Management of Neck Nodes in Oral Cavity Malignancies

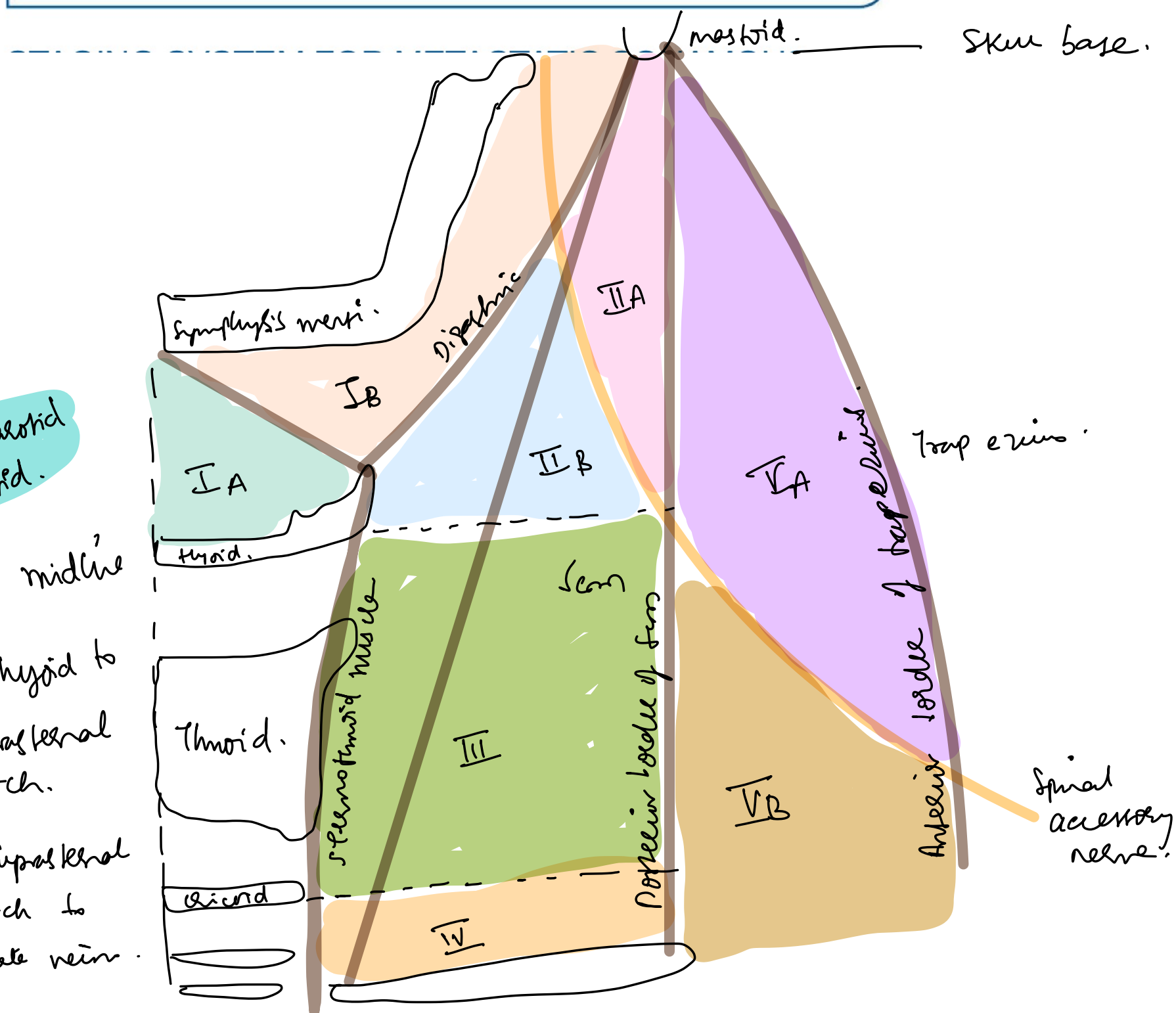
Management of neck in HNSCC

→ Levels of neck node :

