



Clinical benefits of IMRT

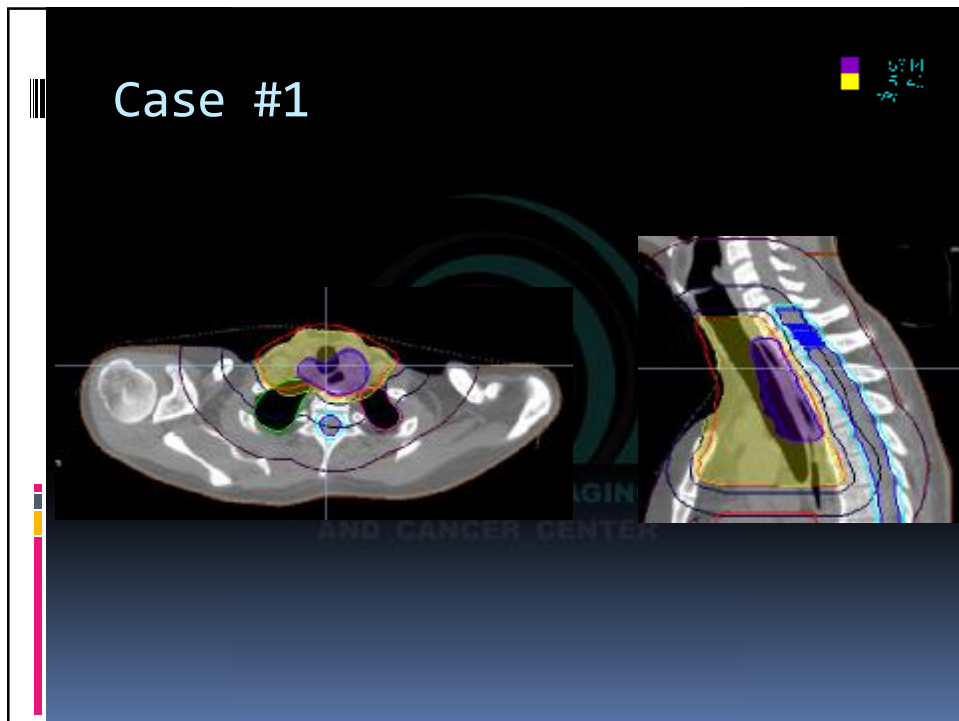
Evidence behind use of intensity-modulated radiotherapy: a systematic review of comparative clinical studies

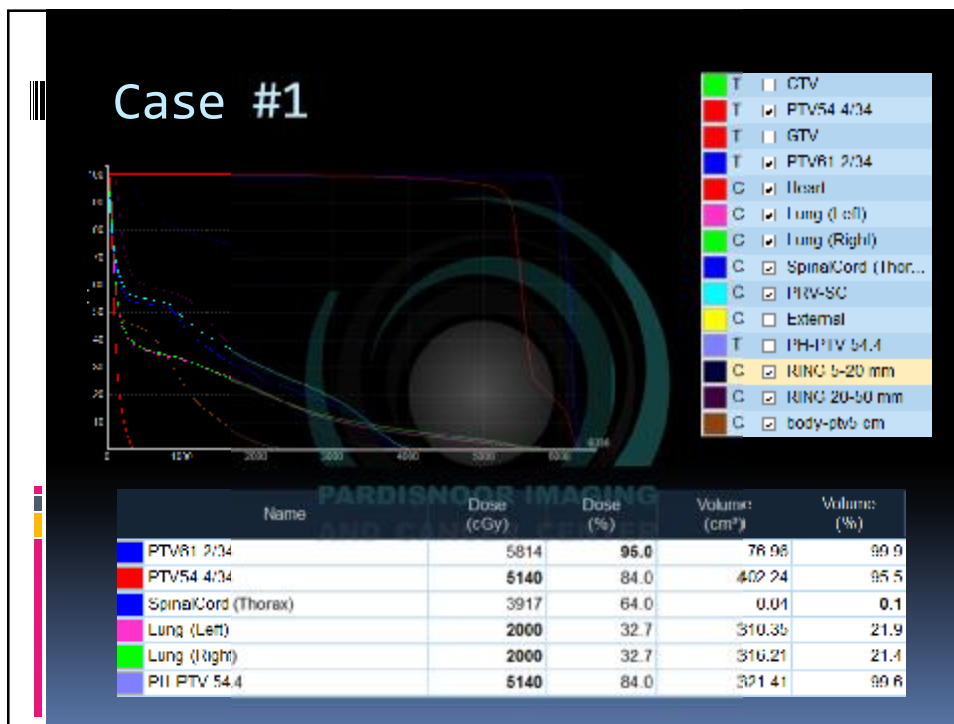
Clinical Oncology, 2019; 31(1): 1-11

Overview: A Review of the Clinical Evidence for Intensity-Modulated Radiotherapy (IMRT) as Initial of the Radiotherapy Treatment: Final Report of the Radiation Therapy Development Board

