



INCISIONS FOR NECK DISSECTION IN ORAL AND MAXILLOFACIAL SURGERY-A REVIEW OF LITERATURE

Maxillofacial Surgery

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ABSTRACT

Surgical incision design is a critical portion of operative planning for neck dissection to allow adequate exposure to harvest a representable nodal yield and eliminate gross metastatic neck disease. As the understanding of the vascular supply of the neck skin and clinical practices improved, some incisions were preferred to others. However, a particular type of incision is still not used uniformly on each patient. Considering an oncological perspective and the technical aspects of incisions these should provide nodal clearance and superior cosmesis, without increasing the risk of complications and compromising vascularity. Although a particular incision maybe used, there are still some fundamental specifications that needs to be considered.

KEYWORDS

Incisions, Neck Dissection, Complications in Neck Dissection

INTRODUCTION

Surgical incision design is a critical portion of operative planning for neck dissection (ND) to allow adequate exposure to harvest a representable nodal yield and eliminate gross metastatic neck disease. The selection is often based on the surgeon preference and access required for optimum neck disease-clearance without increasing the risk of complications and compromising vascularity.¹

Physical characteristics such as neck flexibility, neck length, girth, muscle-bulk, and fascial consistency may influence surgical incision planning. Patients with decreased neck extension, decreased thyromental distance, increased neck-girth, and thick muscle-bulk make the dissection more challenging, and must be thoroughly evaluated preoperatively.¹

Conditions For Ideal Incision^{2,3,4}

1. Good exposure for surgery
2. Preservation of the vascular supply of the skin flap(s).
3. It should look good cosmetically, not limiting the movement of the head and neck.
4. Avoidance/ minimized post-operative complications.
5. Prevention of damage to the anatomical structures especially the carotid artery, occurring post-operatively.
6. Capable of flap transfer as primary reconstruction/defect covering.
7. It should be suitable for tracheostomy formation.^{2,3,4}
8. Considerations for unilateral versus bilateral procedures, location of nodal disease and type of dissection⁵

Classification of Incisions For Neck Dissection

Transverse incisions⁷ following the natural folds of the skin are cosmetically advantageous. Recovery of the scar is rapid and successful. They are easy to modify, but it destroys the neck's venous drainage from top to bottom, causing flap separation.^{6,3}

'Vertical' incisions intersect the natural folds of the skin and the vascular supply of the neck^{7,8}. It tends to contract along their long axes, leading to deformity and restricted action. Contracture can be prevented by giving a posterior sigmoid curve^{9,10,3}.

Appiani et al classified incisions into 5 groups according to kinds of incisions and number of flaps involved-Simple Incisions, One Flap and Bipedicled Single-Flap Incisions, Two-Flap Incisions, Three-Flap Incisions, and Four-Flap Incisions.¹¹

Incisions For Neck Dissection T-shaped Incision

One of the first incisions of neck mentioned in the literature, was a "pull-through" approach for tongue tumor, by Regnoli of Pisa, which used a T-shaped incision made under chin for removal of carcinomatous tongue. A midline skin incision on the neck, from the symphysis to the middle of the hyoid bone, followed by a horizontal

incision on each side from the symphysis along the lower border of the jaw, toward the anterior margin of the masseter.¹²

Kocher Incision(Y-shaped)

Kocher advocated for the systematic removal of the submandibular gland and associated lymph-nodes in addition to the primary site when performing floor of mouth and tongue resections through a transcervical approach.¹³

The long arm extended from the mastoid to the level of the omohyoid muscle at its junction with the anterior border of Sternocleidomastoid muscle(SCM).¹⁴

Crile Incision

It begins from the tip of mastoid process in a curvilinear fashion upto the tip of the hyoid, extending superiorly to the submental area. A vertical limb is dropped at 90° from the posterior aspect of this incision behind the carotid artery and extending inferiorly to the middle portion of the clavicle in a lazy 'S' fashion.¹⁵

Advantages^{3,16}

- Maximum exposure of the operative field.
- Can be preferred for a radical(RND) and modified radical neck dissection(MRND).
- Superiorly can be extended from the submental area to make a lip-split incision to include primary tumour.
- Good exposure to the oral cavity with slight modification