TABLE 25.1 Clinical and Surgical Landmarks for Neck Node Levels

Node Level	Clinical Landmarks	Surgical Landmarks
Level I	Submental and submandibular triangles	Superior-lower border of the body of the mandible; posterior-posterior belly of digastric; inferior-hyoid bone
Level II	Upper jugular lymph nodes	Superior-base of skull; posterior-posterior border of sternocleidomastoid muscle; anterior-lateral limit of sternohyoid; inferior-hyoid bone
Level III	Middle jugular lymph nodes	Superior-hyoid bone; posterior-posterior border of sternocleidomastoid muscle; anterior-lateral limit of sternohyoid; inferior-cricothyroid membrane
Level IV	Lower jugular lymph nodes	Superior-cricothyroid membrane; posterior-posterior border of sternocleidomastoid muscle; anterior-lateral limit of sternohyoid; inferior-clavicle
Level V	Posterior triangle lymph nodes	Posterior-anterior border of trapezius muscle; anterior-posterior border of sternocleidomastoid muscle; inferior-clavicle
Level VI	Anterior compartment of the neck	Superior-hyoid bone; inferior-suprasternal notch; lateral-medial border of carotid sheath on either side
Level VII	Superior mediastinal lymph nodes	Superior-suprasternal notch; inferior-innominate artery

II a | II b and I a | I b divided by spinal accessory nerve.



Types of neck dissection

By AAO-HNS & American Society of Head & neck Sp

Comprehensive ND

minimum No: of nodes to be removed in HNSCC = 18 (AAO guidelines)

- RND
- MRND

RND
- Level I-V
- SAN
- SCM
- IJV

MRND
- Level I-V
+
Type 1 – SAN preserved
Type 2 – SAN + IJV, muscle cut → Sternocleidomastoid
SAN + SCM, IJV cut → Jatin Shah.
Type 3 – SAN + SCM + IJV preserved.

Selective ND

- SOHND
- extended SOHND
- Lateral ND
- Antero Lateral
- Postero lateral
- Central

SOHND	extended SOHND	Lateral ND	Antero Lateral	Postero lateral	Central
Level I–III CNo of SCC of Oral Cavity & Oropharynx.	- Level I–IV - to include skip metastasis in CA tongue Lateral border in CNo tongue ↳ Bayeis et al.	Level 2-4 - larynx, hypopharynx	Level 1–5.	Level 2–5 Posterior Scalp lesions.	Level 6, 7 Differentiated thyroid CA.

Extended selective → specific levels only in salvage setting post RT.

Nodal staging in HNSCC

→ HPV negative nodes:

Stage	Clinical stage	Pathological stage
Nx	Cannot be assessed	Same
N0	No mets +	Same
N1	single ipsilateral ≤ 3cm, ENE (−)	Same
N2a	single I/L >3 <6cm ENE (−)	Single I/L ≤ 3cm + ENE (+) (or) Single I/L >3 <6 cm, ENE (−)
N2b	multiple I/L none >6cm and ENE (−)	Same
N2c	multiple B/L node, none >6cm & ENE (−)	Same
N3a	Ln >6cm & ENE (−)	Same
N3b	Any node with clinically overt ENE (+)	Single I/L >3cm ± ENE (+) (or) Any nodes anywhere any size with ENE (+).

Clinical ENE
- fixed node
- matted
- infiltrating strap muscle/ SCM
- Carotid encasement.
- ↓ Restricted vertical mobility

→ HPV Positive nodal staging

Stage	Clinical	Pathological
N_X	Cannot be assessed	Same
N_0	Node negative	Same
N_1	one / more I/L node all < 6cm	mets to ≤ 4 nodes
N_2	C/L or B/L node all < 6cm	mets to > 4 nodes
N_3	Any number of node > 6 cm	No pN_3 stage

→ Evaluation of lymph nodes in HNSCC

→ Clinical examination → Sn ≃ 60 – 70%

→ Imaging → No single modality with 100% sensitivity.

→ meta-analysis by Liao et al

	Sensitivity	Specificity
USG	14 – 88%	User dependant.
CT	60 – 95%	all have ≃ 80%
PET/CT	60 – 70%	

→ Imaging characteristics of metastatic node

① Size — Level I / II → > 1.5 cm
other levels → > 1 cm
Retropharyngeal → 6-8 mm
3/more nodes in groups irrespective of number and level

} Accuracy of 80%.

② Shape — Rounded nodes

Solbiati index = $\frac{\text{maximal diameter}}{\text{minimal diameter}}$ < 2 = malignant

③ Density
- CECT → Necrosis ± central hypodensity and peripheral enhancement.
  - Sn = 91%
  - Sp = 93%
- CE MRI → hyperintense on fat suppressed T2 image
  - Sn = 93%
  - Sp = 89%

④ ENE
- irregular border → most specific.
- infiltration to surrounding structure
- irregular enhancement.

⑤ Carotid involvement → > 270° encasement predicts carotid involvement on T2 weighted image
- Sn = 92-100%
- Sp = 88-93%

→ Grading of ENE : – ENE > 2mm is significant.

Grade 0 – tumor confined to node

Grade 1 – tumor reaches upto capsule of node

Grade 2 – tumor breaches capsule ≤ 1mm

Grade 3 – > 1mm

4 – Soft tissue nets with no identifiable nodal architecture.

