

# Role of Hypofractionation in Early HNSCC

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# HNSCC -Early disease-T1N0,T2N0(Stage I&II)

- Single modality – Radiotherapy or Surgery
- Aim is cure
- Reduce the morbidity
- Different factors determine the treatment

# Factors determine the treatment

- Site of the disease
- Functional outcome
- Cosmesis
- Morbidity
- Expertise
- Patient preference

# When to consider Hypofractionation early disease?

- Low volume disease
- Patients not suitable for brachytherapy
- Sites with low nodal involvement

# Hypofractionation in early Head & Neck SCC

- Early Gingivo buccal complex tumours
- Early glottic tumours

# Early glottic tumours

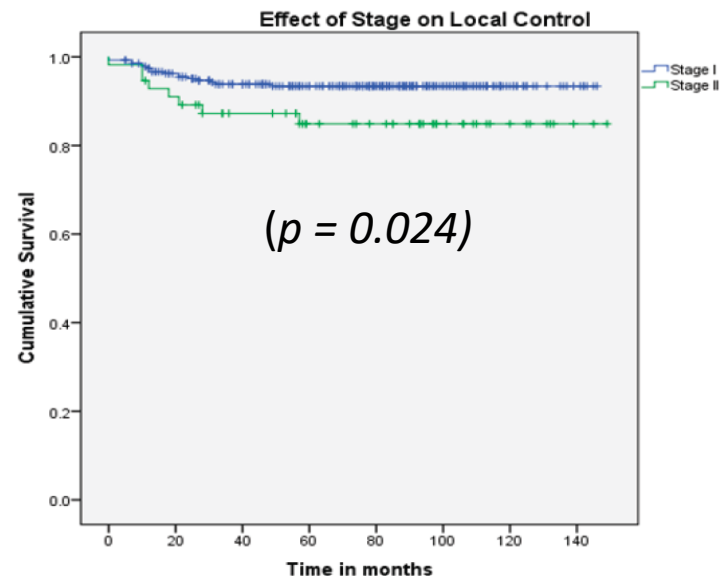
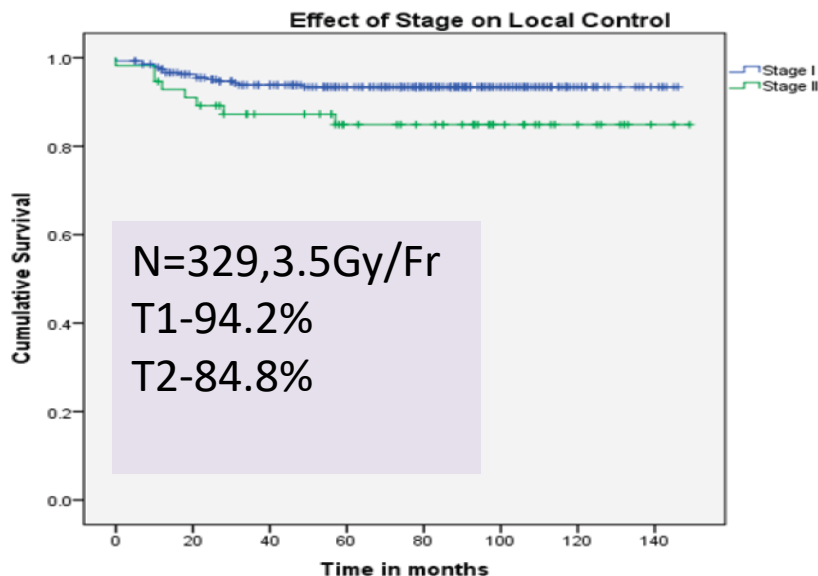
- T1 & T2 glottic tumors
- Low volume disease
- No need to treat the nodal regions

## Three-week hypofractionated radiotherapy in early glottic cancer— a single institution retrospective study

Arun Sankar Sudha<sup>1</sup>, Ravikumar Rejnish Kumar<sup>1</sup>, Milan Anjanappa<sup>1</sup>, Cessal Thomas Kainickal<sup>1</sup>, Aleyamma Mathew<sup>2</sup> and Ramadas Kunnambath<sup>1</sup>

<sup>1</sup>Department of Radiation Oncology, Regional Cancer Centre, Thiruvananthapuram 695011, Kerala, India