Disadvantages^{3,16}

- Primary recovery is <50% in neck areas that received radiotherapy.⁸
- Occurrence of flap separation and delayed wound healing on trifurcation position⁸.
- By damaging the blood stream in the medial direction, the vertical-section may cause necrosis in medial-flap.^{8,17}
- Vertical limb overlies carotid artery, and can lead to carotid artery blowout/ rupture, especially in postoperative radiotherapy^{8,17}
- Cosmetically vertical limb gives more contraction and scarring.¹⁶

Martin(Paired-Y)

Advantages

- The exposition is good³
- Popular for functional and selective ND.
- A chin extension may be used when the removal of the primary tumour requires an intraoral approach.¹⁶

Cosmetics is improved by giving the vertical arm a slightly S-shaped curve. The modification of Double Y is Single-Y incision, which avoids one of the crossings of the double-Y but makes the dissection of the supraclavicular fossa difficult.⁸

Disadvantages

- Flap necrosis and carotid artery rupture at trifurcation that

- received radiotherapy.⁶
- Destruction of both ascending and descending arterial and venous recovery in both of the four flaps.¹⁸
- Combined with stoma, contracture can be seen.¹⁸
- Compromised blood supply to the skin flap, especially in the two crossings of the incision. Vertical arm of the incision should be placed posterior to the carotid artery.¹⁶

R.H.Vanakh described the “**Vanakh Surgery**” involving “collar incision” for removal of carcinoma of the lower lip, removing both the submandibular glands, submandibular and submental lymph nodes.¹⁹

H.Morestin described a cutaneous access called “**incision stellaire**”, preserving the SCM, internal jugular vein and spinal accessory nerve (SAN), and removing the level IIB lymph nodes.¹⁹

MacFee

Composed of two horizontal parallel incisions: Superior incision is placed at the level of the submandibular gland and parallel to the mandible within a skin crease and Lower incision is placed at the supraclavicular area within a skin crease.³

Advantages

- Excellent cosmetic result.⁹ There is no crossing or converging of incisions and no angles, with questionable blood supply.^{19,20,21}
- No lessening of vascularization in the centre.²²
- No angle and intersection in incisions.⁹
- Rapid post-operative wound recovery.^{9,16}
- Suitable in necks receiving radiotherapy and in peripheral vascular diseases.²³
- Despite the cessation of ascending and descending vascular supply, due to wide bipedicular flaps, recovery will not fail.^{3,24}
- The increased time to raise the flap is offset by the decreased closure time.¹

Disadvantages

- Exposure is not good.¹⁸
- Not suitable for bilateral simultaneous ND.²⁵
- It takes longer time to raise.²¹
- Difficulty while working under bridge flap and in posterior ND.²³
- In short necks, it might be difficult to distinguish the front tip of the incision from the tracheostoma.^{23,26}
- Not suitable for patients with shorter neck-length, obese patients/less elastic neck-skin.^{16,27}
- Dissection under central bipedicle flap is tedious.
- Extensive stretching and traction can result in bruising and damaging of skin edges.^{16,27}
- Interference with the reconstruction process with a pedicled flap.^{16,27}

Macfee Modification included a posterior vertical limb, a horizontal limb, anterior vertical limb with/without a Z-configuration and a lower-neck crease.²⁸

Tubach Modifications-When the primary tumor is being resected in the same setting, the MacFee incision needs to be modified depending upon the extent of the tumor-Extension of Incision for Lip-Split, for Splitting Angle of Mouth, Gingivobuccal Carcinoma with Full Thickness Infiltration of Angle of Mouth/Lower Lip, or Cheek and in case of Visor Flap.¹⁵

Schobinger

Y-type incision with the vertical component more posteriorly, rather than directly over the carotid, creating a long anterior- and posterior-based skin flaps, plus a superior-flap.²⁹ It was slightly modified by adding a curve to the vertical component.³⁰

It has two components-horizontal limb which curves from tip of the mastoid process to the midline of submental region, vertical limb starts one finger-breadth behind the angle of mandible and right angles with the horizontal limb. The incision carried down to the edge of trapezius reaches to the midline of clavicle.¹⁶

Schobinger with Babcock and Conley made a longer anterior flap, which protected the carotid artery by preventing the posterior flap from remaining ischaemic.^{29,31}

Advantages

- The exposition is good.³
- Most useful in reaching intraoral lesions.³²

- Provides adequate covering and protection of common carotid artery and its branches.¹⁶
- Choice of incision for MRND and RND.
- Commonly used for bulky neck disease/level V nodal group is involved.³³

