
Fujiwara [18]	2002	14	14	All	1995–1999	40–68 Gy	Overall 7/14, pain 4/5, bleeding 1/1, pressure 0/4, obstruction 0/2, edema 2/2
E	2005	53	62	55 courses	1990–2003	5–52.5 Gy	Pain 23/23, bleeding 25/25, neurological 4/5 CR, edema 5/5 PR

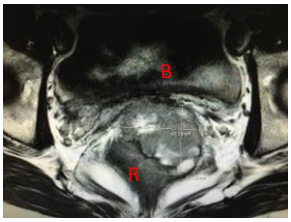
Bleeding and Pain: response rate > 50%

Gynecologic Oncology 102 (2006) 204 – 209

Case discussion

- Radiotherapy may also be used in palliation of symptoms which cannot be taken care by chemotherapy alone.

3D-CRT: 30Gy/10F



Conclusion

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  - Clear cell histology
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Thank You