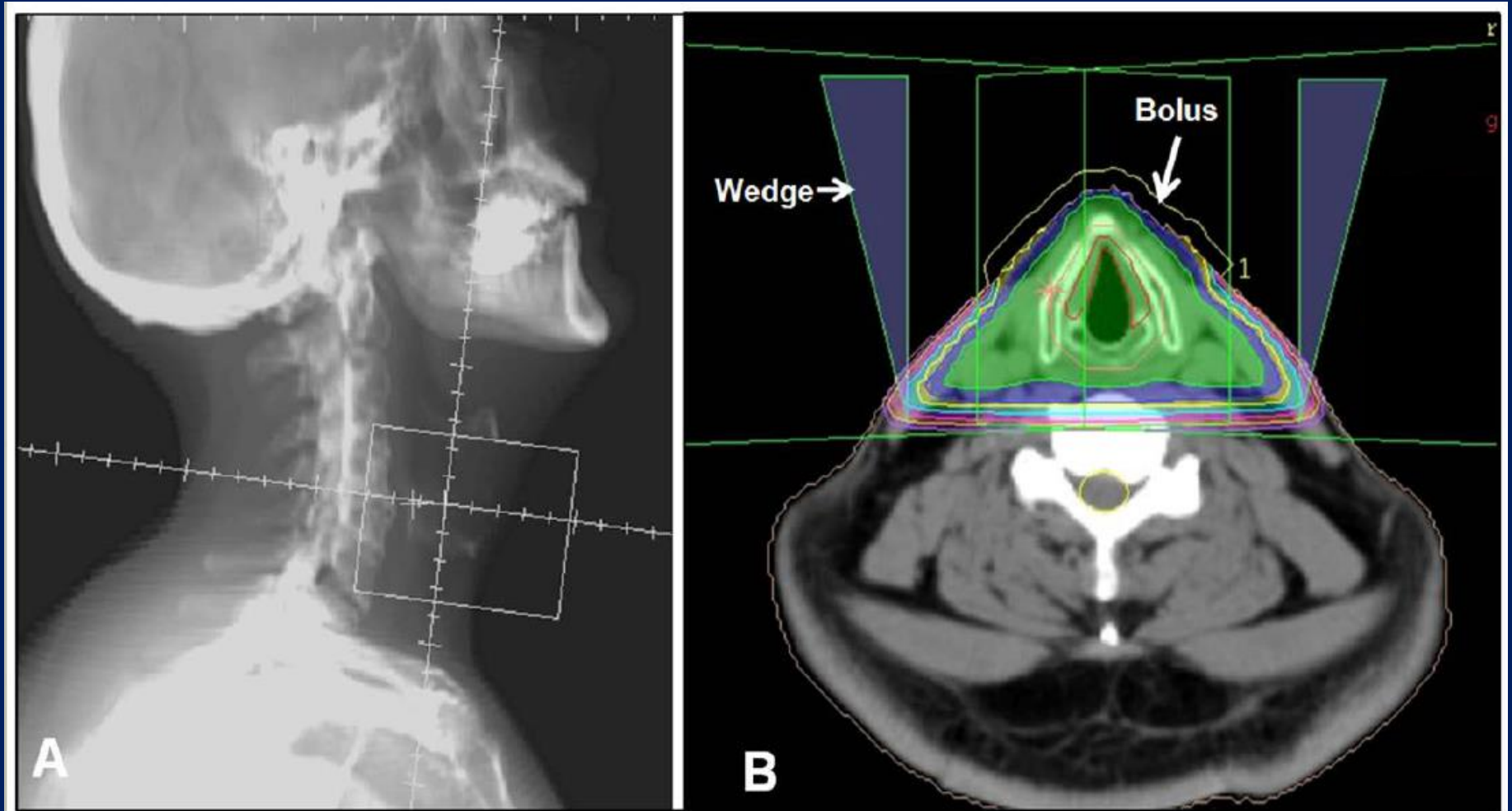
<sup>2</sup>Department of Epidemiology & Biostatistics, Regional Cancer Centre, Thiruvananthapuram 695011, Kerala, India