Disadvantages

- The descending arterial recovery may breakdown.¹⁸
- The front and the tip of the medial flap might become necrotic, this weak point being behind the carotid artery bifurcation, specifically post-radiotherapy.^{18,32}
- Tripartite suture-line is cosmetically inferior which gives a high incidence of postoperative wound dehiscence, flap necrosis and scar contracture.⁵
- Blood supply to the posterosuperior part is not good and occasionally becomes devitalized.¹⁶
- More time-consuming to raise due to the raising of anterior and posterior flaps.^{1,21}

Schobinger incision as modified by **Yoel and Linares**^{34,35} included the extension of the vertical line of incision below the subclavicular area to the nipple-areola complex. Advantages:

- 1) an unobstructed vision of anatomic landmarks and the more distal surgical elements;
- 2) increased blood supply by means of recruitment of new arterial vessels from the first, second, third, and fourth internal mammary perforators;^{5,34}
- 3) Flap necrosis will not compromise the coverage of the great vessels of neck;
- 4) Excessive mobility permits it to be used in facial areas, facilitating their reconstruction.
- 5) Permits access to different areas of the surgical field, allowing protection of vital anatomic structures in both the pre- and postoperative periods,
- 6) Inconspicuous and aesthetically acceptable final scar.

Lasaridis reported that as the vertical limb of modified Conley incision is behind the anterior margin of Trapezius, the skin flap heals without contraction and webbing and the scar is readily hidden by hair/clothing. It can be modified to gain access to either the sternal head/ mandible for composite resections of the tongue/ mandible.³⁶

Modified Schobinger Incision Uses-

- Extended anteriorly as lip-splitting incision in order to expose the primary oral-cavity tumor. Vertical incision was placed at 90° to avoid flap dehiscence; vascular damage and flap necrosis giving wide surgical access.^{5,21}
- RND is performed along with extirpation of the primary lesion/when other nearby areas must be included in the dissection.
- When a parotid resection must be performed together with RND, the submandibular arm of the original incision must be replaced by preauricular.
- When a wide exposure of lateral, supraclavicular/medial aspects of the neck was necessary.³⁴

H-shaped Incision

Kambic and Sirca recommended the H-incision to replace the double-Y, as they found no transverse arteries.³⁷

Advantages

The exposition is well.³

Disadvantages

The carotid artery might be exposed. The front vertical section of the incision will damage collateral recovery from the opposite section of the neck.¹⁸

H-Flap rightly places the horizontal limb in the anastomotic area between the ascending and descending arterial supplies. The anterior vertical limb, unnecessarily deprives the flap of collaterals from the opposite side of neck. There maybe nonunion of flap edges, with exposure of the midcarotid artery. It traps some edema in the most dependent part of the upper flap.¹⁸

Half-Incision-The horizontal limb is at the junction of the ascending and descending arterial supply. The collaterals from the opposite side of neck are left unimpaired except in the commando modification where slight edema in the upper flap is beneficial for cosmesis. The vertical incision lies at the edge of the anterior and posterior arterial supplies of neck. The half-incision runs from the mastoid process

halfway down the posterior border of SCM. From there it is aimed to the midpoint of the clavicle and is carried over the clavicle for 2-4cm. This limb is curved in an "S"-shape in order to help obviate the development of a cheek rein. The transverse incision lies at about the level of the cricoid, beginning 3cm across the midline on the opposite of the neck and is carried in a skin fold horizontally to the midpoint of SCM. The submaxillary triangle is reached by developing the upper flap across the midline above the hyoid.¹⁸

- If a commando procedure is planned, the incision splits the lip and runs vertically to the level of hyoid bone/ thyroid cartilage notch, and then runs horizontally in a skin crease back to the midpoint of the SCM.
- In a hemimandibulectomy following irradiation, the resultant trapped edema in the superiorly-based flap helps fill in the defect and improves the cosmetic result.
- If a bilateral ND becomes necessary later/if a staged dissection is planned, a similar incision on the opposite side may be used with no difficulty.
- This incision is useful if a double-Y has been used previously on the opposite side and the inferior supply to the anterior portion of neck has been compromised. A second double-Y incision would sever the whole ascending supply to the neck.¹⁸

Apron Flap

The apron incision is the workhorse incision that provides almost equivalent exposure as the Tri-radiate, without its wound healing risks. It can be easily converted into a Schobinger/modified Schobinger.¹