Clinical benefits and expanding indications

	Decrease TOXICITY	Improve LOCAL CONTROL	Improve SURVIVAL
Head and neck	✓	✓	✓
Prostate	✓	✓	✓
Lung	✓	✓	✓
Sarcomas	✓	✓	✓
Brain tumors	✓	✓	✓
Oligometastases	✓	✓	✓
Gynecological	✓	✓	-
Gastro-intestinal	✓	✓	-
Breast	✓	-	-
Lymphomas	✓	-	-
Pediatric	✓	-	-









Case #3

Name	Importance	Max Dose (cGy)	Max Dose Penalty	DWH Vol (%)	DWH Dose (cGy)	Min Dose (cGy)	Min Dose Penalty
lcv	10	3800	1	58.08	2500	2500	10
lcv2	10	3800	10	58.08	3800	3000	100

Name	Overlap Priority	Beam Intersection	Use	Importance	Max Dose (cGy)	Max Dose Penalty	DWH Vol (%)	UMI Dose (cGy)	UMI Priority
RIN500	1	Allowed	✓	10	2000	5	80.00	1000	30
Jesu <30cc 24Gy,max29Gy	2	Allowed	✓	35	2700	50	1.00	1	1
Duodenum <5cc 25Gy,max29Gy	3	Allowed	✓	10	2700	100	10.00	1000	1
Duodenum <5cc 25Gy	4	Allowed	✓	10	2500	10	1.00	1	1
Liver 700ml 21Gy	5	Allowed	✓	10	1500	10	1.00	1	1
Kidney (Left)	6	Allowed	✓	5	300	1	10.00	200	1
Kidney (Right)	7	Allowed	✓	5	200	1	5.00	100	1

Beam On Time (sec): 266.9 Actual Modulation Factor: 1.5
 Estimated Gantry Period (sec): 37.5 Active Robotic: 7.0

Name	Dose (cGy)	Dose (%)	Volume (cm ³)	Volume (%)
PTV30	2850	95.0	13.09	98.0
Jesu <30cc 24Gy,max29Gy	2400	80.0	0.32	0.4
Duodenum <5cc 25Gy,max29Gy	2900	83.3	0.19	1.2
Stomach <5cc 25Gy,max35Gy	2990	83.3	2.82	2.0
Liver 700ml 21Gy	2100	70.0	7.25	0.5
Jesu <30cc 24Gy,max29Gy	2019	87.3	0.10	0.1
Stomach <5cc 25Gy,max35Gy	2085	98.2	0.10	0.1
Duodenum <5cc 25Gy,max29Gy	2031	87.7	0.10	0.6



Case #1

Plan Setup
 Jaw Mode: Dynamic
 Field Width: 5.0 cm - Jaws(2.10, -2.10)
 Pitch: 0.418
 Modulation Factor: 2.300

Down On Time (sec): 100.3 Actual Modulation Factor: 1.6
 Estimated Gantry Period (sec): 15.6 Active Rotations: 6.3