Study	N	Fraction size (Gy)	Total dose (Gy)	OTT (days)	Follow up	Local control	Severe complication
Mendenhall [9]	304 (T1-T2)	2.1-2.25	56-67	NA	5	T1-93% T2b-72%	1.6%
Burke [10]	102 (T1-T2)	1.67-3.33	50-74.4 Median 65	49	5	80%-92%	2%
Le [11]	398 (T1-T2)	1.3-2.4	46.6-76	50	5	82%	1.8%
Reddy [12]	114 (T1)	1.8-2	60-70	42-60	5	82%	1.7%
Yu [13]	126 (T1)	2.5 2.25 2	50 65.25 66	26-46	10	76% 84%(>2Gy)	Nil
Voet [14]	383 (T1)	2-3.25	60-65	22->40	5	89%	1.8%-5.3%
Dinshaw [6]	676 (T1-T2)	3.33 2.5 2-2.5	50 60-62.5 55-60	22	10	T1-82% T2-57%	<1%
Lee [15]	128 (T1-T2)	2 1.2-1.6 (b.i.d)	66 Gy 60-74.2	NA	3	T1-86% T2-68%	2%
Gowda [5]	200 (T1)	3.28 2.12	52.5 50	21-26	5	93%	<1%
Garden [16]	230 (T2)	2.06-2.26 2 1.2(b.i.d)	66-70 32-75 74-80	45	5	72%	4%
Cellai [17]	831 (T1)	≤2 >2.4	<61 >65	<45->60	10	83%	0.7%
Yamazaki [4]	180 (T1)	2 2.25	60-66 56.25-63	NA	5	77% (2Gy) 92% (2.25Gy)	Nil
Laskar [18]	652(T1)	3.33 3.43 2.5	50 55 60	NA	10	84% (<3Gy) 86.1% (>3Gy)	1%
Ermis [19]	132 (T1-T2)	2.75	55	28	5	85.6%	2.2%
Dixon [20]	112 (T2)	3.28	52.5	22	5	82%	1.8%
JCOG0701 [21]	370 (T1-T2)	2.4 2	60-64.8 66-70	NA	3	89.7% 84.1%	0.5% 1.1%
Salas [22]	138	2.25 2	63 70	40 51	10	83.9% 83.7%	1.5% 1.4%
Present study	329 (T1-T2)	3.5	52.5	19	5	91.9%	2.1%