Advantages

- Carotid artery is well-protected.¹⁸
- Protects descending arterial recovery.¹⁸
- Can be incorporated with different approaches-lip-split approach/modified Blair incision.
- Used to perform selective ND, MRND/ RND¹
- The avoidance of trifurcation, maintenance of blood supply from the external carotid artery allows for faster healing,³⁶ even in irradiated neck.³⁸
- Large, single incisions offer a safer blood supply and better exposure, although maybe inadequate posteriorly.²⁷

Disadvantages

- Damage to ascending arterial and venous recovery.¹⁸
- Oedema and venous congestion might develop at the bottom corner.
- If it extends over the clavicle there is an increased likelihood of slough of the dependent portion, but the carotid is not endangered.¹⁸

Gluck Incision

It is basically an apron-flap incision, with a vertical posterolateral arm to approach the supraclavicular area. For a bilateral functional ND, the incision extends between both mastoid tips, crossing the midline at the level of cricoid-arch. Sometimes the vertical arm can be avoided by prolonging the apron-flap in a posteroinferior direction, producing a better cosmetic result.¹⁶

J-Incision

A vertical incision was made extending from the mastoid apex to 2cm above the clavicle and along the back of SCM. The incision with a curve was then extended in a horizontal plane and continued in parallel to the bottom edge of the cricoid cartilage and was stopped at the point where SCM is attached to the clavicle. In situations that required bilateral ND, the incision continued symmetrically and extended across to the mastoid apex.³

Advantages³

- Good exposure and can be easily modified.
- Carotid artery is well protected.
- Reduction of the occurrence of fistula.
- Flap vascularization is good.
- Suitable in necks with bilateral ND and which received radiotherapy.
- Cosmetic results are very good.
- Tracheostomy can be performed in a horizontal segment.
- Rotation/transposition flaps can easily be in the required position.³²

Disadvantages³

- Contracture in the vertical-top section.
- Flap separation in the horizontal section

- Morbidity with complications-Wound dehiscence, Flap necrosis, Subcutaneous hematoma, Wound infection, Skin contracture and Oedema.^{3,23}

Modified J incision is used for exposure of levels I-IV. Vertical limb takes origin just anterior to the tip of mastoid and follows the anterior border of trapezius and extends inferiorly and curves obtusely across posterior triangle, 3cm above the clavicle to anterior border of SCM. Disadvantage: Cannot be used in mandibular-swing/lip-split to involve primary tumour.¹⁶

Paul André described the classical "J" approach providing exposure of zone-V without expansion. In the modified approach through a transversal incision in a natural neck crease, incision started from the upper outer-edge of the thyroid cartilage and ran to the posterior border of the SCM, measuring 7cm. For dissecting supraclavicular nodes, incision was extended along the anterior border of trapezius to expose zone-V. When parotidectomy was indicated, it could be achieved by extending the transverse-cervical incision using a pretragal facelift-like vertical incision.³⁸

Single Transverse Incision

It extends from anterior border of the trapezius to the level of the cricoid cartilage.¹ The vasculature is random, supplied from the platysma, and thus skin flaps should be raised in the subplatysmal plane. If a bilateral-ND is performed, it should not extend caudally to preserve the facial and occipital arteries for flap viability. This flap design should not be used if the platysma is adhered to underlying lymph-nodes/if the tumor has invaded the overlying skin. It requires less intensive retraction and decreases the risk of marginal ischemia.³⁹

Advantages:

- Good cosmesis and aesthetics, only if level-I is not involved/part of dissection.¹
- Incision placed in the cervical neck crease at RSTL, creating a barely perceptible scar. It relies on the elasticity of the skin and platysma. Therefore, it may not be appropriate in patients where skin elasticity is limited due to fibrosis/with extensive subcutaneous fat.²
- Suggested for N0 neck/ endoscopic ND, where aesthetics is significant. This suffices a supraomohyoid ND(SOHNND).¹⁶

Disadvantages:

- Limited access with limited exposure²⁴ especially in patients with long necks, high positive level-II nodes, and in the need to explore level-I. Adjusted transverse cervical incision might improve exposure of level I-V without extension.¹
- Choice of NDs is limited as MRND and RND is difficult and time consuming.¹⁶
- Increased risk of wound-dehiscence specifically at the trifurcation region leading to exposure of large vessels.⁴⁰
- increased risk of skin breakdown, especially post-radiotherapy.²

