


CANCER DU CAVUM NOUVELLES TECHNIQUES

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Evolution des Traitements

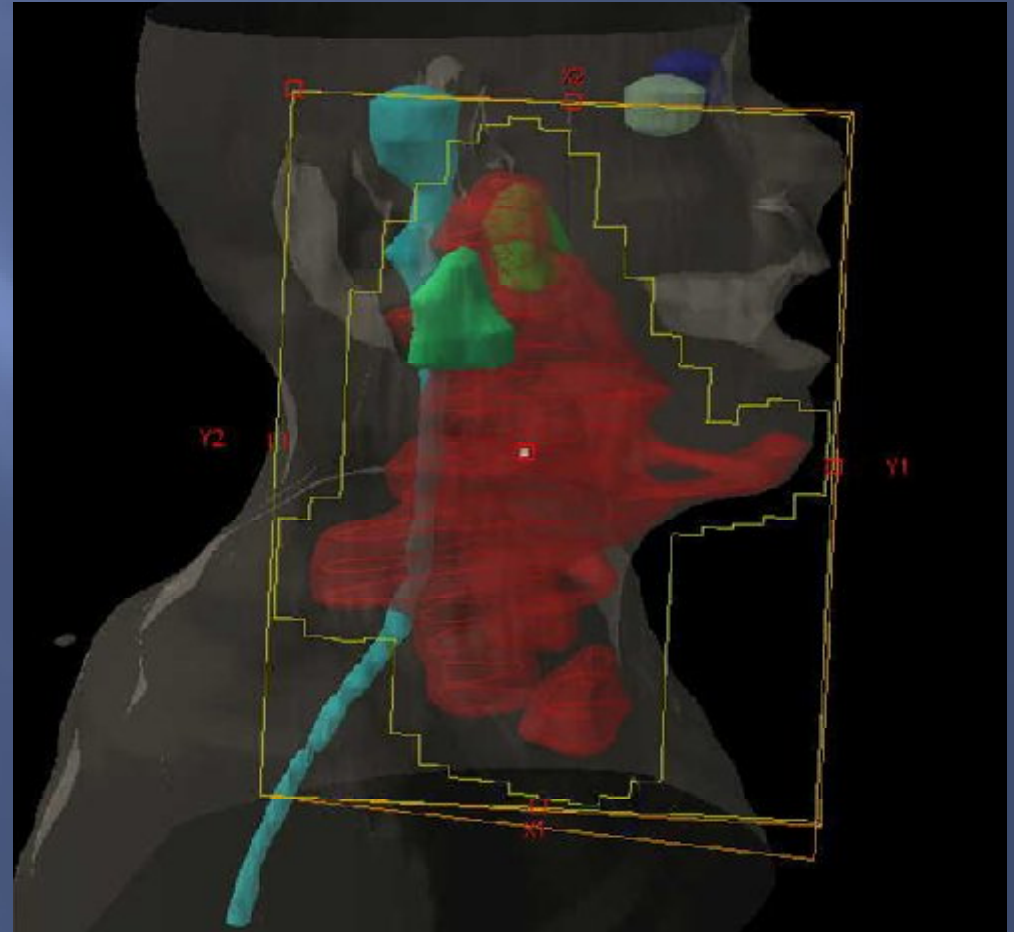


1896	First NPC patient reported	Dr. Voigt
1901	14 patients results	JAMA
1900-20	Chirurgie	
1922	79 patients results	
1941	description clinico-pathol 114 patients	
1921-1950	Radium curiethérapie	5Y 11 %
	200 keV orthovoltage	5Y 20 %
1951-1970	Cobalt-60 +/- Curiethérapie	5Y 48 %
	Radiothérapie + Chimiothérapie	
1970	Radiothérapie + Chimiothérapie	
1996	Concomitant CRT	5Y 65 %

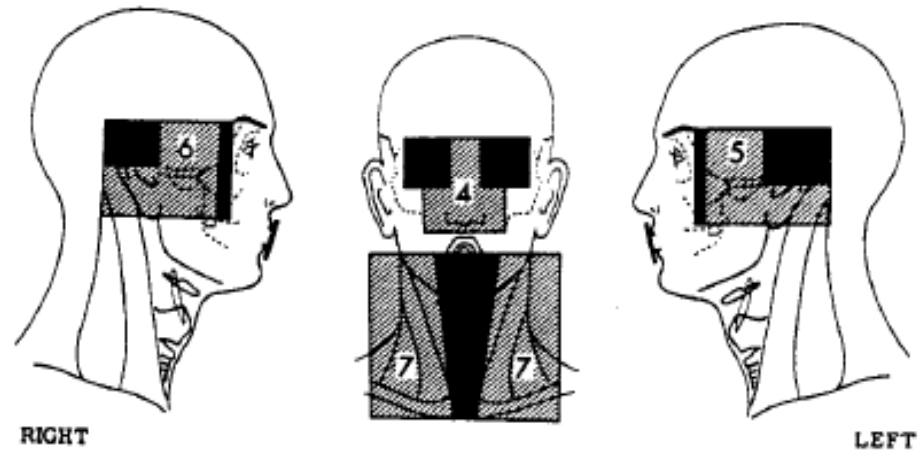
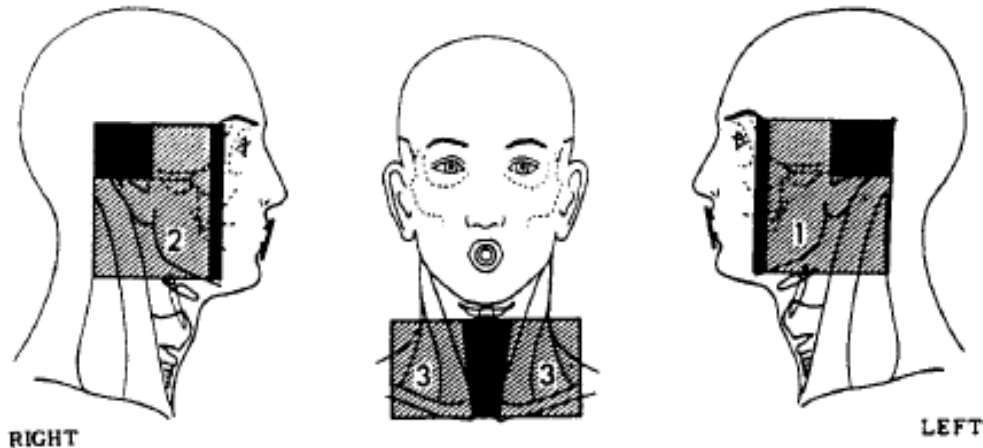
Améliorer les résultats

- ❖ Curiethérapie
- ❖ RT Stéréotactique, radio-chirurgie, cyberknife
- ❖ RT Conformationnelle/IMRT/Tomothérapie
- ❖ Réduire le taux de complications
- ❖ Modifier le fractionnement
- ❖ Nouvelles combinaisons

