



## Access Surgery : Is the Lip- Split Needed for Resection of Intra Oral Tumors?

<b>Dr. Supreet D. Bhatt</b>	M.ch Resident, Gujarat Cancer Research Institute, Civil Hospital Ahmedabad
<b>Dr.Amit Kumar</b>	M.ch Resident, Gujarat Cancer Research Institute, Civil Hospital Ahmedabad
<b>Dr. Kiran C Kothari</b>	Deputy Director, Professor of Onco-surgery, Gujarat Cancer Research Institute, Civil Hospital Ahmedabad

### ABSTRACT

The lip split approach for surgical access is the most widely practised technique for oral and oro pharyngeal large tumor resection. We reviewed the patients who underwent resections for tumors and found that in our institute almost all the patients had gone through a standard or modified lip split incision for access. A study was carried out to assess the outcome of surgeries performed without the lip split incision. A mono or bilateral en-block resection was performed unless other surgical parameters complicated it. It was observed that "not- splitting" the lip did not complicate the resection and after reconstruction the cosmesis achieved was far better than the traditional technique. This technique was used to perform segmental resections of the proximal or distal mandible, marginal resections of the mandible or maxilla. Though this technique has some disadvantages along with its advantages, it must be tailored for particular cases. Thus, concluding that the lip splitting in trans-mandibular resections isn't always necessary.

### KEYWORDS

INTRA ORAL MALIGNANCY, LIP- SPLIT, RESECTION, ACCESS- SURGERY, MANDIBULECTOMY.

### Introduction:

The mandible is a key structure both in the pathology of intra oral malignancy and its surgical management. It bars easy access to the mouth, yet maintenance of its integrity is crucial to function and cosmetics [2]. To be safe and effective, conservative surgery must take into account both vascular and pathological considerations. The difficulties of reconciling these frequently conflicting demands arise most acutely in designing the surgical approaches to the various intra- oral sites and in carrying out resections. Having stated this, most texts of our times stress on the approach of "the lip- split" for greater access and ease of surgery. This credit goes to Martin who stated: "after completion of the neck dissection . . . the lip and chin are split in the midline and the cheek reflected laterally"; half a century back. Since then on, almost all authors have followed this statement. We want to demonstrate that it is possible to perform this surgery without lip splitting. Resection with negative margins remains the most important of goals in the surgical treatment for malignant tumors of the head and neck, and, also for large tumors of the mouth and/or oropharynx involving the mandible. The resection must be wide and en-block with the cervical nodes, if possible. Reconstruction should include both soft tissues and bone if possible. Many surgical techniques to achieve these goals are available and many publications are available on the topic [1-6]. In all these papers we tend to find: the split of the lower lip. The purpose of our study is to demonstrate that the splitting of the lower lip in trans-mandibular resection (Composite resection) is almost always trivial.

### Materials and Methods:

Between 2013 and 2015 a maximum of fifteen cases were operated without the lip split for surgical resection of large malignant tumors of the mouth and/ or oropharynx. Consideration, in particular, were given to the segmental resections of the mandible. Mandibular resections for tumors involving the skin and the subcutaneous tissue along with the mandible, Cases with Grade 2 or Greater OSMF and patients with infratemporal fossa involvement were excluded.

