# 國軍左營總醫院放射腫瘤科

## 2023 年口咽下咽癌放射線治療指引

**本版放射腫瘤科共識會議日期：2022 年 4 月 7 日(與國軍高雄總醫院放射腫瘤科崔樂平主任)，**

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口咽下咽癌放射線治療指引與監測修正對照表

| 2022 | 2023 | 說明 |
|---|---|---|
| 視腫瘤位置需要時口中可含 cork | 口咽癌視腫瘤位置及病患狀況需要時口中可含 cork 固定 | 修改 |
| 經常做頸部柔軟運動 | 經常做頸部柔軟運動及手部按摩 | 修改 |
| | 更新 references | 補充 |

## 口咽癌放射治療適應症

一、根治性目的(Curative intent)

1. Early stage

   T1-2，N0 Definitive RT

   T0-2，N1 with single node ≤ 3cm：Definitive RT or CCRT

2. Locoregional advanced resectable disease：Definitive CCRT or induction chemotherapy followed by RT +/- systemic therapy.

   T3-4，Nany, Tany，N1 (single node > 3cm or 2 more ipsilateral node ≤6 cm) - N3

3. 手術後之輔助性放射治療(Adjuvant radiotherapy)

   A. Positive or close margin

   B. ENE (Extracapsular nodal extension)

   C. LN(+)

   D. PNI (Perineural invasion)

   E. LVP(Lymphovascular permeation)

   F. pT3 or pT4

4. 未產生遠端轉移之局部復發

二、緩解性目的(Palliative intent)

1. 無法手術切除：T4b or unresectable nodal disease 或 T4a 因內科問題或患者意願未接受手術切除

2. 有遠端轉移病灶
3. 併有遠端轉移且產生症狀之局部復發

## 下咽癌放射治療適應症

一、根治性目的(Curative intent)

1. Early stage (T1 N0)：Definitive RT
2. Locoregional advanced resectable disease (T1，N+ or T2-4a，any N)：Definitive CCRT or induction chemotherapy followed by RT +/- systemic therapy
3. 手術後之輔助性放射治療(Adjuvant radiotherapy)
    A. Positive or close margin
    B. ENE (Extracapsular nodal extension)
    C. LN(+)
    D. PNI (Perineural invasion)
    E. LVP(Lymphovascular permeation)
    F. pT3 or pT4
4. 未產生遠端轉移之局部復發

二、緩解性目的(Palliative intent)

1. 無法手術切除 T4b or Unresectable nodal disease 或 T4a 因內科問題或患者意願未接受手術切除
2. 有遠端轉移病灶
3. 併有遠端轉移且產生症狀之局部復發

## 根治性放射治療必要流程

一、治療計劃前完整的臨床評估

1. 確認期別、手術紀錄及病理報告，包括組織型態、腫瘤大小、邊緣、有無神經旁侵犯、有無淋巴血管浸潤、有無淋巴結轉移(包括數目/區域)、有無淋巴結膜外侵犯(ENE)。
2. 必要檢驗以排除有全身轉移之可能。
3. 經團隊會議討論及相關科別照會。
4. 必要時會做放射治療前的牙科會診及牙齒處置。

二、治療體位設定

1. 病人採仰臥，以頭頸模具固定，治療標記設定於模具及身體上。

三、模擬攝影

1. 病人依設定體位躺上電腦斷層攝影床，以金屬線進行必要標記(如手術疤痕、腫大之頸部淋巴、可疑腫塊)，口咽癌視腫瘤位置需要時口中可含 cork 固定，並配合模具固定身體位置。
2. 通常電腦斷層掃描每切面間距為 2.5mm，掃描範圍應包含整個口腔腫瘤及頸部淋巴區域，通常至少包括從眼眶到上縱膈腔。
3. 掃描後應以油性水洗不掉簽字筆作好標記供治療辨認。

四、治療計劃(treatment planning)

1. 臨床腫瘤體積(CTV：clinical target volume)
   A. 手術後之輔助性放射治療：CTV 包括原發腫瘤區(primary tumor bed)、侵犯淋巴部位/淋巴區以及潛在風險淋巴區。
   B. 無手術之放射治療：CTV 包括原發腫瘤部位、侵犯淋巴部位/淋巴區以及潛在風險淋巴區。
   C. 局部復發病人：CTV 包括復發部位。
2. 採用 IMRT 為治療方式，以減少危急器官放射劑量。
3. 治療計劃標靶體積(PTV：planning target volume)：PTV 依 CTV 增加 0.3 至 0.5 公分。鄰近腦幹處，考慮器官忍受劑量可為 0.1 公分。
4. 劑量評估參數：至少包括腦幹、脊髓、腮腺、顳下頷關節，當腫瘤位置較高時，尚要包括眼睛、視神經，視交叉等劑量。