2D vs 3D



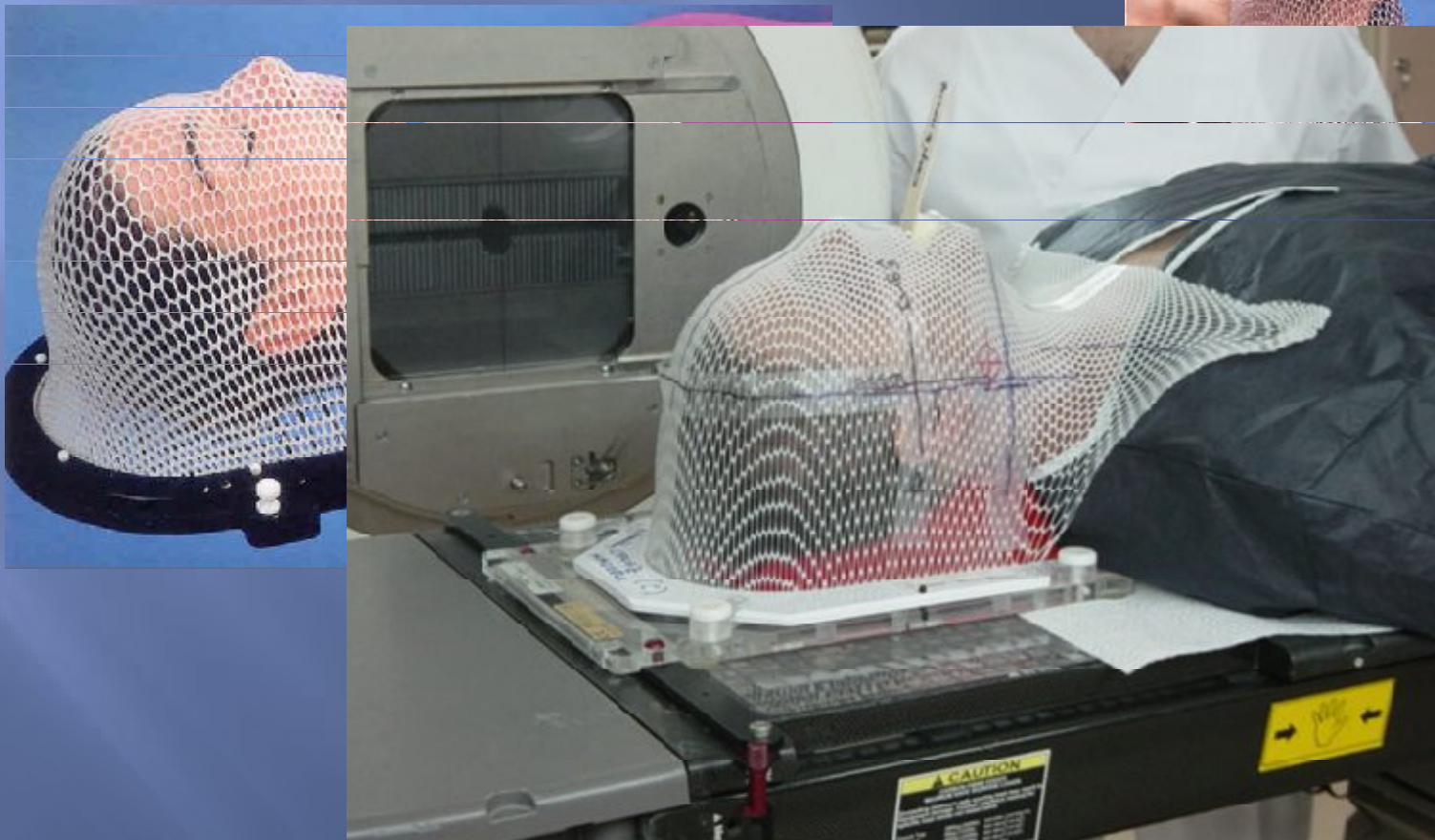
Technique 2D



Les courbes de doses réponses sont basées sur les données rétrospectives !

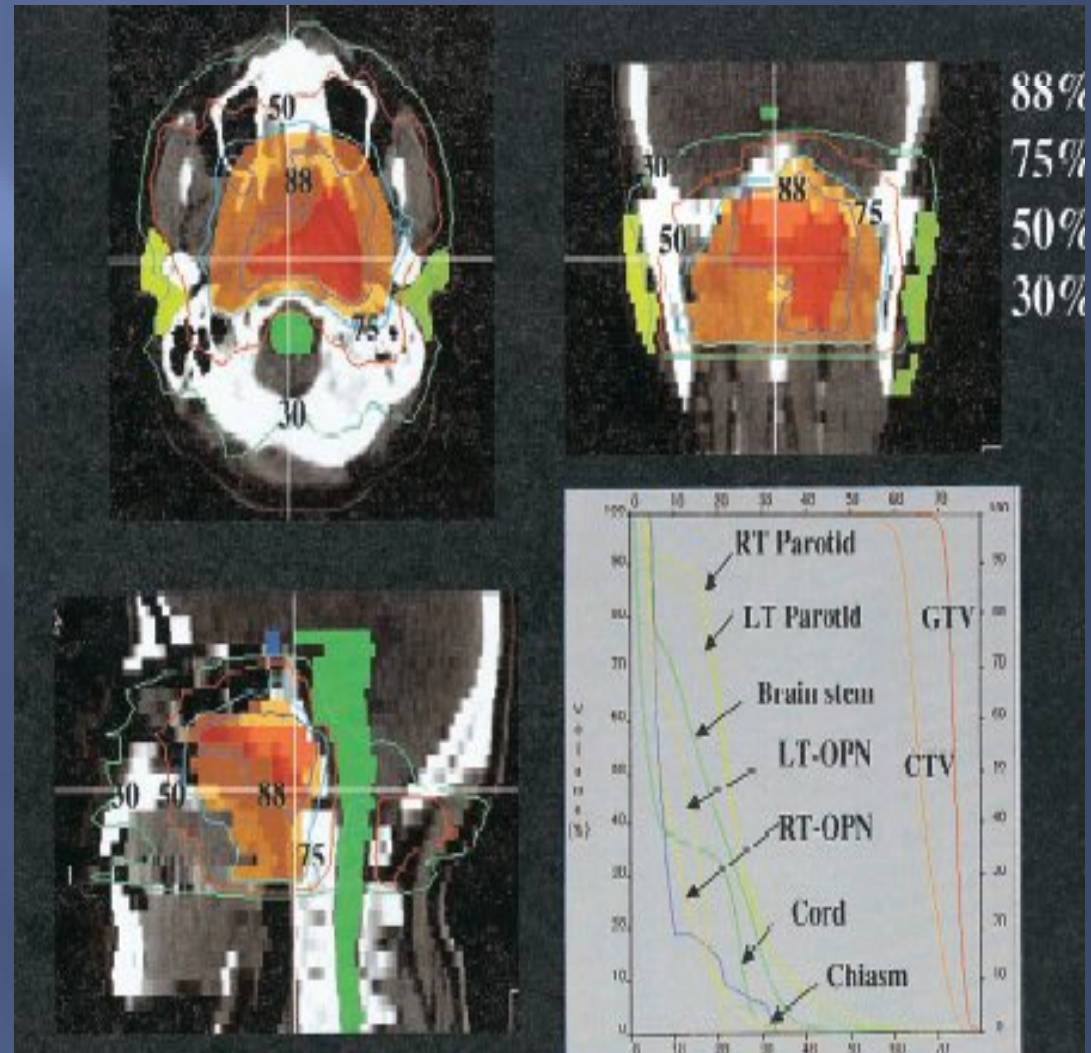
- Dose totale: 70 Gy
- Dose RT élective: 50-60 Gy

