

## Case Report

# Upper lip reconstruction post major cancer resections using the hybrid concept

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### ABSTRACT

Major defects of the upper lip due to cancer surgery are relatively less common compared to lower lip. Standard techniques such as Karapandzic's are capable of reconstructing up to fifty percent of the lip otherwise microstomia and oral incompetence may result. The upper lip has few aesthetic characteristic details due to the philtrum, its columns and cupid's bows. Here we are proposing incorporation of an abbe flap to reconstruct the central unit of upper lip, associated with Karapandzic flaps from both sides. Use of a lip sharing concept has an additional advantage of producing harmony to the reconstructed region, and avoidance of crowding phenomena to the lower lip.

**Keywords:** Upper lip, Cancer, Reconstruction, Large defect, Karapandzic flap, Abbe flap

## INTRODUCTION

Lip functions include maintaining oral competence, speech, and communication. These tasks specifically oral continence has been studied objectively and thoroughly in the past.<sup>1</sup> Reconstructing the lip is considered best with local and regional tissues since it follows "like with like" basic principle of reconstruction.

Well established techniques such as bilateral Karapandzic's (K) rotational flaps or Johanson's step-plasty are capable of effectively reconstructing up to fifty percent of lip tissue otherwise microstomia would result. Dieffenbach's bilateral advancement flaps from the cheek physically would reconstruct a bigger than fifty percent defect but lip would lose its mobility and sensation.<sup>2</sup> Not all techniques described historically and theoretically can be applied to upper lip because from aesthetic point of view, it is totally a different unit.<sup>3</sup>

In this study, we are demonstrating two cases with upper lip sub-total defects, reconstructed with the "hybrid concept" of combining K flaps with an Abbe flap.

## CASE REPORT

Both cases in this article had their oncologic management addressed by the head and neck oncology multidisciplinary tumor board team. Surgical resection part of the lip tumor was carried out by a colleague head and neck surgeon, guided with frozen sections.

### Case 1

A 55 years old woman diagnosed with adenocarcinoma. Preoperative inter commissure distance was 4.5 cm. A segment of 3.8 cm or over 80% full thickness of the central upper lip was resected (Figure 1a).

### Case 2

A 70 years old woman was diagnosed with squamous cell carcinoma (SCC). Baseline inter commissure distance was 5.0 cm. She had 3.5 cm or a 70 % full thickness of her upper lip resected (Figure 4a).

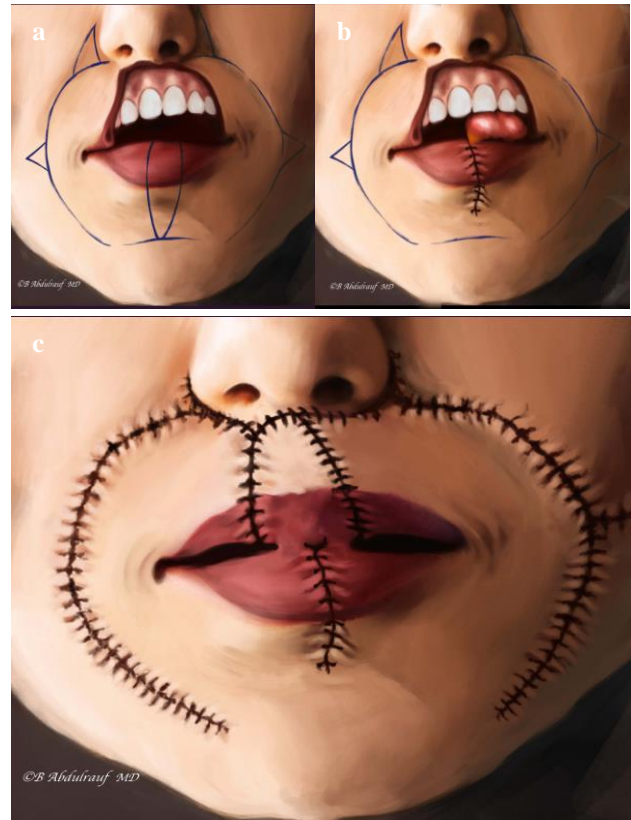
Similar plan and surgical steps were carried out in both cases Figure 1 (b-d), Figure 2 (a-c) and Figure 4 (b-e). The width of Abbe flap was determined keeping in mind expected remaining defect after K flaps been rotated, since it is known that bilateral K flaps would reconstruct close to fifty percent of lip defect.



