

Hybrid Reconstruction of the Upper Lip Following Major Cancer Resections



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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 Karapandzik 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; Major; Total; Subtotal; Karapandzic Flap; Abbe Flap; Combined.

"When you are short of tissues, remove some more!"

Introduction

Lip functions include maintaining oral competence, speech, and communication. These tasks specifically oral continence has been studied objectively and thoroughly [1]. 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 Karapandzik'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 [2]. In this paper, the Hybrid concept of combining K flaps with an Abbe flap is demonstrated in 2 patients with Upper lip sub-total defects.

Technique: Both cases shown 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: (Figure 1a) was 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 1 Subtotal full thickness Upper lip defect post resection of Adenocarcinoma.



Figure 1b: Reconstructive plan has been marked including an Abbe flap, bilateral K flaps and peri alar crescentic excisions.

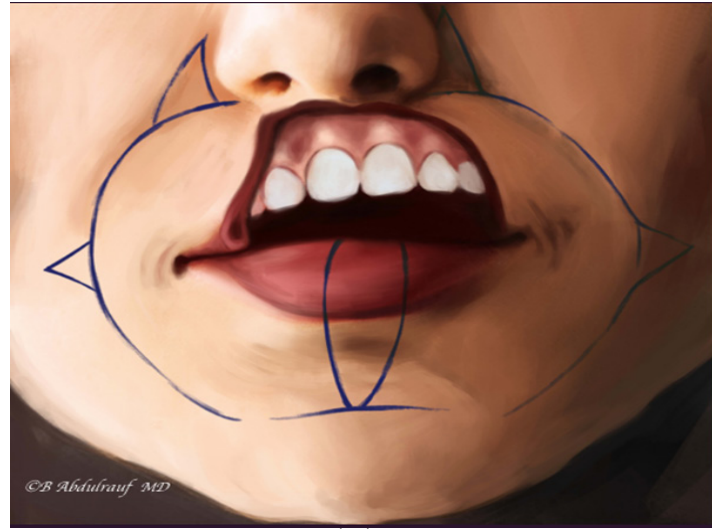


Figure 1c: As a first step, Abbe flap has been dissected, raised from lower lip and donor site is closed.



Figure 1d: End of 1st 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.

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



(A)



(B)



(C)

Figure 3: Case 1 results 2 years post reconstruction and radiotherapy,



A. At rest



B. Smiling



C. Oral competence.

Case 2: (Figure 4a) was 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.

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 4a: Case 2 Post SCC resection of Upper lip with 70% full thickness defect.

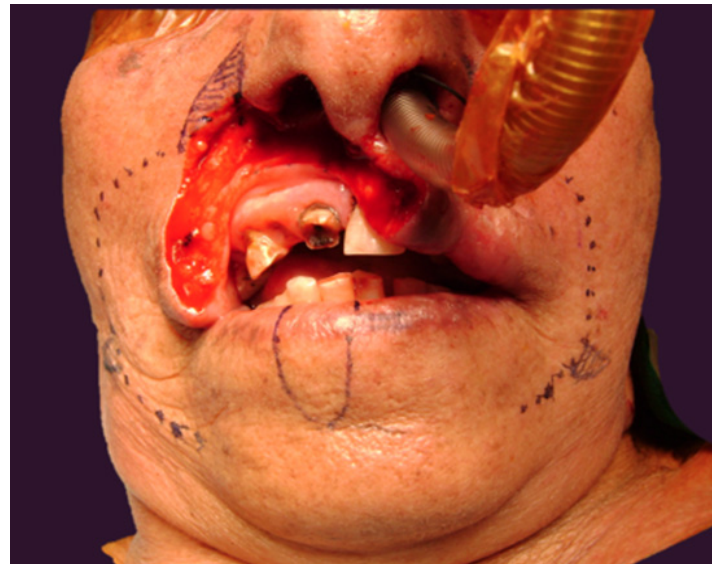


Figure 4b: Plan is marked for the Hybrid technique.