IMMOBILISATION



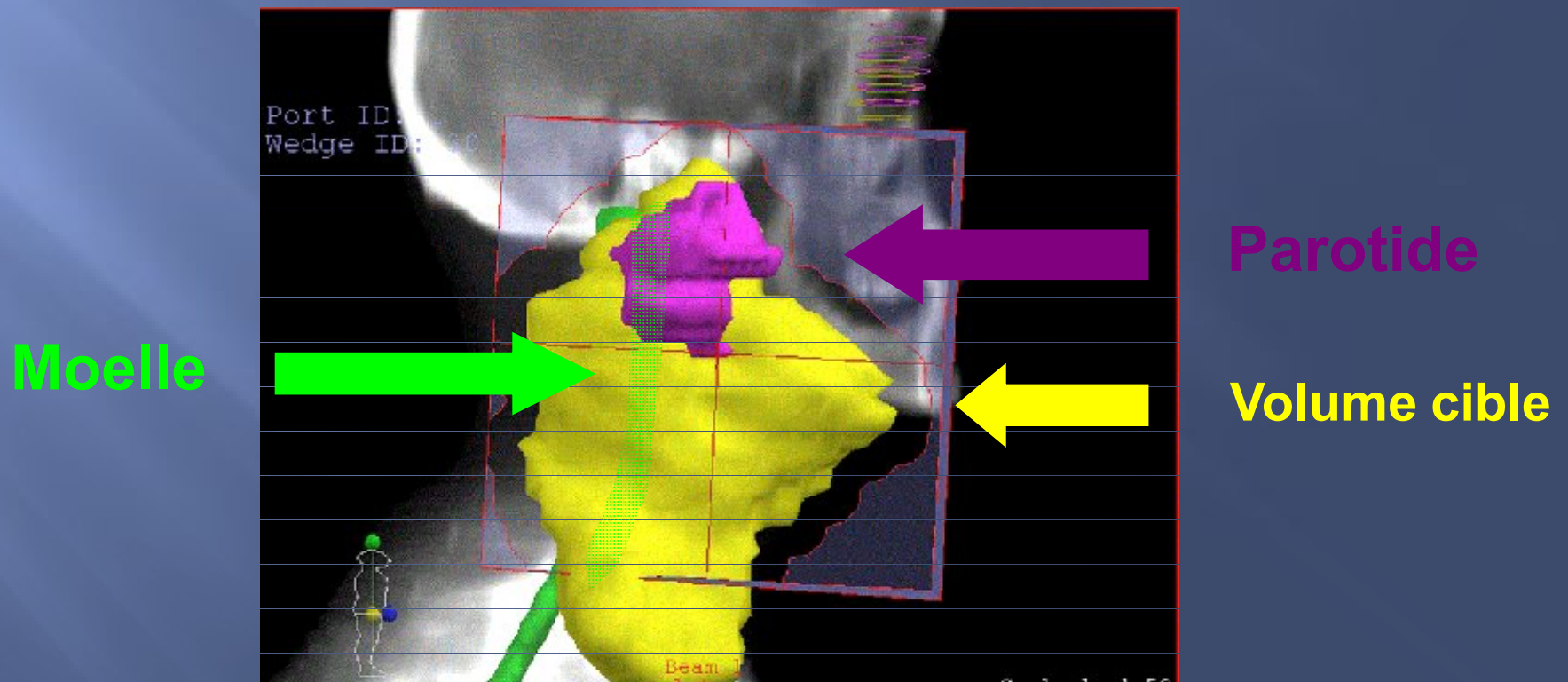
3 D Conformal / IMRT

- ❖ Meilleure délimitation du GTV
- ❖ Meilleure protection tissus sains (gl. saliv..)
- ❖ Fusion image IRM
- ❖ PET-CT (bilan & volume)
- ❖ Augmenter le contrôle local & la survie ?



Pourquoi l'IMRT ?

- ❖ Radiothérapie Conformationnelle par Modulation d'Intensité
(Intensity Modulated Radiation Therapy)
- ❖ Même si les champs conforment la tumeur, des organes à risque peuvent se trouver dans le champ



OBJECTIF

Evaluation du Cancer du Cavum du point de vue du traitement et des résultats préliminaires après l'IMRT

DISTRIBUTIONS des MALADES

- ▣ Juin 2005-Decembre 2006, 20 Cas
- ▣ Age: 14-73 (moyenne 52)
- ▣ Sexe: 3 femmes, 17 hommes
- ▣ Stade:

▪ T1	2	N0	6	M0	19
▪ T2	12	N1	4	M1	1
▪ T3	0	N2	9		
▪ T4	6	N3b	1		

Classifications de l'OAS et Technique de traitement

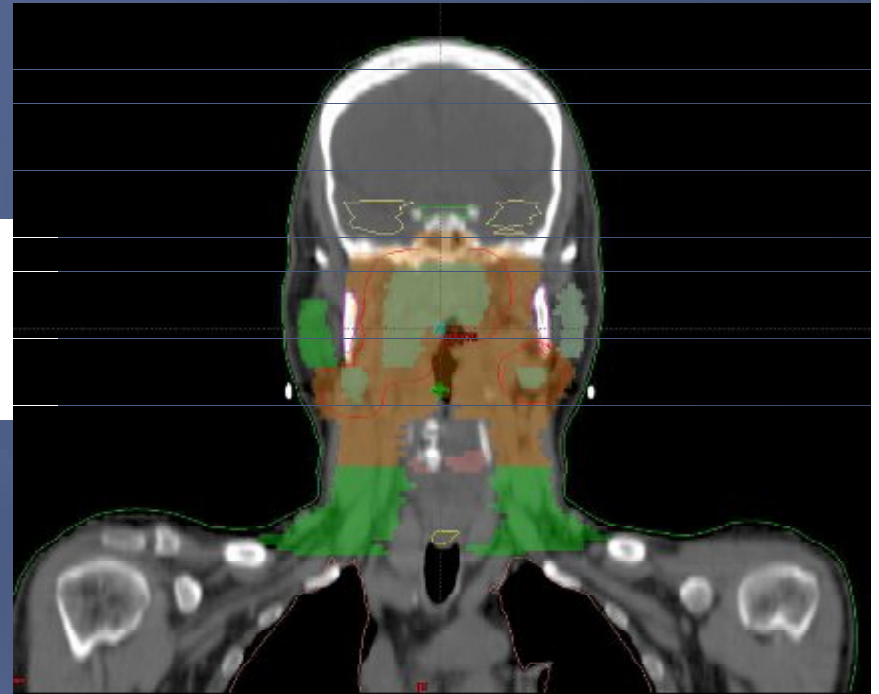
- ▣ OAS
 - Type1 %15
 - Type2 %5
 - Type3 %80