**Figure 1: (a) Case 1 subtotal full thickness upper lip defect post resection of adenocarcinoma, (b) reconstructive plan has been marked including an Abbe flap, bilateral K flaps and peri alar crescentic excisions, (c) as a first step, Abbe flap has been dissected, raised from lower lip and donor site is closed, and (d) end of 1<sup>st</sup> stage reconstruction, where Abbe flap been flipped to replace philtrum, and K flaps have been raised and rotated bilaterally in addition to the peri-alar crescentic full thickness skin excisions to facilitate rotation. A Burrow's triangle excision was considered unilaterally, on the left cheek. All flaps have been inset together in place; they are nicely perfused.**

Raising the Abbe flap was done at first and its donor site closed. Upon raising the K flaps extra care was taken on the side of which Abbe flap's pedicle would be based upon. Peri-alar crescentic full thickness skin excisions were also carried out to aid in mobilizing the K flaps. All 3 flaps were brought together and repaired in layers. Flaps remained healthy. Abbe flap division and adjustment was considered in about 3 weeks.

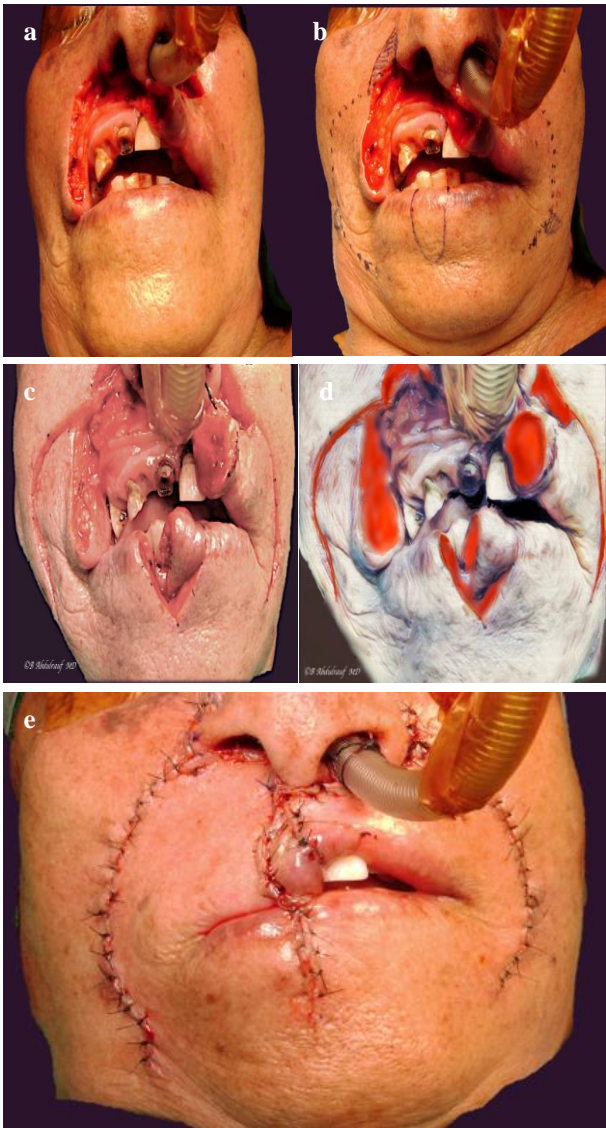
Both cases eventually received postoperative radiation, however they did very well functionally. The Abbe flap provided a reasonable aesthetic replacement to the philtrum unit (Figure 3 a-c) and (Figure 5 a and b).



**Figure 2 (a-c): Artist's depiction for the reconstructive plan and steps shown in (Figure 1).**



**Figure 3: Case 1 results 2 years post reconstruction and radiotherapy (a) at rest, (b) smiling, and (c) oral competence.**



**Figure 4: (a) Case 2 post SCC resection of upper lip with 70% full thickness defect, (b) plan is marked for the hybrid technique, (c) K flaps and Abbe flap have been dissected and raised, (d) artist's depiction of flaps being raised, and (e) completion of reconstruction and all flaps being inset.**



**Figure 5: (a) Case 2 result 6 months post-operative, at rest and (b) mouth opening ability.**

## DISCUSSION

All local reconstructive techniques depend on skin laxity and fortunately lack of elasticity. There are more techniques of lip reconstruction for cancer that are applicable to Lower lip, since it is more commonly affected and hence more commonly been reconstructed and studied.<sup>2,3</sup> Cleft lip surgery is an exception and a very specific kind of congenital anomaly.