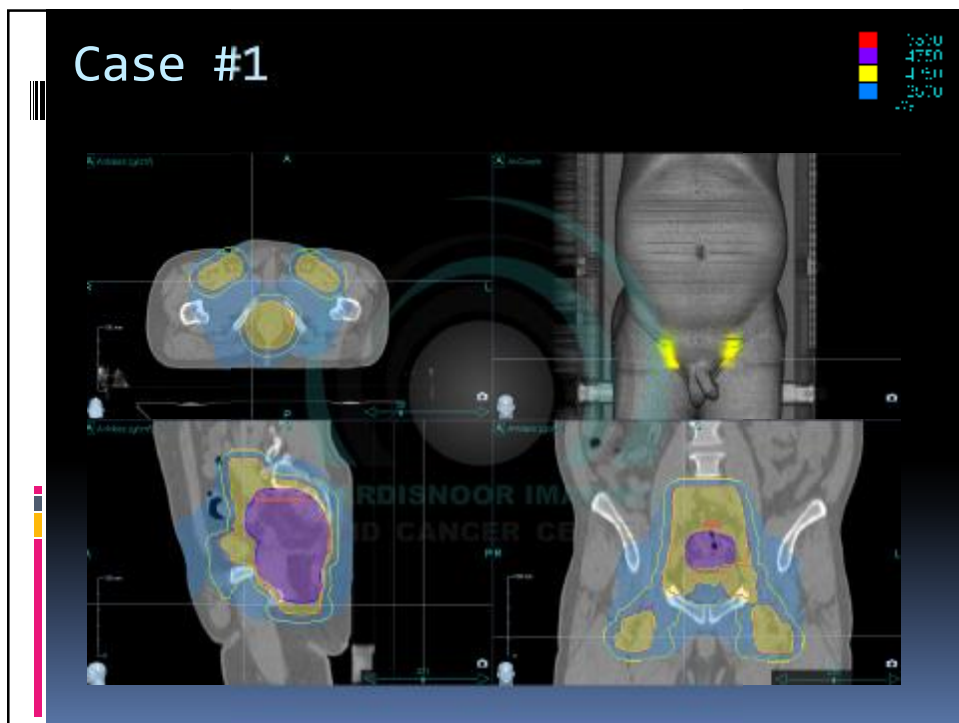
Prescription: Median For: PTV 45/25 50.00 % will receive 4500 cGy in 25 Fractions

Name	Overlap Priority	Use	Importance	Max Dose (cGy)	Max Dose Penalty	DVH Vol (%)	DVH Dose (cGy)	Min Dose (cGy)	Max Dose Penalty
PTV 45/25	1	Allowed	100	4500	75	50.00	4500	4000	120

Name	Overlap Priority	Beam Intersection	Use	Importance	Max Dose (cGy)	Max Dose Penalty	DVH Vol (%)	DVH Dose (cGy)	DVH Penalty
Heart Opt 2mm	1	Allowed	Allowed	3	4250	5	50.00	500	20
L Kidney Opt 2mm	2	Allowed	Allowed	5	4150	5	50.00	1000	20
RT KIDNY	3	Allowed	Allowed	5	3750	5	50.00	350	20
							70.00	50	20
							20.00	1000	20

Case #1

Name	Min (cGy)	Mean (cGy)	Max (cGy)	CI	σCI	HI	Coverage (%)
PTV 45/25	3666	4490	4688	1.01	2.08	1.04	48.39
Esoma	8	596	4688	n/a	n/a	n/a	n/a
LIVER	96	1764	4561	n/a	n/a	n/a	n/a
RT KIDNY	91	909	4237	n/a	n/a	n/a	n/a
LT KIDNY	150	1356	4317	n/a	n/a	n/a	n/a
CTV	4294	4516	4685	n/a	n/a	n/a	n/a
SPLEEN	1606	3280	4678	n/a	n/a	n/a	n/a
HEART	55	405	4451	n/a	n/a	n/a	n/a
AORT	67	1811	4601	n/a	n/a	n/a	n/a
Lung (Left)	13	420	4592	n/a	n/a	n/a	n/a
Lung (Right)	13	115	2175	n/a	n/a	n/a	n/a
SpinalCord (Thorax)	11	613	2498	n/a	n/a	n/a	n/a
Liver Opt 3mm	96	1675	4272	n/a	n/a	n/a	n/a





Case #2

Prescription: Median For PTV53.2/28 50.00 % will receive 5320 cGy in 28 Fractions


Target Objectives

Name	Overlap Priority	Use	Importance	Max Dose (cGy)	Max Dose Penalty	DVH Vol (%)	DVH Dose (cGy)	Min Dose (cGy)	Min Dose Penalty
PTV53.2/28	1	<input checked="" type="checkbox"/>	120	5320	100	50.00	5320	5320	100
PH-PTV 42/28	2	<input checked="" type="checkbox"/>	150	4750	100	50.00	4200	4200	100