- ▣ 18 Cas PET/CT-Sim
- ▣ Technique de IMRT (S.I.B.)
- ▣ PTV 70, PTV 60, PTV 54
- ▣ 70Gy/2.12Gy, 60Gy/1.8Gy, 54Gy/1.6Gy
totale 33fx

CHIMIOThERAPIE

- Induction+Concomitante 7
- Concomitante 11
- Induction 1
- Pas de Chimio 1

VOLUMES CIBLES



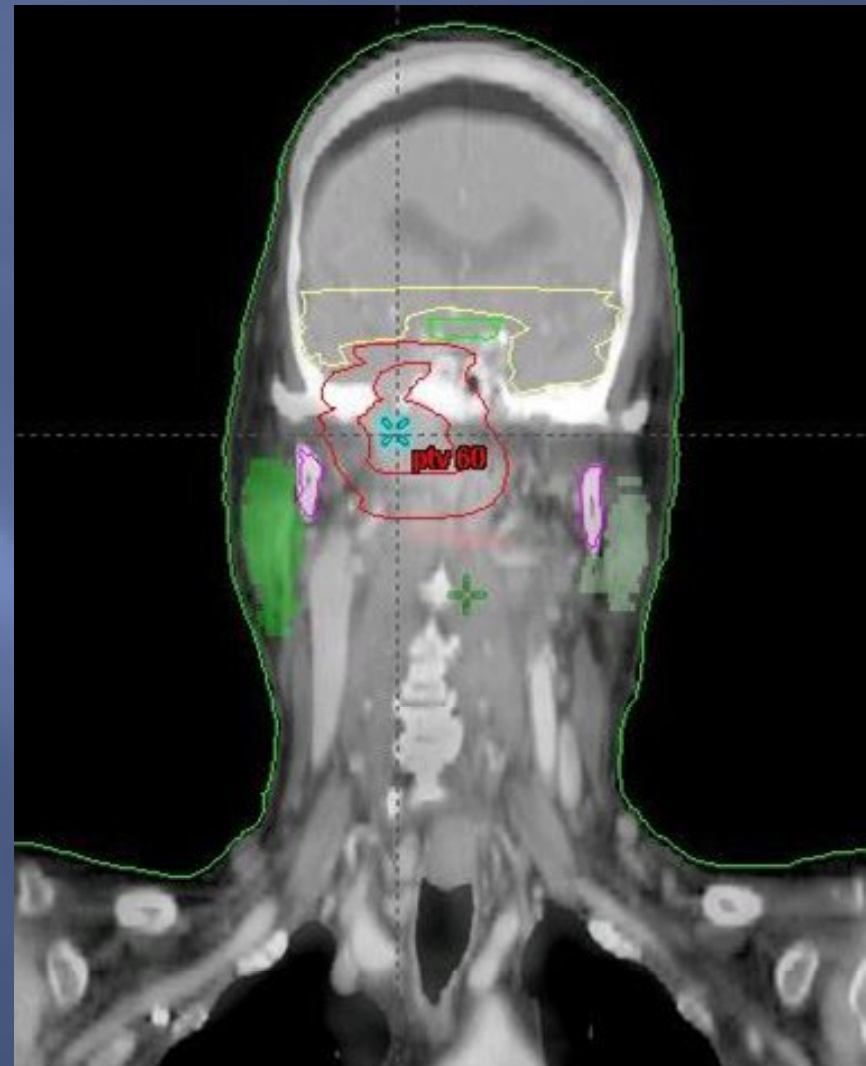
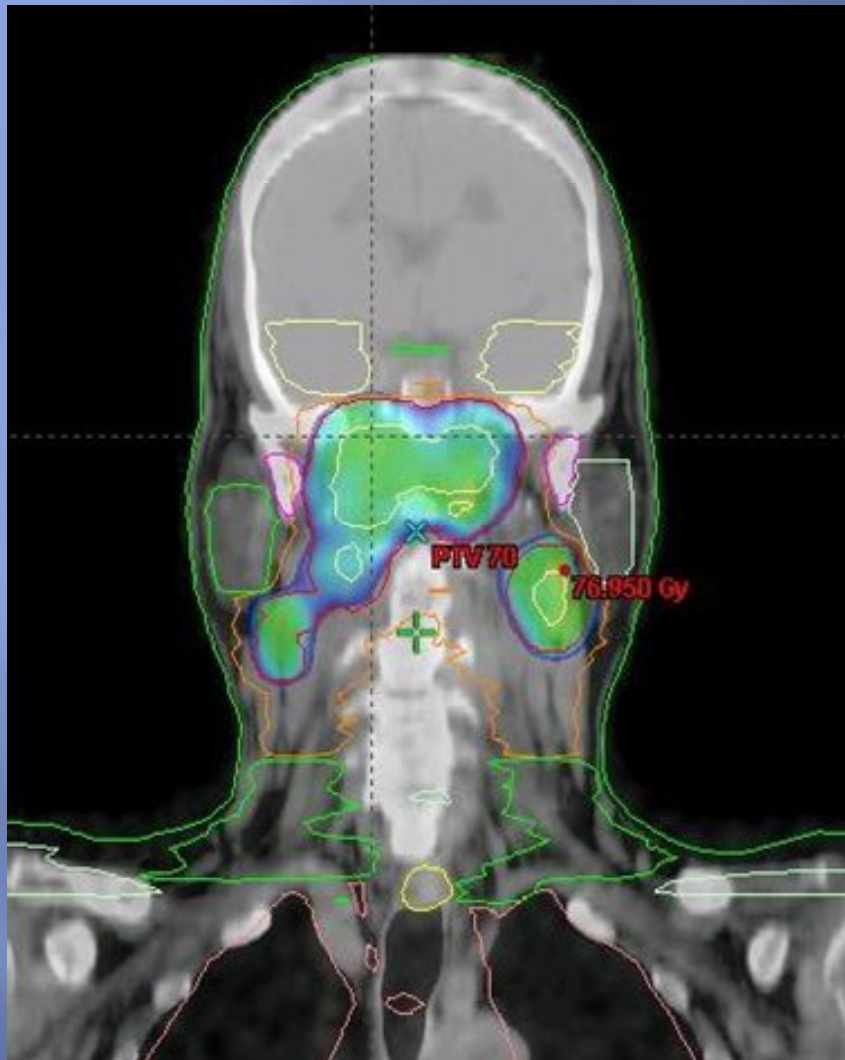
	PTV 70	PTV 60	PTV 54
Median volume (cc)	157 (48-403)	592 (378-850)	174 (43-347)
Median dose (Gy)	73.13 (71-75)	67 (64-70)	57 (54-58)

