

Chapter 13

Intraoral Cone (IOC)



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13.1 General Utilization

1. Mainly for floor of mouth, oral tongue, buccal mucosa, gingiva, and retromolar trigone.
 - (a) Indications:
 - Small, superficial, early-stage disease.
 - (b) Technique:
 - Administered with orthovoltage X-rays or electrons.
 - Orthovoltage preferred due to less beam constriction and higher surface dose.
 - If electrons are utilized, bolus is needed for adequate surface dose and a larger margin is necessary due to beam constriction.
 - Daily setup verification is necessary to ensure position of tumor relative to the cone.

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13.2 Specific Disease Sites

1. Floor of mouth

(a) Indications:

- Superficial (≤ 4 mm thick), well-differentiated tumors.
- Alone or as a boost with EBRT:
 - If used as a boost, IOC will precede EBRT (can optimally define the extent of tumor and procedure is difficult when following EBRT due to patient discomfort).

(b) Dose:

- Sole treatment = 45 Gy over 3 weeks (55 Gy over 4 weeks if palpable induration or positive margins).
- Boost w/ EBRT = 15–24 Gy in 10 fx followed by 45–50 Gy EBRT.

2. Oral tongue

(a) Indications:

- Early T1 and superficial T2 N0 tumors if patient declines or is at surgical risk.
- Typically used as a boost with EBRT
- Daily setup/reproducibility can be an issue due to difficulty with immobilization of the lesion.

(b) Dose:

- 21–27 Gy in 7–9 fx followed by 30–50 Gy EBRT.

Study	Patients	Treatment	Outcomes
Wang 1989 [1]	$n = 142$, oral tongue SCC (93 tx w/ IOC)	EBRT + brachytherapy or IOC boost IOC: 24–27 Gy in 8–9 fx EBRT: 51.4 Gy/32 fx BID	Brachytherapy boost: 54% 5-year LC IOC boost (orthovoltage) 50% 5-year LC IOC (electrons): 86% 5-year LC Toxicity: ORN, ulceration
Million and Cassisi 1994 [2]	N/A	EBRT + IOC boost IOC: 21–27 Gy in 7–9 fx EBRT: 30–32 Gy	Common dose fractionation schemes for oral tongue SCC

13.3 Summary

IOC is no longer commonly used. It has variable LC rates, and the literature is limited. The types of severe complication are similar to brachytherapy (ORN, ulceration) and generally acceptable, but, like brachytherapy, are also likely related to clinician experience and expertise in performing the procedure.

References

1. Wang CC. Radiotherapeutic management and results of T1N0, T2N0 carcinoma of the oral tongue: evaluation of boost techniques. *Int J Radiat Oncol Biol Phys.* 1989;17:287–91.
2. Million RR, Cassisi NJ. Management of head and neck cancer: a multidisciplinary approach. 2nd ed. Philadelphia, PA: Lippincott; 1994.