→ Management of N0 neck in HNSCC

→ Indications for NOT addressing the neck in N0 (NO END)

1. DoI ≤ 3mm (D'Cruz) ≤ 4mm (Sofia et al metanalysis)
2. T_x N_0 – Primary operated outside with negative margin superficial lesion.

Clinically N0

↓

Risk of occult nodal mets < 20%

Estimated by → Weiss et al using mathematical analysis

- > 20% risk → Primary treated by RT → Elective nodal RT
- Risk < 20% → Primary treated by Sx → SOHND 1–3 levels for oral cavity. 2–4 levels for larynx/hypopharynx.

Risk < 20%

↓

Patient candidate for regular follow up

- Yes → Observe
- No → Elective treatment.

current clinical practice

clinically cN0

T_1/T_2	T_3/T_4
↓	↓
Elective neck dissection	Elective neck dissection.

Some Results by SEND trial (British trial)

(D'Cruz et al (2004 - 2014)

n = 596 pts T_1/T_2 lesions well lateralised (80% CA tongue)

Randomised to END vs therapeutic ND (after appearance of node)

Results:

END showed improved OS (80% vs 67%)

END showed improved DFS (70% vs 46%)

DOI ≤ 3mm have limited benefit from END.

↓ Levels to be dissected

(metanalysis by Huang et al showed risk of nodal mets increased with increasing DOI

4mm → 4%

5mm → 16%)

Risk of level IV/V/2B mets in No neck - 2.4%

- Level I-3 SOHND
- Byers et al → 15% skip mets to Level 4 in tongue CA.
  Included Extended SOHND I-4 → Controversial results.
- Level IIb → Lea et al → risk of occult mets to IIb is 6%
  → Pantvaidya et al → IIA mets is single most important factor to Predict IIb mets.
  → IIb + III mets → Predicts Level 5 mets.

* Role of Frozen section of LN levels → Level IIa, Level III Sent.
  ↓ If positive ↓
  Level IIb, Level V Resected.

Clinically cN0 → Role of SLNB in HNSCC

→ Guidelines by 8th International Symposium on Sentinel node biopsy. midway btw END and CND.

* Patient selection:
  - primary resected & negative margin
  - cN0
  - No need to expose neck for reconstruction.
  * DOI alone is not an indicator for END.

Drawbacks of SLNB

- FNR - 10-12% in HNSCC.
- Shine through Phenomenon:
  - Strong Radioactive signal from primary tumor obscures the weaker signal from LN, seen in floor of mouth lesions.

* Technique:
  - Dual dye technique only
  - optical tracer (Blue dye / ICG) + Radionucleide

0.05 mCi / 1-2 ml injected peritumoral.

↓

Skin crease incision

↓

Gamma camera - Any node ≥ in vivo 10 second count more than 3x the background is a HOT NODE

↓

excised and staged by Ultrastaging → Serial Subsections with IHC AE1/AE3 → and surgery needed when positive in 15-30% cases

→ SENT trial
  - T1/T2 NO Oral cavity.

Results - SLNB had Sn = 86%
NPV = 95%
Occult mets detected in = 23%.

→ SLNB vs END

* Hernando et al → Better shoulder function
  - Small scar
  - ↓ hematoma.

* Ren et al →
  OS and RFS @ 10 years similar.

→ RCT in SLNB in HNSCC:
  - French group (Harrel et al) - equivalence trial - equivalent 2yr Nodal RFS in END vs SLNB.
  - Japanese trial -

→ Current Role for SLNB in Oral Cavity SCC:

- There is equivalence for SLNB and END according to meta analysis from ACTREC, Tiwang et al.
- Drawbacks
  - Steep learning curve
  - Expensive
  - 2 step procedure if positive
  - IHC Serial Sectioning – upto 6 to 10 sections of 5 micron thickness.
  - Cumbersome.
  - Skip through phenomenon.

Clinically N(+) neck management:

→ Level 1–5 vs level 1–4. in cN(+) neck:

* Partvaidya et al: 583 specimen:

- 91% of mets in Level 1–3
- 96% mets in level 1–4
- NO skip mets to level 4/5
- Incidence of level 5 mets – 3.6%.
- mets to level II 6 and 3 → most significant in predicting mets to 5.
- Skip mets to IIB without IIA also low.

All things considered, cN(+) in oral cavity with no significant level 2 nodes, comprehensive ND can be avoided.

Non surgical management of neck nodes

– Rate of Complete response after CCRT:

N_1 → 80%
N_3 → 40%
} → N_2–N_3 need node surveillance with PET/CT after CCRT

– Based on PET/NECK Anal.