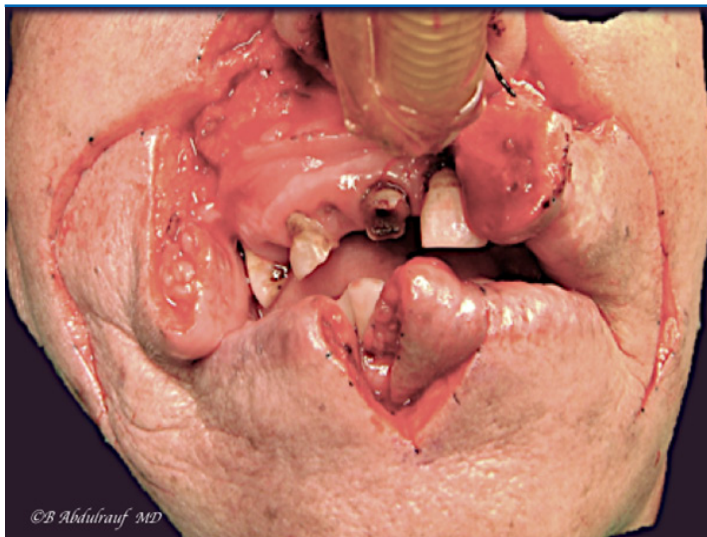


Figure 4c: K flaps and Abbe flap have been dissected and raised.

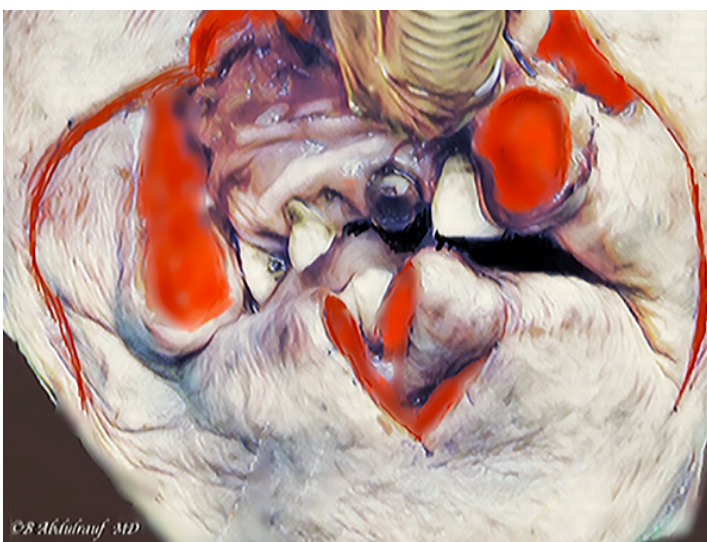


Figure 4d: Artist's depiction of flaps been raised.



Figure 4e: Completion of reconstruction and all flaps been inset.

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 which Abbe flap's pedicle was 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 done received postoperative radiation, however done extremely well functionally. The Abbe flap provided a reasonable aesthetic replacement to the philtrum unit (Figure 3a-c) and (Figure 5a, b).



Figure 5a: Result 6 months postop, at rest.



Figure 5b: 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 [2, 3]. Cleft lip surgery is an exception

and a very specific kind of congenital anomaly.

Theoretically speaking many techniques can be applied to both lips. However, excellent techniques such as Johanson's Step-plasty are not applicable to Upper lip due to obvious reason of distorting aesthetic units otherwise.

Many free tissue transfer techniques including Radial forearm flap with palmaris longus, have been described and evolved for major lip defects, and are considered as viable options for some surgeons [3-5]. 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 [5].

We have already introduced the "Hybrid concept" of reconstruction in Lower lip major defects, using various combinations of flaps [6]. Uglesic et al., Gonzalez and Etchichury have also shared their experience of the Lower lip large defects being reconstructed with different techniques [7, 8]. Here we are demonstrating similar concept of combining a variety of maneuvers in cases of the Upper lip major defects.

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 [9]. The two cases shown in this article, both had significant defect especially case 1, where approximately 80% of the Upper lip was removed (commissures preserved).

The idea of incorporating Abbe flap obviously came for the purpose of filling part of the large defect. 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.

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. 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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Ethical Statement

Funding: This work did not require any funding.

Conflict of Interest: As an author, we declare there is no conflict of interest.

Ethical Approval: Procedures performed in the case series were in accordance with the ethical standards of the institutional research committee as well as in accordance with the revised Helsinki Declaration 2013. The work presented is a modification of surgical techniques as per the need of particular case.

Informed Consent: Informed consent was obtained from all patients undergoing the procedure, after discussing the potential risks and benefits.

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