### Surgical Technique without Lip Splitting:

The most frequently used incision in our study for the trans-mandibular resection was the Schobinger incision. The incision has two limbs, one horizontal and the other one comes down vertically as a lazy "s" (in order to prevent scar contracture later). The horizontal limb typically lies at least about 2 cm below the mandible to avoid injury to the ramus marginalis mandibularis, and the vertical limb starts at a point that is at least 2 cm behind the point where the carotid pulsations are felt. This is to avoid the trisection from lying directly over the carotids (in the event of the dehiscence of incision at this trisection, the carotids may lie exposed leading to a blow- out, especially following radiotherapy). This also allows the posterior flap to be as short as possible as it is devoid of platysma, which is vital for the survival of these flaps. (Figure 1). Neck dissection is performed from bottom up according to normal oncologic rules. Reaching the mandible region, we isolate and preserve the marginal branch of the facial nerve by ligating the facial vessels. Trans orally an incision is made on the mucosa of the alveolar ridge (in edentulous patients), or in the gingival fornix when teeth are present. If the tumor extends laterally to soft tissues of the cheek, the incision of the mucosa must be at a suitable distance from the tumor, according to normal rules for radical resection. A tunnel is thus obtained, below the non-involved soft tissues of the lip and cheek. If the masseter muscle can be preserved, it is detached from the ascending ramus of the mandible, as upward as it is necessary, reaching the sigmoid incisure or more (if also the condyle must be resected). The soft tissues of the cheek, the masseter muscle and the parotid gland, reflected upward and laterally display a perfect exposure of the hemi mandible and of the tumor. The mandibular osteotomies are performed in the desired position. Marginal mandibulectomies are suitable for tumors of the tongue and floor of the mouth without bony erosion for the purpose of adequate margins. By sectioning the mandible, a gentle pull-down allows a perfect view on the whole oral cavity and oropharynx. In this way the resection of the tissues involved by the tumor may be performed as in lip-splitting approach. Also, upper alveolar process (Alveolectomy) and the contralateral soft palate can be resected without much diffi-

culty (Figure 2). Vision and manipulation of the operative field are as good as in lip-splitting approach. Closure is rarely possible by direct suture of the mucosa after so large resections (Figure 3, 4). In most cases pedicled or free flaps must be used to reconstruct soft tissues and bone (Figure 5). In case of anterior tumors requiring the resection of the anterior arch of the mandible, the procedure is even simpler. Exposing the mandible bilaterally, sometimes from corner to corner, it is possible to reflect the soft tissues upwards (the so-called Visor flap), obtaining a perfect view of the entire oral cavity, with the possibility of performing every extended resection.

**Results:**

Between 2013 and 2015, fifteen patients were operated at the institute for a segmental resection of the mandible for oral and/or oropharyngeal malignant tumors using the mentioned approach. Twenty percent of these patients presented with recurrence after surgery and/ or radiotherapy. Surgeons at the institute used to perform mandibulectomies mostly attesting to the fact that the tumor not only was involving the mandible but also was close to it. In all the fifteen patients' reconstruction was carried out using either a pedicled or free flap with or without bone. The non-splitting of the lip rarely complicated any type of resection or reconstruction. The time required for the completion of surgery decreased because of avoidance of hemostasis of the mandibulotomy and lip split as well as suturing of the lip and mandibular plating. Though the difficulty in reconstruction increased (to some extent) because of the non-split, cosmetic results were, obviously, far superior to the conventional technique (Figure 7).

**Discussion:**

"N" number of books and articles have been written on the subject of composite resections for the cancers of the oral cavity or oropharynx during past half of the century [1-6]. We just report a small fraction of the cases. In almost all the published literature splitting of the lip is a rule.

The scar on the lip and the chin is a very important factor for cosmetic results. Some papers talk about how to split and repair the lower lip to avoid, as well as possible, aesthetic and functional consequences [8, 11, 15-16]. All these authors concur that, however it is done, lip splitting causes dysfunction as well as aesthetic damage. However, it is taken for granted as being an unavoidable necessity. Ward and Robben in their paramount paper reported his experience of 45 transmandibular resections (that he called "Composite Operation") and Pull-through, Ward never split the lower lip [17]. This concept is very clear in his description of the operation and in the drawings of the paper, in spite of the fact that he operated very large tumors, often relapses after previous radiotherapy. His resections reached the pterygoid fossa, without problem in controlling the operative field. Ward being aware of the functional consequences of the large resections he was doing, spared the important and non-involved structures of the neck, many years before Bocca and Pignataro [18]. Moreover Ward mentioned this in his article which was published in the same Volume as the article of Martin who emphasized "After completion of the neck dissection the lip and chin are split in the midline and the cheek reflected laterally". It was not the question of performing the operation with lip split or without, but that the surgery be performed maintaining the rules of radicality. The authority of Martin was so great that for many years there was no doubt about these concepts. No one except for Ward considered the lower lip since then. Strong and Spiro admitted the possibility of performing transmandibular resection without splitting the lower lip but they stated: "Adequate exposure for resection is best achieved using a cheek-flap approach (or occasionally a Visor- flap approach for anterior lesions)". Junien- Lavillauroi and Guerier also stated the same [3]. Even the surgeons at the Institute always split the lip to achieve access, as it was instilled in the minds of the surgeons. This also led the authors to perform the surgery without lip splitting and we realized that it was easy, safe and quick for every type of oral and pharyngeal resection and reconstruction. In Ward's technique, he removed the involved