# RT Planning for T1/T2 Glottis



## T2N0 Buccal mucosa –Options(Single modality)

- EBRT- 66 to 70 GY- **What about Hypofractionation?**

or

- WE+ (L) SOHND +/- RC

T2N0 GBC



## T2 Buccal mucosa



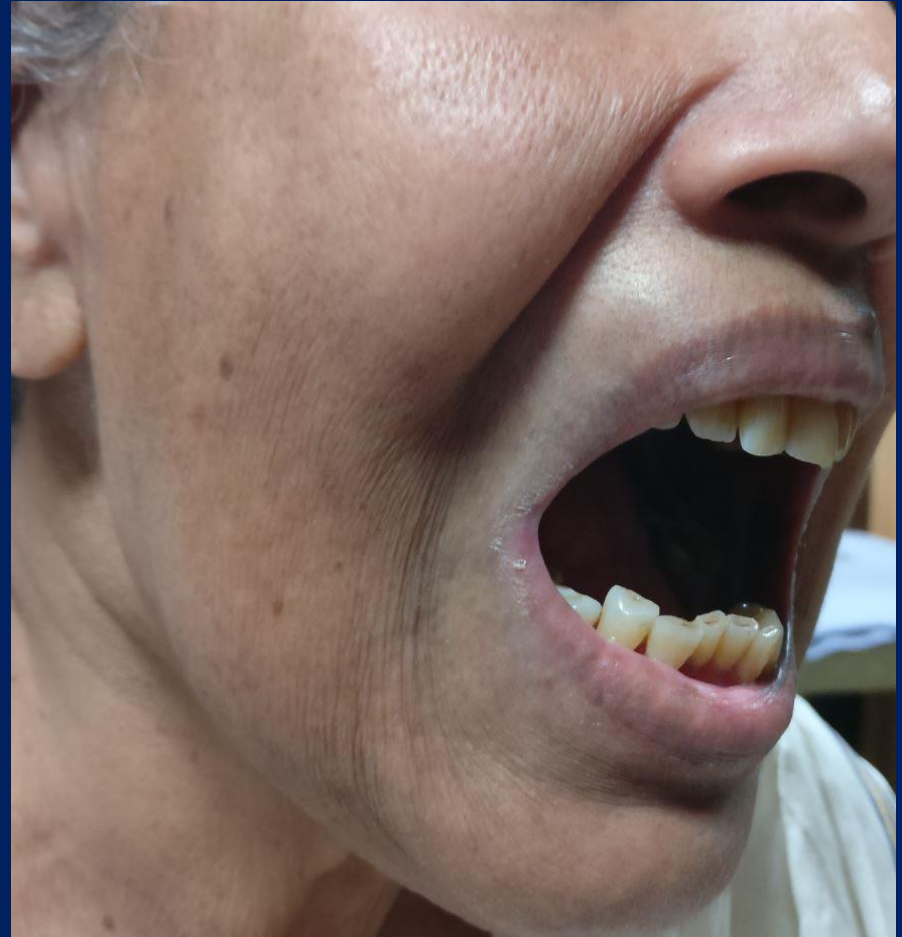
# T2N0 Buccal mucosa



# Early Oral cancer



## T2 Buccal mucosa Post RT-52.5Gy/15fr

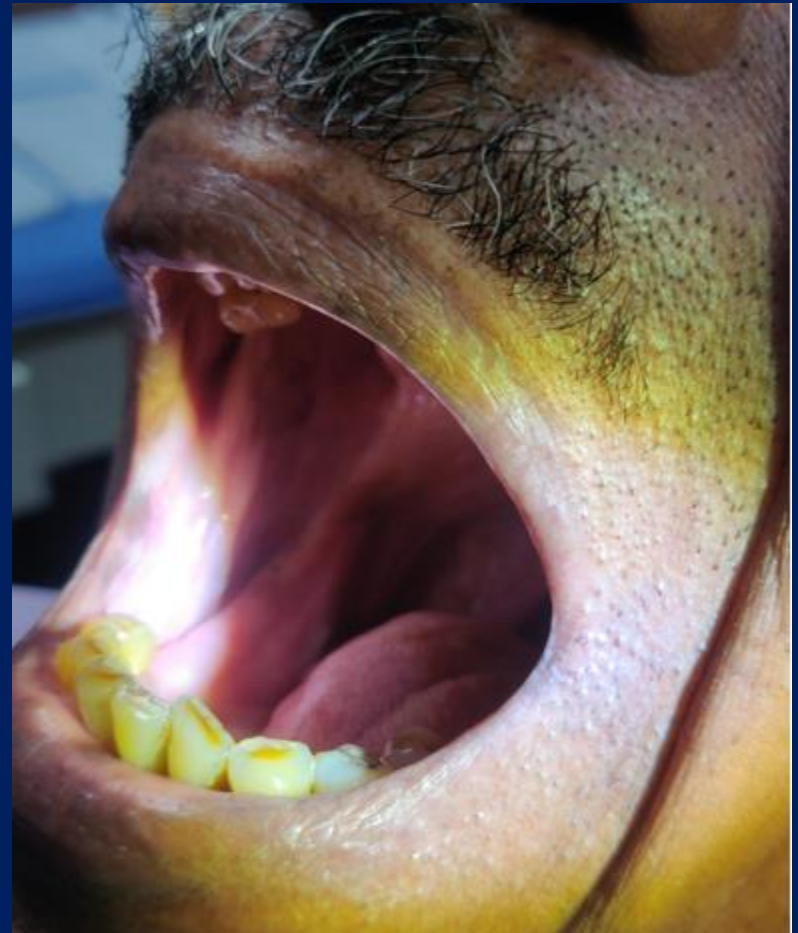


# Post RT- Hypofractionation – 52.5 Gy/15fr





# Post RT- Hypofractionation – 52.5 Gy/15fr



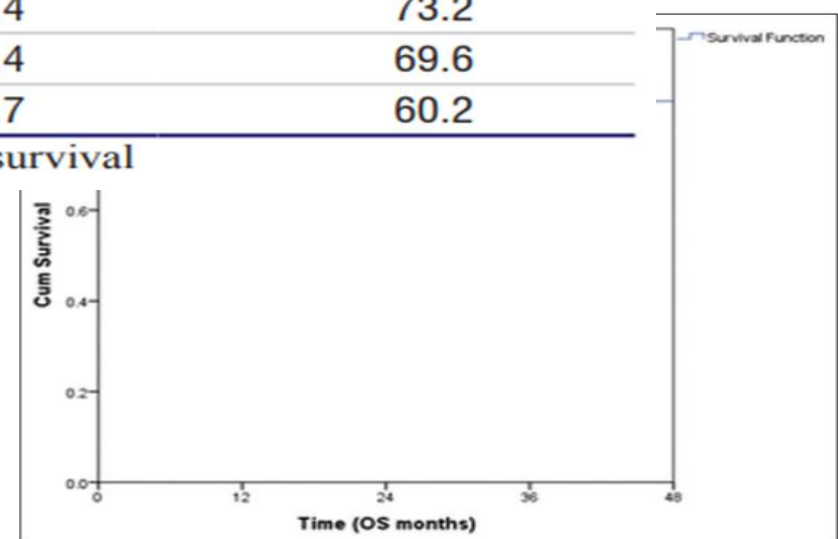
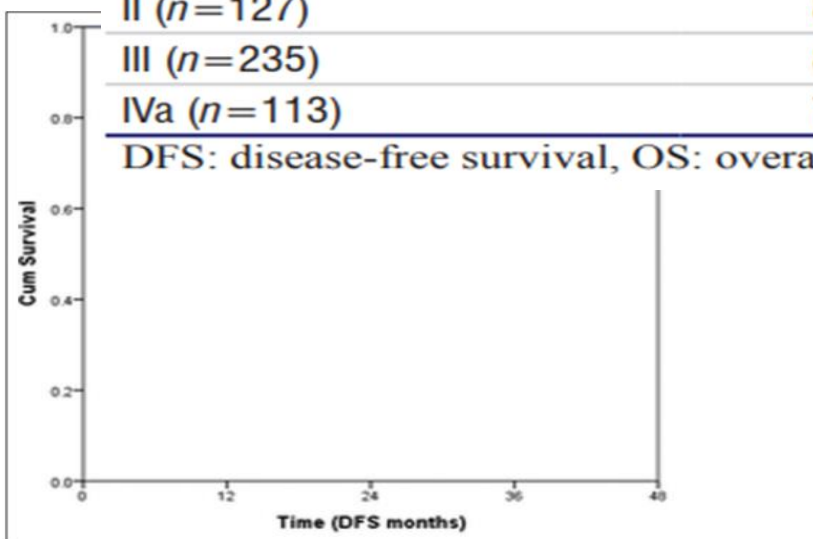
# Treatment outcomes of carcinoma buccal mucosa treated with definitive hypofractionated accelerated radiotherapy—A retrospective analysis