五、放射治療前評估紀錄：包括病理報告、期別、核磁共振或電腦斷層攝影影像報告、病人簡史、理學檢查、重要檢查結果、診斷評估、體能狀態及治療計劃。

六、首次治療前應使用定位照相驗證片以確保照射範圍正確性，並由主治醫師確認簽章後才能進行。

**根治性放射治療技術**

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一、手術後之輔助性放射治療

1. 原發腫瘤區(primary tumor bed)給予 60Gy-70Gy，侵犯淋巴部位(involved nodes area)給予 60-70 Gy，未侵犯但有潛在風險淋巴區(uninvolved nodes area)給予 44-60Gy。每天一次，每週五至六次。
2. 若以 conventional sequential two phase radiotherapy 治療，daily fraction：1.8-2 Gy. Phase I：cover primary tumor with adequate margin and regional lymphatic region at risk with 44-50Gy. Phase II：boost additional dose to primary tumor bed and nodal bed for total 58-70Gy。總治療次數 29-35 次。
3. 若以 Simultaneous Integrated boost(SIB) technique 治療，daily fraction：2-2.2 Gy for CTV-H (primary tumor bed or involved nodes area)；1.8-2 Gy for CTV-M (high-risk primary tumor bed or involved nodes region)；1.6-1.8 Gy for CTV-L (low-risk uninvolved nodes area)。總治療次數 30-35 次。
4. 輔助性放射治療建議於手術後三至四週後開始實施。

二、 無手術之放射治療

1. 原發腫瘤部位(primary tumor area) 及侵犯淋巴部位(involved nodes area)給予 66-76Gy，未侵犯但有潛在風險淋巴區(uninvolved nodes area)給予 44-63Gy。總治療次數 33-40 次。每天一次，每週五至六次。
2. 若以 conventional sequential three phase radiotherapy 治療，daily fraction：1.8-2 Gy.Phase I：cover primary tumor with adequate margin and regional lymphatic region at risk with 44-50Gy. Phase II：boost additional dose to primary tumor and nodal areaswith limited margin to totally55-63Gy。Phase III: boost additional dose to primary tumor and nodal areas to totally66-72Gy。總治療次數 33-40 次。

3. 若以 Simultaneous Integrated boost(SIB) technique 治療，daily fraction：2-2.2 Gy for CTV-H(primary tumor bed or involved nodes area)；1.8-2 Gy for CTV-M(high-risk primary tumor bed or involved nodes region)；1.6-1.8 Gy for CTV-L (low-risk uninvolved nodes area)。總治療次數 35 次。

三、 Example：

1. Postoperative RT：

Simultaneous Integrated boost (SIB) technique：differential “dose painting” for each fraction throughout the entire course

A. For margin positive：

$CTV\text{-}H_{(70Gy)}$：2.0Gy x 35Fx

$CTV\text{-}M_{(63Gy)}$：1.8Gy x 35Fx

$CTV\text{-}L_{(56Gy)}$ ：1.6Gy x 35Fx

$CTV\text{-}H_{(70Gy)}$：primary tumor bed with 0.5-1.0 cm margin

$CTV\text{-}M_{(63Gy)}$：primary tumor bed with 1.0-1.5 cm margin/involved nodal area

$CTV\text{-}L_{(56Gy)}$ ：uninvolved nodal area

B. For margin close or ECS of neck node：

$CTV\text{-}H_{(66Gy)}$：2.0Gy x 33Fx

$CTV\text{-}M_{(59.4Gy)}$：1.8Gy x 33Fx

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CTV-$L_{(52.8Gy)}$：1.6Gy x 33Fx

CTV- $H_{(66Gy)}$：primary tumor bed with 0.5-1.0 cm margin / involved nodal bed

CTV- $M_{(59.4Gy)}$：primary tumor bed with 1.0-1.5 cm margin / involved nodal

area CTV- $L_{(52.8Gy)}$：uninvolved nodal area

C. For other adverse risk features：

CTV-$H_{(60Gy)}$：2.0Gy x 30Fx

CTV-$L_{(54Gy)}$：1.8Gy x 30Fx

CTV- $H_{(60Gy)}$：primary tumor bed with 1.0-1.5 cm margin / involved nodal area

CTV- $L_{(54Gy)}$：uninvolved nodal area

**可根據病人情況調整計畫**

Sequential (Two phases)：deliver the initial phase (week 4-5) followed by high-dose boost volume phase (week 6-7) using 2 separate dose plans