Modified Single Flap-The transverse limb runs backward from the submental region, as for any type of surgery on the submandibular gland, taking care to avoid the mandibular branch of the facial nerve. At the posterior margin of the SCM, about 3cm below the tip of the mastoid process, the incision curves gently downward keeping about 2cm behind the anterior margin of trapezius. This vertical limb extends down to the clavicle. There is adequate exposure, and no difficulty in exposing medially upto the sternal insertion of the SCM.⁴¹

Single Transverse Cervical Incision

- Incision along a Langer's line at the junction of upper 2/3rd and lower 1/3rd of neck was made of approximately 9-11cm in length extending anteriorly from anterior border of SCM to anterior border of trapezius posteriorly.^{5,16}
- Around a 12cm(unilateral dissection)/ a circa 15cm(bilateral dissection) transverse incision was performed on the upper border of both clavicles. Incision extended through platysma, but not deeper.⁴²
- Incision in low skin-crease in the neck and extends to the mastoid process laterally and crosses the midline by 2-3cm below the thyroid cartilage to the opposite side.⁴³

Advantage

- Natural skin folds, in the same direction, provides quick, firm healing and excellent aesthetics²⁰
- Parallel to, and not invading the RSTL, it favors a good

- postoperative scar.⁴²
- Easy access to veins in the contralateral anterior neck in free flap surgery if the vascular architecture is compromised on that side.⁴³
- skin necrosis not seen in preoperative radiotherapy and postoperative infection, affirming the generous cutaneous blood-supply to the flap.¹²
- Extended-STI used for minimal disruption of the arterial zones, adequate venous outflow and broad bases to the superior and inferior flaps.¹²
- Potential carotid artery exposure from wound dehiscence/necrosis is minimized because the incision crosses the carotid only once at right-angles⁴⁴ and trifurcate incisions/ a short posterior flap donot exist.⁴⁵

Disadvantage

- Possibility of technical difficulty induces greater lymph-node recurrence-rate.²⁰
- access to the upper-neck levels might be more difficult due to the increased distance from the incision-site.⁴²

Vascularization is in random pattern, and its viability is supported by the vascularization of platysma as the skin is raised in a subplatysmal plane. If bilateral conservative NDs are planned, the viability of the flap should be secured by not extending the lower border of the skin flap caudal to the supraclavicular area and by preserving the facial and the occipital arteries.⁵

Extension across the midline obviates the need for a vertical incision superiorly to access the contralateral level-Ia neck. Access to the lateral neck and level-Vb can be improved by a vertical extension towards the clavicle/ by a separate horizontal incision just above the clavicle, providing a broad base of blood supply and eliminating the necessity of a vertical incision.⁴³

Extreme caution must be exercised when making the incision across the posterior triangle as the SAN is often superficial and vulnerable to injury.⁴⁴

STNI Modifications include upward extension from midline through the upper lip for oral composite resections and upward extension from trapezius for parotid lesions requiring NDs.⁴⁴

Rogers and Freeland endorsed the use of horizontal incisions in the "watershed" region to ensure adequate flap nutrition, since there is minimal disruption of the arterial zones, adequate venous outflow, and broad bases to the inferior and superior flaps.⁶

Hockey Stick and Reverse Hockey Stick Incisions

Lahey first described hockey stick incision(HSI), having two components longitudinal and transverse incision but in continuation as single incision. A low transverse incision above suprasternal notch curving superiorly as a vertical incision to reach the tip of mastoid process. The difference in HSI and RHSI is based on difference in skin flaps. HSI allows elevation of a superiorly based single cervical flap and reversed HSI allows for an inferiorly based flap.¹⁶

Omura described different types- HSI, Bilateral-HSI, Reversed-HSI, Upwardly extended reversed-HSI and Contralaterally extended reversed-HSI³⁰

Salient Features-

- HSI involved difficulty in accessing the submental region and the mouth. The mediosuperiorly-based skin flap of the HSI had to be retracted upwardly in order to explore the submental region and the oral cavity.³⁰
- Reversed-HSI provided better access without retracting the skin flap.
- Upwardly extended reversed-HSI allowed the lower lip-split, providing excellent exposure of the operation field.
- In reversed-HSI, the apex of a skin flap with an acute angle has an increased tendency to become necrotic due to poor blood-supply.
- Bilateral-HSI in patients combined with glossectomy allowed deglovement of the whole neck and access to the oral cavity was relatively easy. To make the incision for tracheostomy, the transverse part of the bilateral-HSI had to be displaced superiorly.
- Extended reversed-HSI was applied for bilateral ND, including ipsilateral RND and contralateral SOHND. Upwardly extended reversed-HSI allowed the lower lip-split, leading to the greatest exposure of the operation field.