Geetha Babu<sup>1</sup> MD Radiotherapy, Deivick Devikumar<sup>1</sup> MD Radiotherapy, Malu Defil<sup>1</sup> DMD Radiotherapy, Zuzaki Sharafuddin<sup>1</sup> MD Radiotherapy,

**Table 2. Clinical stage-wise 5-year OS and DFS.**

Clinical stage (n=517)	5-year OS (%)	5-year DFS (%)
I (n=42)	80.3	75.7
II (n=127)	84.4	73.2
III (n=235)	81.4	69.6
IVa (n=113)	73.7	60.2

DFS: disease-free survival, OS: overall survival



**Figure 1:** Showing 5-year DFS. DFS: disease-free survival.

**Figure 2:** Showing 5-year OS. OS: overall survival.

# Continuation ...

**Table 3. Summary of various studies on the 5-year overall survival outcomes of carcinoma buccal mucosa reported in literature.**

	No. of patients	Stage I (%)	Stage II (%)	Stage III (%)	Stage IV (%)	Treatment
Present study (2021)	517	80.3	84.4	81.4	73.7	Radical radiation
Bobdey <i>et al.</i> (2018) <sup>[16]</sup>	409	85.2	82.9	56.3	42.6	Surgery±radiation
Diaz <i>et al.</i> (2002) <sup>[17]</sup>	119	78	66	62	50	Surgery±radiation
Turner <i>et al.</i> (1996) <sup>[19]</sup>	333	90	65	56	34	Radical radiation
Nair <i>et al.</i> (1988) <sup>[18]a</sup>	238	85	63	41	15	Radical radiation

<sup>a</sup>Three-year OS. OS: overall survival

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## Pilot Study Comparing 2 External Beam Radiation Therapy Schedules in Oral Cancer