Organes à risque

- ❖ Parotides: 24 à 26 Gy
- ❖ Cochlées < 60 Gy
- ❖ Voies optiques < 55 à 60 Gy
- ❖ Tronc Cérébral < 50 Gy
- ❖ Moelle épinière < 45 Gy
- ❖ Lobes temporaux < 60 Gy
- ❖ Cristallins < 5 Gy

ORGANES A RISQUES

▣	Tronc Cerebral	57cc	max 55Gy (50-62)
	Moelle épiniere	41cc	max 46Gy (43-55)
▣	Parotide	21cc	mean 35Gy (25-65)
▣	parotide opposée	20cc	mean 26Gy (8-33)
▣	Mandibule	76cc	max 70.4Gy (65-75)
▣	Larynx	31cc	mean 46Gy (15-64)
▣	Chiasme	1,4cc	max 39Gy (6-60)
▣	Voies optiques	1,7cc	max 38Gy (5-60)
▣	Lobes temporaux	348cc	max 65Gy (58-73)



RÉSULTATS

- ▣ Poursuite moyenne 20 mois (12-29)
- ▣ Récidive locale après 24 mois dans un cas
- ▣ Métastase pulmonaire après 8 mois dans un cas
- ▣ Métastase hépatique après 12 mois dans un cas

COMPLICATIONS PRECOCES

▣ Mucite

- ▣ Grad 2 %55
- ▣ Grad 3 %35

▣ Réaction cutanée

- ▣ Grad 2 %55

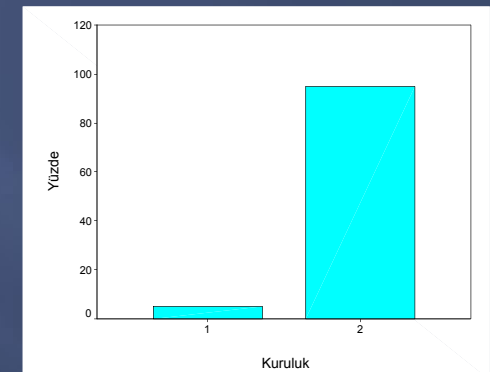
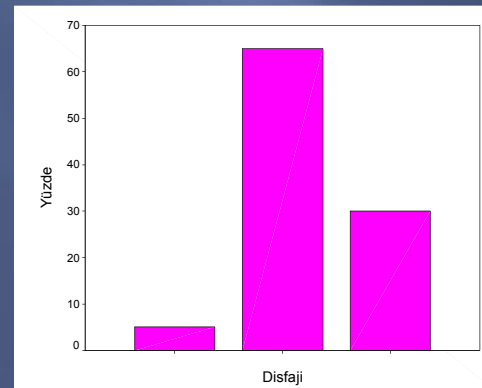
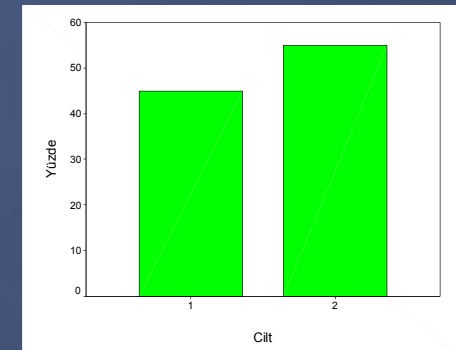
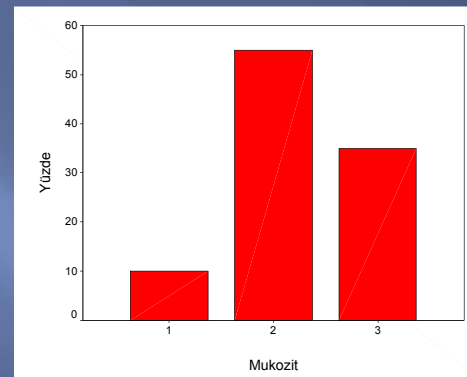
▣ Dysphagie