CTV-H：60Gy/30fx-70Gy/35fx

CTV-L：44Gy/22fx-50Gy/25fx

CTV-H：primary tumor bed with 0.5-1.5 cm margin / involved nodal bed with 0.5 cm margin or involved nodal area

CTV-L：uninvolved nodal area

2.Definitive RT：

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Simultaneous Integrated boost (SIB) technique：differential “dose painting” for each fraction throughout the entire course

CTV-$H_{(70Gy)}$/CTV-$M_{(63Gy)}$/CTV-$L_{(56Gy)}$：2.0Gy/1.8Gy/1.6Gy x 35Fx

CTV- $H_{(70Gy)}$：primary tumor with 0.5-1.0 cm margin / involved node with 0.5 cm margin

CTV- $M_{(63Gy)}$：CTV-H+ 0.5-1.0cm margin / involved nodal area

CTV- $L_{(56Gy)}$：uninvolved nodal area

**可根據病人情況調整計畫**

Sequential (Three phases)：deliver the initial phase (week 4-5) followed by moderate-dose boost volume phase (week 5-6.5), then gross tumor boost to high dose (week 6.5 to 8), usually using 3 separate dose plans.

CTV-H:primary tumor with involved nodal area :
66.6Gy/37fx – 75.6Gy/42fx

CTV-M:primary tumor with 1.5-2.0 cm margin / involved node with 1.0-1.5 cm margin or involved nodal level :
57.6 Gy/ 32 fx– 61.2 Gy/ 34 fx

CTV-L:uninvolved nodal area :
41.4Gy/23fx-50.4Gy/28fx

## 重要器官劑量評估參數

NOTE：All dose constraints below should be met whether the patient undergoes 3D-CRT or IMRT techniques.

*Critical Normal Structures*

Dose constraints are given below：

| Structure | true structure constraint | PRV constraint |
|---|---|---|
| Brainstem | 54 Gy max dose | no more than 1% to exceed 60 Gy |
| Spinal Cord | 45 Gy max dose | no more than 1% to exceed 50 Gy |
| Optic Nerves，Chiasm | 54Gy max dose | 54 Gy max dose |
| Mandible，TM joint | 70 Gy，if not possible then no more than 1cc to exceed 75 Gy | |

Parotid glands: Mean dose <26 Gy (optimal) or 30 Gy(acceptable), should be achieved in at least one gland; or at least 50% of one gland will receive < 33 Gy (optimal) or 35Gy(acceptable) (should be achieved in at least one gland).

Submandibular/sublingual glands and oral cavity： Reduce the dose as much as possible.

Other normal structurescan be considered:

| | |
|---|---|
| Each cochlea | No more than 5% receives 55 Gy or more (Mean dose less than 45 Gy) |
| Eyes | Max dose less than 50 Gy |

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| | |
|---|---|
| Lens | Max dose less than 10Gy |
| Glottic Larynx | Mean dose less than 40 Gy |
| Esophagus，Postcricoid pharynx | Mean dose less than 45 Gy |

根治性咽喉癌放射治療常見之副作用及程度分級：

**CTCAE 4.03-June 14, 2010**

| | Grade | | | | |
|---|---|---|---|---|---|
| **Adverse event** | **1** | **2** | **3** | **4** | **5** |
| Oral pain | Mild pain | Moderate pain; limiting Instrumental ADL | Severe pain; limiting self care ADL | - | - |
| Definition: A disorder characterized by a sensation of marked discomfort in the mouth, tongue or lips | | | | | |
| Mucositis oral | Asymptomatic or mild symptoms; intervention nor indicated | Moderate pain; not interfering with oral intake; modified diet indicated | Severe pain; interfering with oral intake | Life-threatening consequences; urgent intervention indicated | death |
| Definition: A disorder characterized by inflammation of the oral mucosal | | | | | |
| Dry mouth | Symptomatic(e.g., dry or thick saliva) without significant dietary alteration; unstimulated saliva flow>0.2ml/min | Moderate symptoms; oral intake alteration(e.g., copious water, other lubricants, diet limited to purees and/or soft, moist foods); unstimulated saliva 0.1-0.2 ml/min | Inability to adequately aliment orally; tube feeding or TPN indicated; unstimulated saliva <0.1 ml/min | - | - |
| Definition: A disorder characterized by reduced salivary flow in the oral cavity | | | | | |
| Dysphagia | Symptomatic, able to eat regular diet | Symptomatic and altered eating/swallowing | Severely altered eating/swallowing; tube feeding or TPN or hospitalization indicated | Life-Threatening consequences; urgent intervention indicated | Death |
| Definition: A disorder characterized by difficulty in swallowing | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Dermatitis radiation | Faint erythema or dry desquamation | Moderate to brisk erythema; patchy moist desquamation, mostly confined to skin folds and creases; moderate edema | Moist desquamation in areas other than skin folds and creases; bleeding induced by minor trauma or abrasion | Life-threatening consequences; skin necrosis or ulceration of full thickness dermis; spontaneous bleeding from involved site; skin graft indicated | Death |
| Definition: A finding of inflammatory reaction occurring as a result of exposure to biologically effective levels of ionizing radiation | | | | | |