segment of the mandible from soft tissues of the oral cavity before resecting the tumor, and he justified this procedure writing: "this makes the specimen more pliable and is of assistance in helping to prevent damage to large vessels". We never did that. We usually detach the tumor mass trans-orally including the mucosal lining and resect the mandible too if the tumor mass is small (Figure 6). Or else the surgeons resect the mandible from the access achieved from raising the neck flaps. La Ferriere elevated the soft tissues of the chin from the outer surface of the mandible till the contralateral mental foramen, "over the face, creating excellent exposure for the standard mandibular osteotomies and mucosal incisions necessary for the extirpation of the primary lesion" [6]. In this way the musculature of the lower lip and chin get detached from their osseous insertions. The function may thus be impaired even if excellent suturing is achieved. As regards the Visor flap the exposure provided by the Visor flap approach is satisfactory; pitfall includes anesthesia of the skin of the chin and lower lip due to sacrifice of mental nerves." With our approach we still have a good vision of the oral cavity and oropharynx, preserving the contralateral mental nerve. In performing a segmental mandibulectomy we clearly sacrifice the mandibular nerve in the bone and anesthesia of the homolateral chin and lower lip is unavoidable. In cases of wide anterior segmental resection of the mandible, extending posteriorly to the mental foramen on both sides, there is the problem of chin anesthesia, whichever approach is used. Even in mandibular-swing approach we sometimes do not split the lower lip. It is possible but, in such cases, it is necessary to cut the homolateral mental nerve, to allow the elevation of the flap from the mandible. Performing the osteotomy, the mandible may be retracted laterally, giving a good exposure of the oral and oropharyngeal cavity, both for resection and reconstruction. We are not sure of the consequences the patient faces when he/ she has anesthesia in half of the chin without scar on the lower lip, or to have sensibility and a scar. We observed that a lot of patients without lip splitting and mental nerve section recovered some sensibility in the chin in about one year.

In conclusion, the splitting of the lower lip is almost always unnecessary in resection of the tumors of the oral cavity and/or oropharynx with segmental or marginal mandibulectomy or with pull-through approach except for the cases with reduced mouth opening which may be due to pre-operative trismus, due to medial pterygoid involvement or OSMF (which may be the short coming of this technique). For the mandibular-swing approach the non-lip-splitting technique presents some advantages and disadvantages. We also believe the importance of reduction of as much as possible the functional and cosmetic problems of patients undergoing large resections for oral cavity and oropharynx tumors. With the advances in micro-vascular reconstruction techniques this has been taken care of to a great extent but the surgeon should also mitigate the damage.

**Tables:**

**Table 1: Demographics:**

Approach	No of Patients.	Mean Age	Gender	
			Male	Female
Non Lip Split	11	32.5	07	04
Visor	04	50.0	03	01

**Table 2: Type of Surgical Resection:**

Treatment given	No of Cases	% Cases
Marginal mandibulectomies	04	26.8%
Segmental mandibulectomies	Posterior Segmental	02
	Visor	04
Hemi mandibulectomies	05	
Maxillary Alveolectomies	04	

**Table 3: Adequacy of Surgical Margins:**

Surgical Margins	Positive Margins	Close Margins	Widely Free Margins	% Cases
a)	00			0%
b)		0.5 cm 0.7 cm		13.4%
c)			13	86.66%
Total no. of Cases.	0	02	13	15 or 100%