- ▣ Grad 2 %65
- ▣ Grad 3 %30

▣ Xérostomie

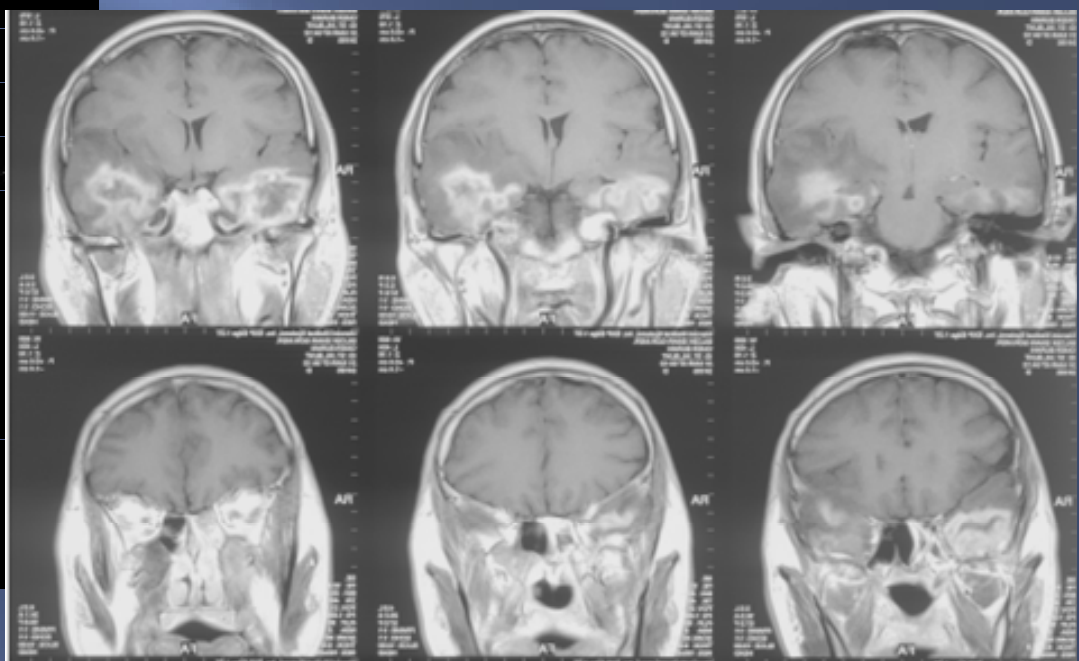
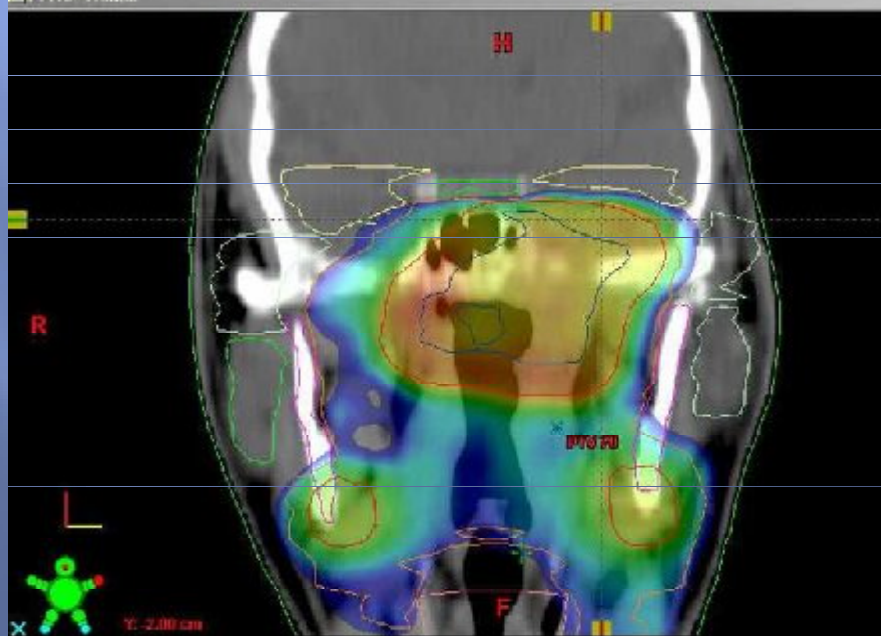
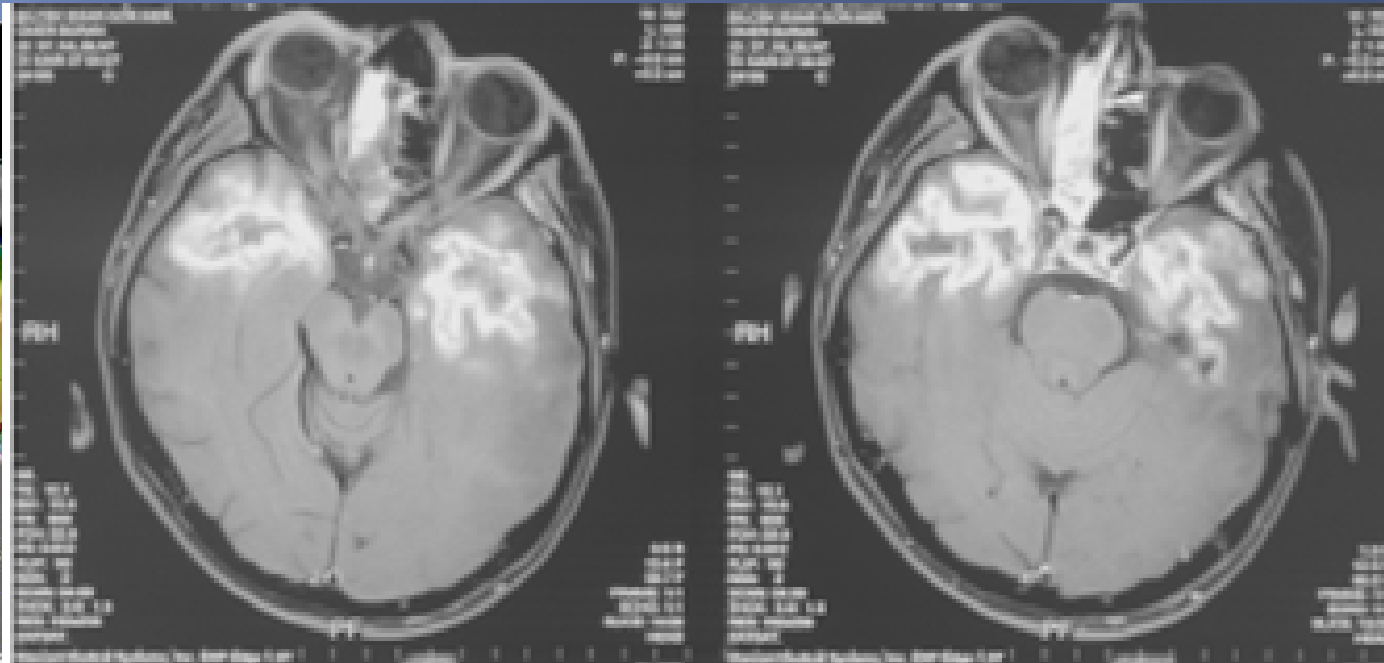
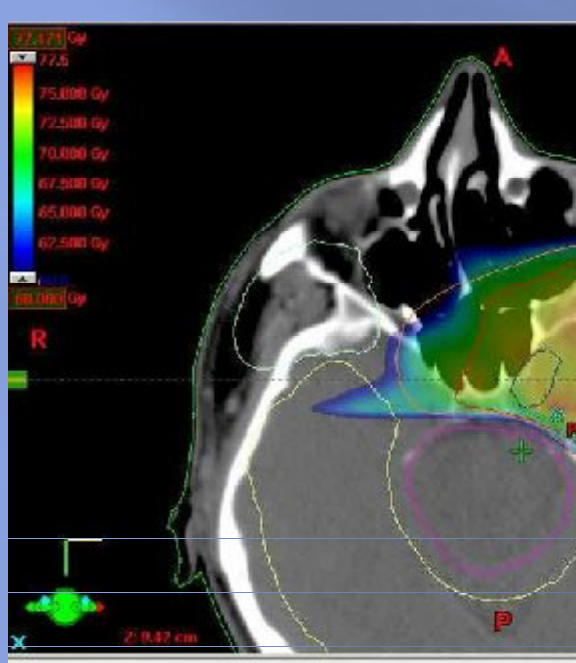
- ▣ Grad 2 %90

▣ Moyenne perte de poids %10 (5-20)