根治性咽喉癌放射治療可能副作用與處置：

一、急性副作用：

1. 口腔黏膜炎：常以溫開水漱口，嚴重時可請醫師處方漱口劑及藥膏。
2. 嗅覺味覺遲鈍：需配合調節食物口味，在治療後將漸漸恢復。
3. 皮膚炎：減少磨擦，嚴重時可請醫師處方藥膏。
4. 口乾：隨身攜帶水壺漱口或飲用。
5. 下巴、頸部淋巴水腫：嚴重時可請醫師處理或開處方藥物。
6. 短暫性脊髓病變：在治療後將漸漸恢復。

二、慢性副作用：

1. 口乾：隨身攜帶水壺漱口或飲用，嚴重時可請醫師處方藥物。
2. 蛀牙：保持口腔清潔，定期牙科門診防治。
3. 牙關緊閉：練習張口運動。

4. 頸部僵硬：經常做頸部柔軟運動及手部按摩。
5. 中耳炎及聽力減退：定期耳鼻喉科門診追蹤。
6. 少數零星個案且較嚴重的副作用，如腦組織壞死、視神經及視網膜病變、腦幹病變、腦下垂體功能低下、永久性脊髓病變、骨頭壞死、白內障、吞嚥困難、大量出血及中風等等：定期門診追蹤，嚴重時可考慮介入處置。

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**2023 年口咽下咽癌放射治療品質監測指標**

1. 根治性口咽下咽癌病人接受放射治療前，主治醫師對該療程進行確認及簽章比率:閾值:95%

   分子定義：監測期間內，因口咽下咽癌進行根治性放射治療，於接受放射治療前，主治醫師對病患療程進行確認及簽章之人數

   分母定義：監測期間內，因口咽下咽癌進行根治性放射治療總人數

2. 根治性口咽下咽癌病人接受放射治療前，使用定位照相以確保照射範圍正確性之比率:閾值:95%

   分子定義：監測期間內，因口咽下咽癌進行根治性放射治療，於接受放射治療前，使用定位照相或影像導引以確保照射範圍正確性之人數

   分母定義：監測期間內，因口咽下咽癌進行根治性放射治療總人數

3. 根治性口咽下咽癌病人接受放射治療時，劑量符合標準政策之比率:閾值:90%

   分子定義：監測期間內，因口咽下咽癌進行根治性放射治療，於療程完成時，總劑量與標準劑量誤差為正負(含)10%以內之人數

   分母定義：監測期間內，因口咽下咽癌進行根治性放射治療總人數

4. 根治性口咽下咽癌病人接受放射治療時，治療時間符合標準政策之比率:閾值:90%

   分子定義：監測期間內，因口咽下咽癌進行根治性放射治療，於療程完成時，總治療時間與標準治療時間誤差為正負(含)兩週之人數

   分母定義：監測期間內，因口咽下咽癌進行根治性放射治療總人數

5. 根治性口咽下咽癌病人接受放射治療時，治療次數符合標準政策之比率:閾值:90%以上

   分子定義：監測期間內，因口咽下咽癌進行根治性放射治療，於療程完成時，實際次數與標準次數誤差為正負(含)10%以內之人數

   分母定義：監測期間內，因口咽下咽癌進行根治性放射治療總人數

6. 根治性口咽下咽癌病人接受放射治療時，急性期非血液副作用出現第三級或以上之反應的比率:閾值:30%

分子定義：監測期間內，因口咽下咽癌進行根治性放射治療，於療程完成時，急性期副作用出現第三級或以上之反應之人數

分母定義：監測期間內，因口咽下咽癌進行根治性放射治療總人數