Advantages:³

- 1) It provides an optimal exposure of the operation field, is versatile as long as no skin defects are created at the base of the flap, and can easily be combined with intraoral incisions for incontinuity resection and reconstructions with any type of free or pedicled flap.⁴⁷
- 2) Reversed-HSI was applied for block-resection of parts of the oral cavity because it provides much better exposure of the operation field.³
- 3) An acceptable cosmesis, preferable in younger patients²²
- 4) HSI provides good exposure to parotid area.
- 5) Suitable for access to level-I-V, and lateral component of the neck.⁴⁶
- 6) Both HSI and RHSI are gently curved single linear incisions without three-point suture junction lines, hence prevents wound dehiscence and carotid blowout.
- 7) Ideal for NDs like MRND, RND and post irradiated neck, as it does not form a three-point junction and prevents wound dehiscence and carotid blowout.³

Disadvantages:

- Vertical incision crosses the RSTL, causing evident scarring.³
- Raising the skin flap takes approximately 20minutes more than the Y incision, as the platysmal plane is not clear at the start of the incision.²⁷
- The exposure of the submental area is suboptimal and may require extension of incision along/ below the jaw.^{27,47}

HSI-Modifications-

- In parotidectomy, the incision is extended in front of the ear and a forward cut is made for additional exposure.
- For greater exposure in the submandibular area, the incision is extended forward parallel to the mandible. The horizontal limb can then be made below the clavicle for widening the flap-base and improving the vascularity.
- The flap can be rotated to cover a skin defect in the face/ neck, such as involved skin over level-II nodes, and to reach as far as Nasolabial Folds.²⁷
- It can be used to fill a skin defect with good quality skin that is natural in colour, texture and elasticity, eliminating the need for skin grafting.²⁷

Miscellaneous Incisions

Lahey's lateral utility incision is commonly used in post-irradiated neck as it doesnot forms a three-point junction and prevents wound-dehiscence and carotid blowout.^{5,48}

Melvin described ND through a **facelift incision**, which extended from the anterior border of the tragus, around the lobule, and continued postauricularly 4.5cm inferiorly along the hairline.⁴⁹

Hsu's Minimally invasive ND-5cm incision at the leading edge of the SCM to align horizontally with the hyoid bone.⁵⁰

Approaches for **endoscopic-assisted** selective ND includes transaxillary, retroauricular, transoral, and transcervical for minimally invasive surgery. Among these, retroauricular(or modified facelift) approaches demonstrate favourable aesthetic and functional outcomes.⁵¹

Approach to Cervical Region¹¹

A cervicofacial incision for RND originates in the temporal and preauricular region, like a parotidectomy incision, running along the contour of the base of the ear lobe and falls vertically down behind the SCM down to the middle third of the clavicle, where it ends with a slight inward curve. When the anterior flap is lifted, it offers a broad surgical field, allowing radical cervical surgery and treatment of the parotid gland, metastatic cervical adenopathies, submaxillary tumors and specifically when there is skin radiodystrophy.

A very open inverted L incision included a horizontal incision running 1 cm below the submaxilla, crossing the midline of the chin region, and continuing on to the mastoid region. It included a vertical trace resembling the arc of a circle at the top and falling in front of the trapezius down and out, reaching the shoulder. When radical surgery is required on both sides, the incision continues to the opposite side.¹¹

Cervicocraniofacial incision has the same purpose as cervicofacial incision except that an incision along trapezius is added to the temporal preauricular trace.¹¹

Radiotherapy considerations -Vascular recovery in narrow angled flap's corners and sides may be reduced. Trifurcation and vertical incisions should not be practised in these necks as flap necrosis may expose the carotid artery. McFee / similar parallel transverse incisions¹⁶ are reported to yield positive results.³

CONCLUSION

In the preoperative planning, careful thought to the technique that will be necessary for tumor removal and anticipation of the reconstructive method will allow the surgeon to choose the most convenient incision. When there is inadequate approach, surgical maneuvers can produce tension in the wound, devascularization of the tissues and skin flaps, and result in poor handling of the tissues and insufficient tumor resection.³⁴ The design of the incision must be meticulous.

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