Definitive Management of Head-and-Neck Squamous Cell Carcinoma

C.T. Kainickal • R.R. Kumar • S. Naveen • A.S. Sudha • M. Rafi • K. Ramadas

DOI: <https://doi.org/10.1016/j.ijrobp.2013.11.084>



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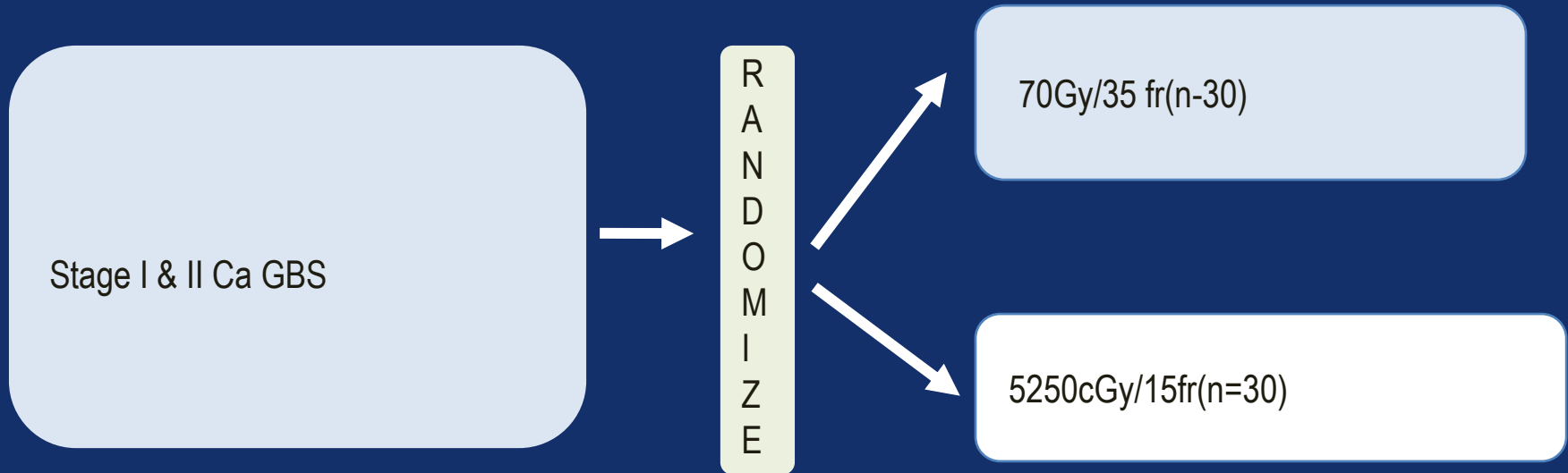
## Conventional radiotherapy versus altered fractionation for patients receiving radical radiotherapy for oral cancer: A randomised phase 2b trial

C.T. Kainickal , P. George, R.R. Kumar, M. Rafi, A.S. Sudha, R. Raghavan, K. Ramadas

Division of Radiation Oncology, Medical College Campus, Regional Cancer Centre, Kainickal, Trivandrum, Kerala, India

<https://doi.org/10.1016/j.ejca.2015.06.010>

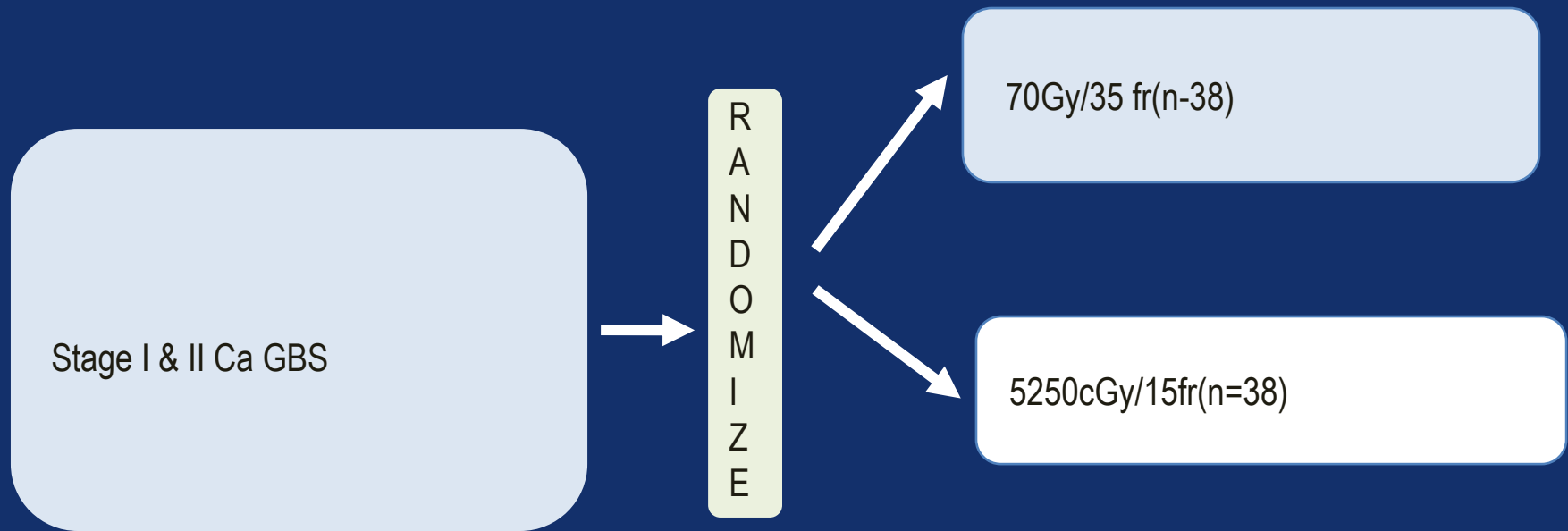
# Pilot study - Conventional RT Versus Accelerated RT



There was a trend to higher DFS with accelerated RT arm (81.5% vs 50.6%,  $p=0.10$ ) and a non-significant improvement in complete response rates (82.8% vs 66.7%,  $p=0.28$ ).