Theoretically speaking many techniques can be applied to both upper or lower lips. However excellent techniques such as Johansson's step-plasty are not applicable to upper lip due to obvious reason of distorting aesthetic units otherwise.<sup>6</sup>

In major lip defects, many free tissue transfer techniques including radial forearm flap with palmaris longus, have been described and evolved, and are considered as viable options for some surgeons.<sup>3-5</sup> But these carry the disadvantages of being barely a physical barrier with poor sensation, texture mismatch and the inability to replace a vermilion like tissue.<sup>5</sup>

We have already introduced the "hybrid concept" of reconstruction in lower lip major defects, by rearranging the surrounding and regional soft tissues, using various concepts of flaps.<sup>6</sup>

Uglesic et al, Gonzalez et al have also shared their experience of the lower lip large defects being reconstructed with different flaps.<sup>7,8</sup>

Here we have demonstrated that on the upper lips, a similar concept is applicable, by carefully using a variety of maneuvers.

The percentage of a lip defect post resection is estimated based on the baseline inter commissure distance, since it is variable from one individual to another, and has been studied thoroughly in the past.<sup>9</sup>

The two cases shown in the article, both had significant defect especially case 1, where approximately 80% of the upper lip was removed (only commissures were preserved).

The idea of incorporating Abbe flap obviously and initially came for the purpose of filling part of the large defect, and providing a unit mimicking the philtrum.

But it was noted during surgery, taking that shield shape flap from the lower lip worked more so like the concept of Burrow's triangle, helping in closure.

When bilateral K flaps are used for closure of a defect, it is a common observation, one would notice the opposing lip is somewhat crowded. Taking an Abbe flap makes all the sense, hence the fraise. When you are short of tissues, remove some more.

Technically, raising the Abbe flap was done initially and under loupe magnification. Abbe flap requires more tedious dissection and learning curve compared to other regional flaps, it makes more sense to do that part first. Furthermore, we tend to avoid using adrenaline infiltration whenever doing an Abbe flap. The disadvantage of temporary limited oral opening and intake with an Abbe flap, is little in our opinion relative to what it gains at the end.

## CONCLUSION

We believe the hybrid concept of upper lip reconstruction has the potential to provide optimum results both functionally and aesthetically in near total lip defects as well. Moreover, it represents an ideal concept for redistributing tissues in the lip region following major cancer resections; it is worth to be part of the armamentarium for the reconstructive surgeon.

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## REFERENCES

1. Stranc MF, Fogel ML. Lip function: a study of oral continence. BJPS. 1984;37:550-7.
2. Stranc MF. Reconstruction of the lips. In: Mimis Cohen (ed.) Mastery of plastic and Reconstructive surgery, 1st edition. Little Brown co; 1994.
3. Neligan PC. Strategies in lip reconstruction. Clin Plastic Surg. 2009;36(3):477-85.
4. Sasaki K, Sasaki M, Oshima J, Aihara Y, Nishijima A. Flap reconstruction for full thickness oral defects involving the oral commissure combined with oral modiolus reconstruction using a facial sling. Microsurgery. 2019.
5. Vansison C, Beckmann N, Smith A. Recent advances in lip reconstruction. Current Opinion Otolaryngology Head Neck Surg J. 2019;27(3):219-26.
6. Abdulrauf BMI. The Hybrid concept in lip reconstruction. Int J Otorhinolaryngology Head Neck Surg. 2020;6(6):1183-7.
7. Uglesic V, Amin K, Dedliol E, Koustic D. Combined Karapandzic-Abbe/Eslander/Stein flap for subtotal and total lower lip reconstruction. J Plastic Reconstructive Aesthetic Surg. 2019;72(3):484-90.
8. Gonzalez A, Etchichury D. Reconstruction of large defects of the lower lip after Mohs surgery: the use of combined Karapandzic and Abbe flaps. Annals Plastic Surg. 2018;81(4):433-7.
9. Fogel ML, Stranc MF. Lip function: a study of normal lip parameters. British J Plastic Surg. 1984;37:542-9.

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