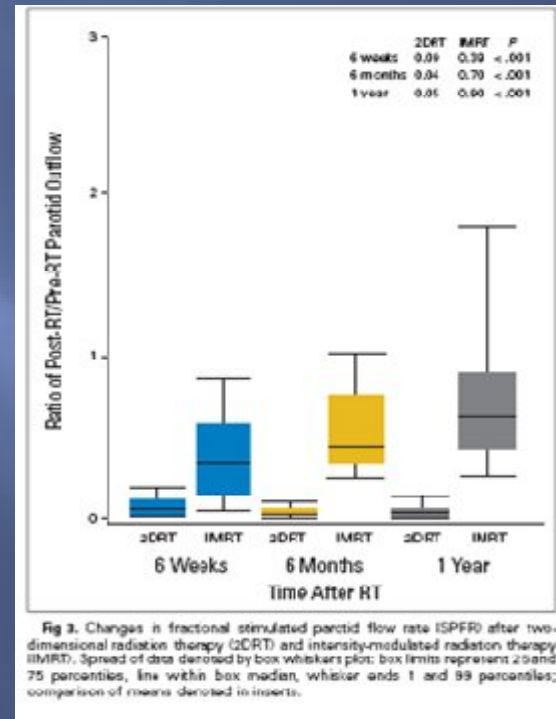
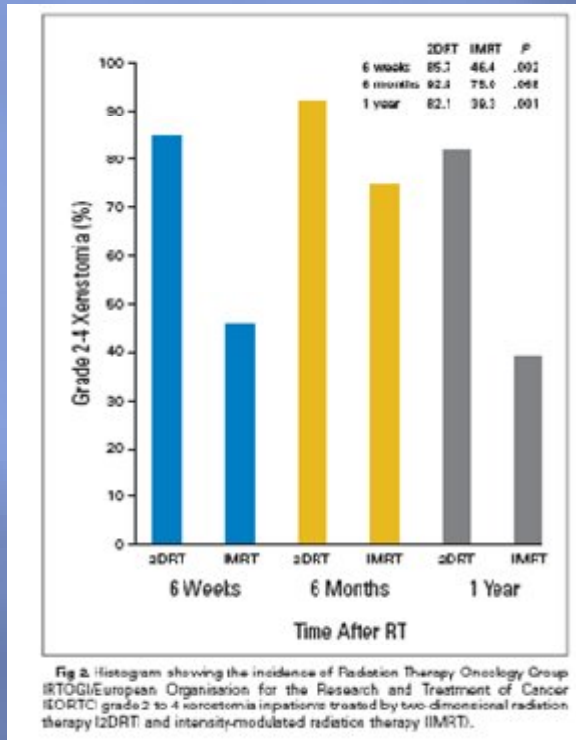


COMPLICATIONS TARDIVES

- ▣ Grade II Dysphagie %5
- ▣ Grade II Xérostomie %25
- ▣ Nécrose du lobe temporal dans un cas



Prospective randomized study of Intensity-Modulated- Radiotherapy on salivary glands in early-stage nasopharyngeal carcinoma patients



Essai randomisé qui compare RT 2D à IMRT

60 patients avec NPC T1-2bN0-1M0

A 1 an: Incidence xérostomie: 82.1% vs 39.3% ($p=0.001$)

Prospective randomized study of Intensity-Modulated- Radiotherapy on salivary glands in early-stage nasopharyngeal carcinoma patients

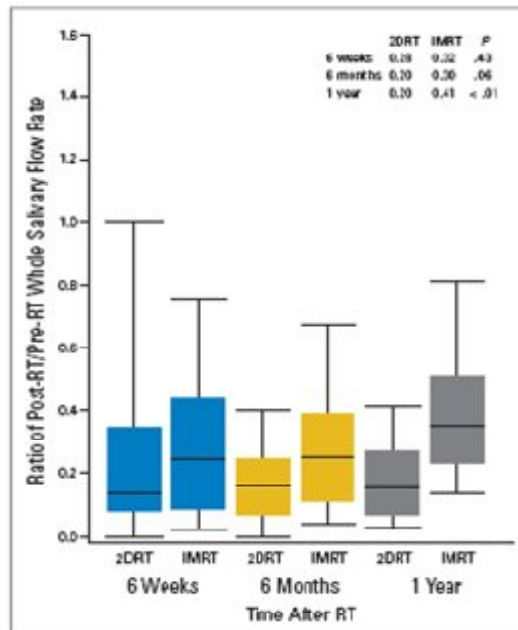


Fig 4. Changes in fractional stimulated whole saliva flow rate (SWSFR) after two-dimensional radiation therapy (2DRT) and intensity-modulated radiation therapy (IMRT). Spread of data denoted by box whiskers plot; box limits represent 25 and 75 percentiles, line within box median, whisker ends 1 and 99 percentiles; comparison of means denoted in inserts.

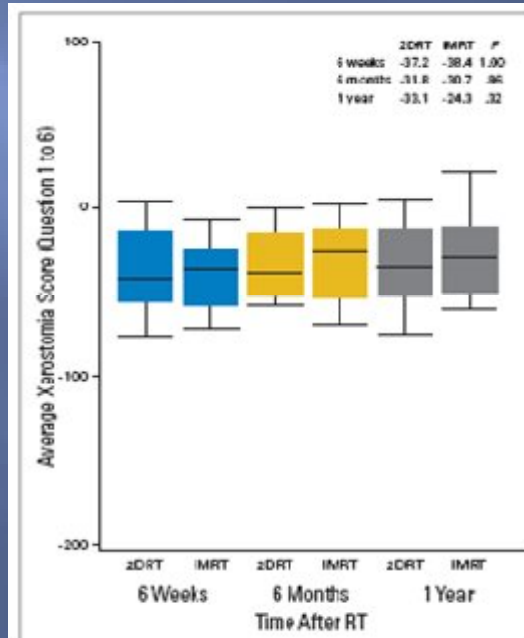


Fig 5. Average scores of the six-item xerostomia questionnaire in two-dimensional radiation therapy (2DRT) and intensity-modulated radiation therapy (IMRT) arms at various time point post-treatment. Positive score indicates improvement and negative score indicates deterioration. Spread of data denoted by box whiskers plot; box limits represent 25 and 75 percentiles, line within box median, whisker ends 1 and 99 percentiles; comparison of means denoted in inserts.

Table 2. Spearman Rho Correlation Between Saliva Flow Rate and Patients' Xerostomia Scores at 1-Year Post-Treatment

Xerostomia Score	SPFR		SWSFR	
	Correlation Coefficient	P	Correlation Coefficient	P
XQ1	-0.015	.915	0.046	.744
XQ2	0.083	.545	0.081	.558
XQ3	0.212	.120	0.357	.009
XQ4	0.246	.068	0.330	.015
XQ5	0.090	.511	0.207	.133
Mean XQ	0.167	.224	0.231	.090

Abbreviations: XQ, xerostomia questionnaire scores; SPFR, stimulated parotid flow rate; SWSFR, stimulated whole saliva flow rate.

- IMRT > RT 2D dans la préservation de la fonction salivaire
- Moins de toxicité tardive salivaire
- Préserver la qualité de vie des patients

Kam M, JCO 2007

Preservation of quality of life after Intensity-Modulated- Radiotherapy for early-stage nasopharyngeal carcinoma: results of a prospective longitudinal study patients

Table 3. Saliva flow at baseline and 2, 6, and 12 months after radiotherapy.