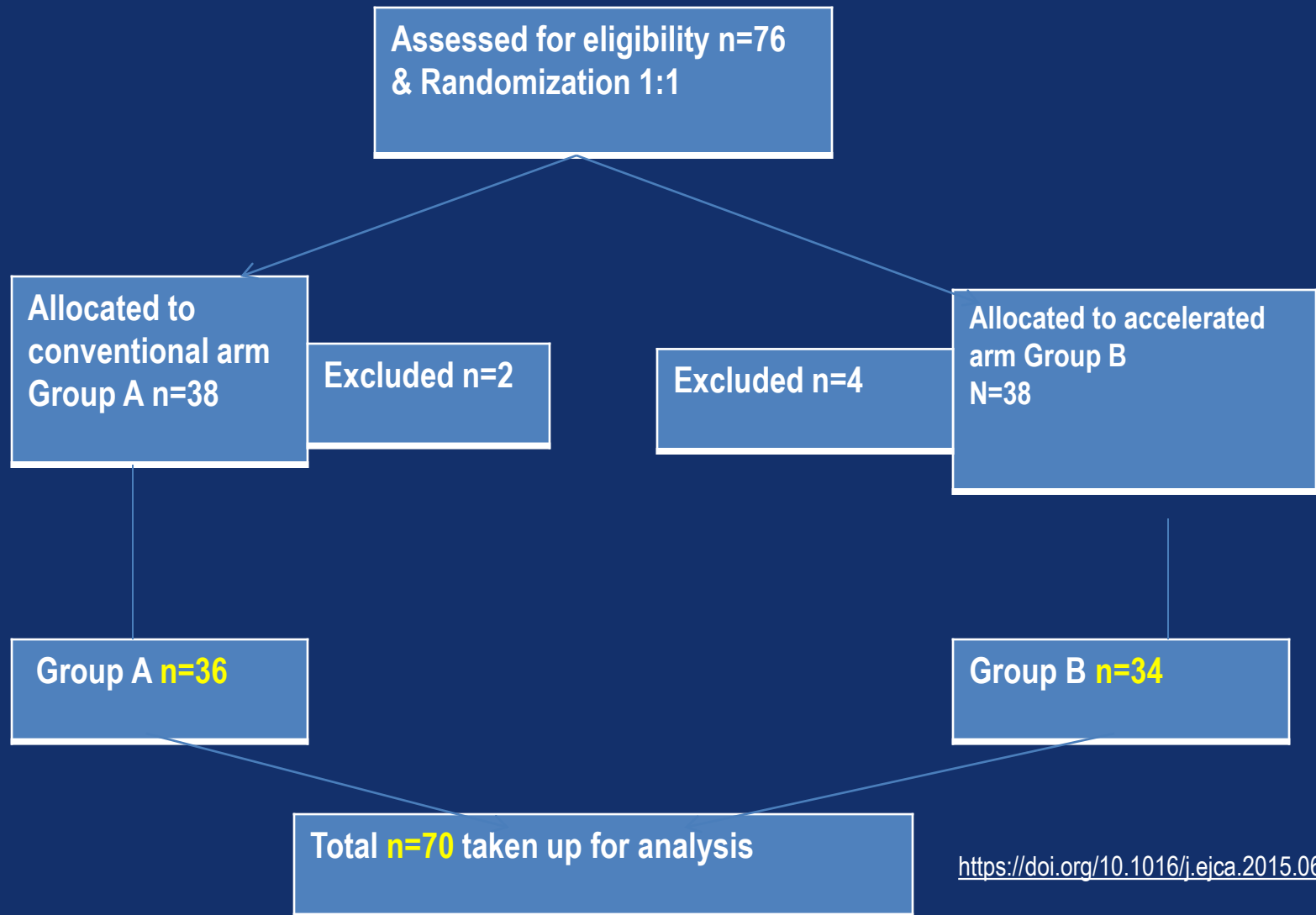
# Prospective Phase IIb Study comparing two EBRT Schedules in the definitive treatment of Oral Cancer

C.T. Kainickal, P. George, R.R. Kumar, M. Rafi, A.S. Sudha, R. Raghavan, K. Ramadas