Critical Constraints

Name	Overlap Priority	Beam Interaction	Use	Importance	Max Dose (cGy)	Max Dose Penalty	DVH Vol (%)	DVH Dose (cGy)	DVH Penalty
SP-OUT	1	Allowed	<input checked="" type="checkbox"/>	4	4000	25	90.00	2200	10
BLADDER OUT	2	Allowed	<input checked="" type="checkbox"/>	3	4000	25	90.00	2500	10
SB in PTV	3	Allowed	<input checked="" type="checkbox"/>	2	4000	15	50.00	4000	10
BLADDER mid 42 Gy	4	Allowed	<input checked="" type="checkbox"/>	1	4050	10	50.00	3900	10
void	5	Allowed	<input checked="" type="checkbox"/>	5	2200	10	70.00	1500	10
RP femur	6	Allowed	<input checked="" type="checkbox"/>	3	3500	10	90.00	1000	10
IF femur	7	Allowed	<input checked="" type="checkbox"/>	3	3500	10	90.00	1000	10
Bladder in PTV 53.2	8	Allowed	<input checked="" type="checkbox"/>	1	5100	10	50.00	5050	10
RNG 5.2.5	9	Allowed	<input checked="" type="checkbox"/>	5	3750	10	70.00	2300	10
RNG 2.5.5	10	Allowed	<input checked="" type="checkbox"/>	5	2900	10	50.00	1900	10

Rectal Cancer



PARDISNOOR IMAGING
AND CANCER CENTER



Case #1

The image displays a Tomotherapy planning interface for Case #1, focusing on the target objectives and critical constraints. The prescription is set to 50.00 Gy in 28 fractions. The target objectives table is as follows:

Name	Overlap Priority	Use	Importance	Max Dose (cGy)	Max Dose Penalty	DVH Vol (%)	DVH Dose (cGy)	Min Dose (cGy)	Min Dose Penalty
PTV50.4/28	1	<input checked="" type="checkbox"/>	100	5040	50	50.00	5040	5040	50
PRV 4E PHV	2	<input checked="" type="checkbox"/>	100	4500	50	50.00	4500	4500	50

The critical constraints table is as follows:

Name	Overlap Priority	Beam Intersection	Use	Importance	Max Dose (cGy)	Max Dose Penalty	DVH Vol (%)	DVH Dose (cGy)	DVH Penalty
SMALL BLS/IR	1	Allowed	<input checked="" type="checkbox"/>	10	4200	10	62.00	2000	10
RNGC2	2	Allowed	<input checked="" type="checkbox"/>	10	4200	30	52.00	3000	10
R ADCR1-PRV	3	Allowed	<input checked="" type="checkbox"/>	10	2600	10	92.00	1000	1



Case #2

The image displays a Tomotherapy treatment planning interface for Case #2, focusing on the Target Objectives and Critical Constraints tables. The background shows a single axial view of the pelvic region with target and OAR contours.

Target Objectives

Name	Overlap Priority	Use	Importance	Max Dose (cGy)	Max Dose Penalty	DVH Vol (%)	DVH Dose (cGy)	Min Dose (cGy)	Min Dose Penalty
PTV	1	<input checked="" type="checkbox"/>	100	5000	5000	50.00	5000	5000	10000
PTV IN 45	2	<input checked="" type="checkbox"/>	200	4500	5000	50.00	4500	4500	10000

Critical Constraints

Name	Overlap Priority	Beam Interaction	Use	Importance	Max Dose (cGy)	Max Dose Penalty	DVH Vol (%)	DVH Dose (cGy)	DVH Penalty
SMALL INTESTIN	1	Allowed	<input checked="" type="checkbox"/>	30	4275	1000	35.00	3000	1000
WVD	2	Allowed	<input checked="" type="checkbox"/>	60	2500	100	22.00	1500	100
BLAD	3	Allowed	<input checked="" type="checkbox"/>	50	4275	1000	10.00	1000	1000
HEALTHY BLAD	4	Allowed	<input checked="" type="checkbox"/>	10	5000	10	10.00	1000	10
RECTUM-50025	5	Allowed	<input checked="" type="checkbox"/>	10	4800	10	5.00	3000	10
LIT LUMINAL LEAD	6	Allowed	<input checked="" type="checkbox"/>	10	3800	10	12.00	2500	10
LIT LUMINAL LEAD	7	Allowed	<input checked="" type="checkbox"/>	10	3800	10	10.00	1000	10



مؤلفه کتابهای پزشکی ایرانی

■ عبدالله شیدافر، استاد دانشگاه و مؤلف کتابهای پزشکی بر 12 سالگی از دنیا رفت.

■ او نگرانی ریاضیات (بسته تصمیمات ریاضیات 8 (2005) از دانشگاه سبزوهر لندن دانسته شیدافر از سال 1328 تا 1300، عضو هیات علمی دانشگاه پزشکی، دانشگاه علم و صنعت ایران و پیش شاد.

See translation

صورت زبانه می آید به کار
حرفی از معنی اگر داری بید

مولانا

END

A. Ghanbarzadeh