	BL n = 32	2 mo n = 32	6 mo n = 32	12 mo n = 32	All 4 visits p ^a	BL vs 2 mo p ^b	BL vs 6 mo p ^b	BL vs 12 mo p ^b
Stimulated whole saliva (SWS) Flow rate, mL/min (mean, SD)	0.01 (0.03)	0.10 (0.08)	0.18 (0.16)	0.28 (0.27)	<.001	<.001	<.001	<.001
Stimulated parotid saliva (SPS) Flow rate, mL/min (mean, SD)	0.06 (0.09)	0.01 (0.02)	0.02 (0.03)	0.06 (0.10)	.005	<.001	<.001	.217

Abbreviation: BL, baseline.
^aFriedman 3-way ANOVA.
^bWilcoxon signed-rank test; level of significance .01.

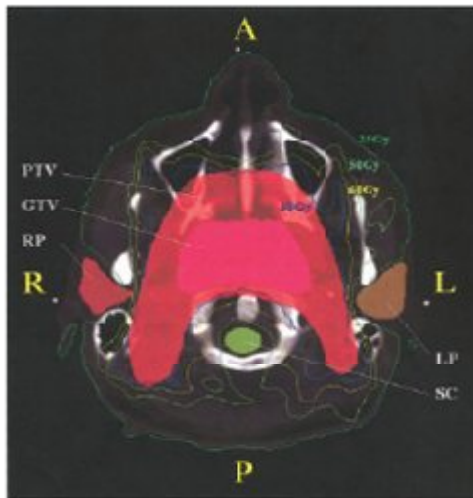


FIGURE 1. Isodose distribution with intensity-modulated radiotherapy for nasopharyngeal carcinoma showing the sparing of parotid glands from high-dose radiation. The gross tumor volume (GTV) and planning target volume (PTV) received at least 68 Gy, while most parts of the superficial parotid glands received less than 25 Gy. RP, right parotid; LP, left parotid; SC, spinal cord.

- 32 pts, T1-2N0-1M0 ++ IMRT
- Questionnaire EORTC...
- Amélioration de 25% du flux salivaire à 1 an
- Amélioration de la qualité de vie des patients

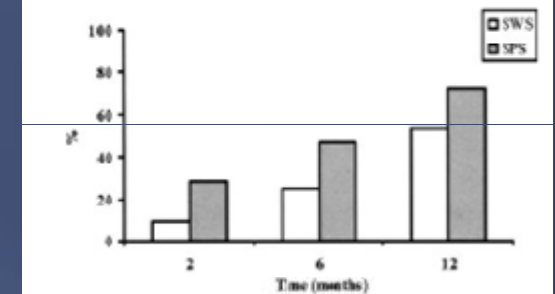
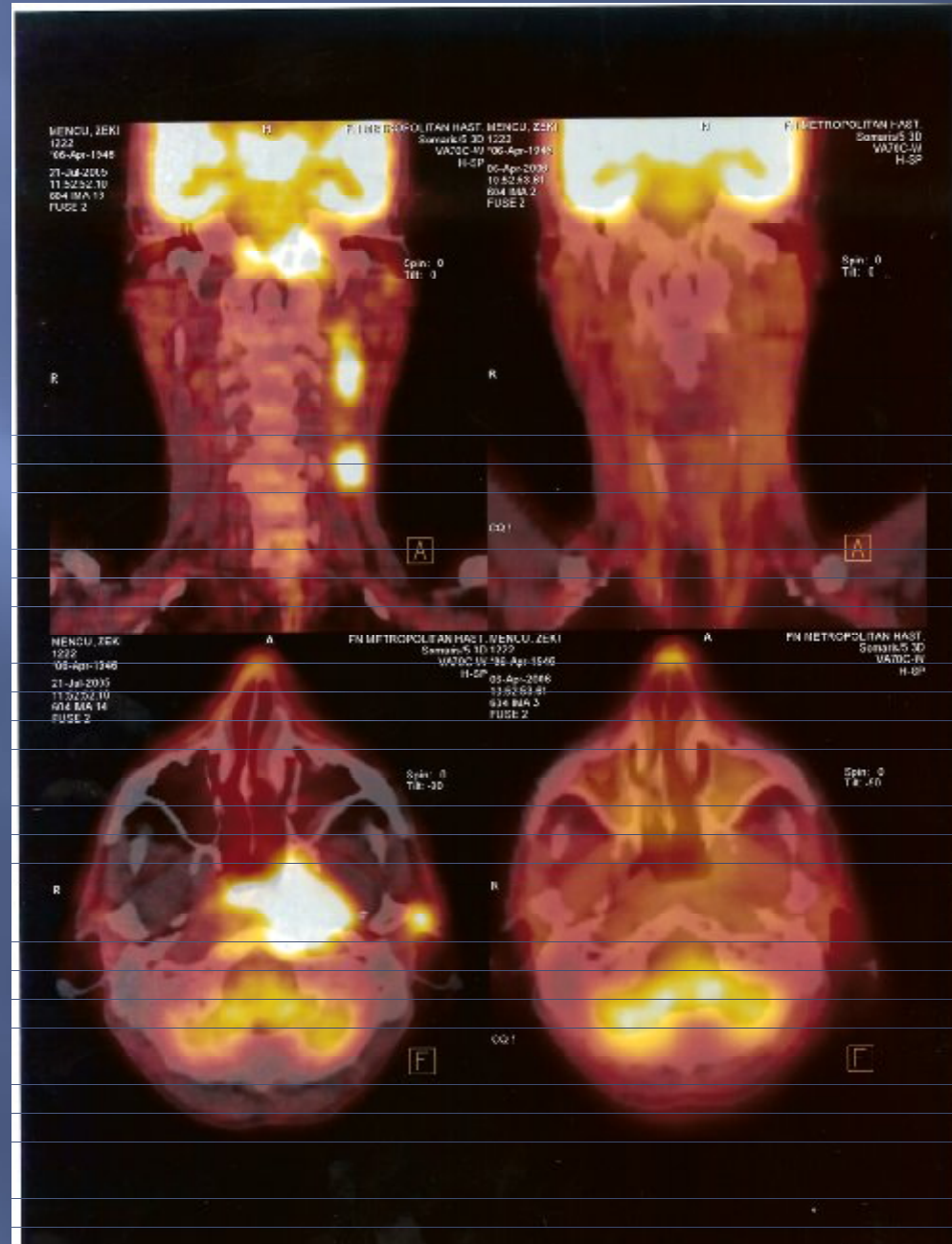


FIGURE 2. Percentage of patients who had recovered at least 25% of the pre-radiotherapy-stimulated whole saliva (SWS) and stimulated parotid saliva (SPS) flow at 2, 6, and 12 months after radiotherapy.

- ▣ T4N2cM0
- ▣ Cancer du Cavum
- ▣ IMRT+Chimio



CONCLUSION

Résultats précoces: pourcentage élevé du contrôle loco-régional

Complications précoces sont similaires avec Les traitements conventionnels.

Complication tardive: baisse significative de xérostomie



08/11/2007