**Table 4: Site of Lesion:**

Site of Lesion	No of Cases of:		% Cases
1. Posterior Mandible	A) Post. Mand. Inc. RMT	05	60.8%
	B) RMT involving upper GBS	02	
	C) Lower GBS + Upper GBS	02	
2. Post. Mand. Not inv. The RMT	Lesion inv. Lower GBS.	02	13.4%
Anterior Mandible Crossing the Midline	Lesions of the Floor of the Mouth.	04	26.8%

**Table 5: Rate of Recurrence:**

Total no of Cases	No of Recurrences	Length of follow up (in Months)
15	02	33.4
100%	13.4%	--

**Table 6: Complication Rate**

Acc. To Site	Fistula		Oral incompetence		Loss of Sensation	
	No.	%	No	%	No	%
Anterior	03	75%	02	50%	03	75%
Posterior	02	18.18%	00	00%	07	100%

**References**

- Martin H, Del Valle B, Ehrlich H, Cahan WG. Neck dissection. *Cancer* 1951;4(3):441-99.
- McGregor IA, McGregor FM, editors. *Cancer of the face and mouth. Pathology and management for surgeons.* Edinburgh: Churchill Livingstone; 1985. p. 384, 395.
- Junien-Lavillauroi C, Guerrier Y. *Chirurgie des cancers de la cavite' buccale.* In: Portmann M, Guerrier Y, editors. *Traite' de technique chirurgicale ORL et cervico-faciale.* Paris: Masson; 1980. p. 443-508.
- Strong EW, Spiro RH. *Cancer of the oral cavity.* In: Strong Suen EN, Spiro Myers EN, editors. *Cancer of the head and neck.* New York, NY: Churchill Livingstone; 1981. p. 301-41.
- Shah JP. *Oral cavity and oropharynx.* In: Shah JP, editor. *Head & neck surgery & oncology.* 3rd ed. Edinburgh: Mosby; 2003. p. 173-233.
- La Ferriere KA, Session DG, Thawley SE, Wood BG, Ogura JH. Composite resection and reconstruction for oral cavity and oropharynx cancer. *Arch Otolaryngol* 1980; 106 (2):103-10.
- Carlson ER, Miller I. *Surgical Management of the Neck in Oral Cancer.* *Oral Maxillofac Surg Clin N Am* 18 (2006) 533-546.
- Fernandes R, Ord R. *Access Surgery for Oral Cancer.* *Oral Maxillofac Surg Clin N Am* 18 (2006) 565-571.
- Evans BT. *Access surgery.* In: Landon J, Patel M, editors. *Operative maxillofacial surgery.* Chapman Hall Medical; 1998. p. 238.
- Weber O. *Vorstellung einer kranken mit Resection des Unterkiefers.* *Verhandlungen des naturhist-med Vereins z Heidelberg.* 1845;4:80-2 [in German]
- McGregor IA, McDonald DG. *Mandibular osteotomy in the approach to the oral cavity.* *Head Neck Surg* 1983; 5: 457-62.
- Robson MC. *An easy access incision for the removal of some intraoral malignant tumours.* *Plast Reconstr Surg* 1979; 64: 834-5.
- Hayter JP, Vaughan ED, Brown JS. *Aesthetic lip splits.* *Br J Oral Maxillofac Surg* 1996; 34:432-5.
- Spiro RH, Gerold FP, Strong EW. *Mandibular "swing" approach for oral and oropharyngeal tumours.* *Head Neck Surg* 1981; 3:371-8.
- Ramon Y, Hendler S, Oberman M. *A stepped technique for splitting of the lower lip.* *J Oral Maxillofac Surg* 1984; 42(10):689-91.

- Rassekh CH, JANEKA IP, Calhoun KH. *Lower lip splitting incision: anatomic considerations.* *Laryngoscope* 1995; 105(8):880-3.
- Ward GE, Robben JO. *A composite operation for neck dissection and removal of cancer of the mouth.* *Cancer* 1951; 4(1):98-109.
- Bocca E, Pignataro O. *A conservation technique in radical neck dissection.* *Ann. Otol. Rhinol. Laryngol* 1967; 76(5):975-87.