<https://doi.org/10.1016/j.ejca.2015.06.010>

# Consort diagram



# Response Rate at 6 months

70Gy/35fr

52.5Gy/35fr

Response rate	N=36(%)	N=34(%)	P value
Complete Response	23(63)	31(91)	<b>P=0.010</b>
Partial Response	13(37)	3(9)	

Recurrence/residual	N=36(%)	N=34(%)	P value
Yes	15(41.6)	5(14.7)	<b>P=0.017</b>
No	21(59)	29(85)	

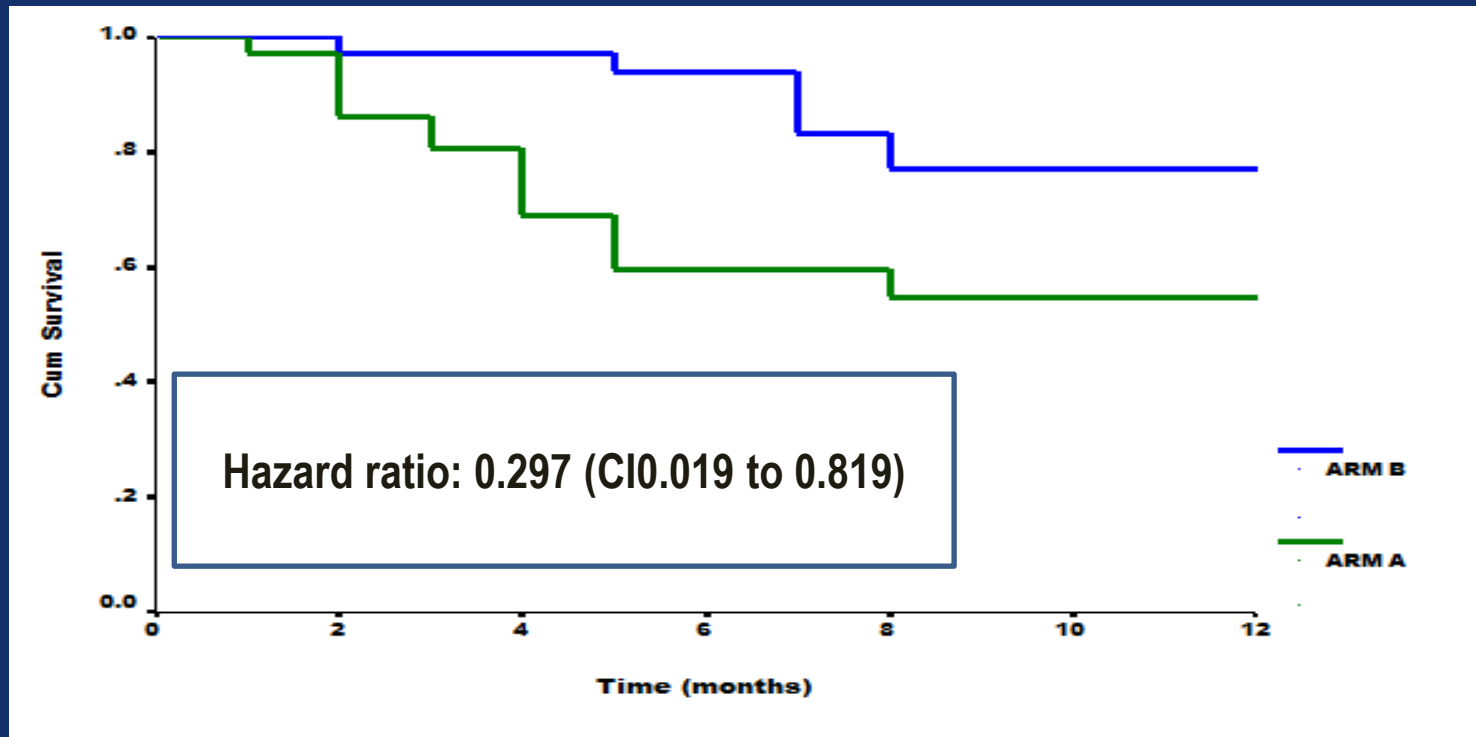
Reurrence/residual	(15)	(5)	Total(20)	P value
Salvaged with surgery	6	1	7	P=0.613



# DFS

Median follow up- 10.2 months (range: 4 – 16months)

	70Gy/35fr	52.5Gy/15fr	P value
1year	54.7	76.9	P=0.0107



# Hypofractionation in early HNSCC

- Whole treatment will be over by 3 weeks
- Very useful for institutions with long waiting period
- Well tolerated
- Comparable results with 70Gy/35fr
- Need to be validated in a phase III trial



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