

## Mental Nerve and Field Blocks for Lip Cancer Radiotherapy: A Case Report

Sonali Saraf and Ravikiran Nikhade\*

Jupiter Hospital, Thane, Maharashtra, India

\*Corresponding author: Ravikiran Nikhade, Jupiter Hospital, Thane, Maharashtra, India, Tel: +919823190004; E-mail: nikhade\_ravi@yahoo.com

Received date: December 11, 2018; Accepted date: December 25, 2018; Published date: December 31, 2018

Copyright: © 2018 Saraf S, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

### Abstract

Carcinoma of the lower lip is commonly treated with high dose rate interstitial brachytherapy. Placing catheters to the lip and mentum area in post hemimandibulectomy patient may require general anesthesia considering difficult airway anatomy. We present the use of mental nerve blocks and field block with minimal sedation as an alternative to General anesthesia for placement of Brachytherapy catheters.

**Keywords:** Brachytherapy; Mandibulectomy; Pectoralis; Mandibular implants

### Introduction

The incidence of lip and oral cavity cancer is markedly increasing due to increased exposure to ultraviolet radiation and lead exposure in individuals living in extensive Sun exposure. The estimated incidence, mortality and 5-year survival due to lip, oral cavity cancer in world is 3, 00, 373 (2.1%), 1, 45, 328 (1.8%) and 7, 02, 149 (2.2%) respectively according to data of GLOBOCAN 2012 [1]. Treatments of these cancers include surgical resection, radiation, and/or brachytherapy. The brachytherapy delivers high localized radiation dose to the tumor with relative sparing of the surrounding healthy tissue. To perform brachytherapy, catheters must be placed near the targeted lesion. This is most commonly done using the rigid needle and catheter technique for the lower lip. The isolated location of the lower lip and mentum presents a unique opportunity to use regional anesthesia as the primary anesthetic for the procedure.

Mental nerve blocks have been previously used for pain relief of symptomatic mandibular premolars and during placement of mandibular implants [2]. Furthermore, there have been reports of simple surgical resections of ulcerative lesions of the lower lip that were facilitated by mental nerve blocks [3]. In the following, we report the patient of Lip Carcinoma recurrence after segmental mandibulectomy with PMMC flap. The use of unilateral mental nerve on one side and field blocks to the allow placement of a lip brachytherapy catheter. Written consent was obtained from the patient for publication of the case report.

### Case Presentation

A 66-year-old, 60 kg man admitted with recurrence of squamous cell carcinoma of the lower lip. He underwent segmental Mandibulectomy with PMMC flap in 2013 for Ca buccal mucosa left side and now present with recurrence for which lip resection was done a month back and planned for high dose rate interstitial brachytherapy catheter implantation. The patient had a history of tobacco use in past and has an ulceroproliferative lesion of approximately 2 x 1.5 cm just inside lower lip area. Topical anesthesia (EMLA), right sided mental

nerve blocks and field infiltration by local anesthetics on left side and minimal sedation were offered to the patient to provide pain control during the procedure. The patient was brought to the radiation procedure suite, positioned supine, and standard American Society of Anesthesiology monitors were placed. The Eutectic mixture of local anesthetic (EMLA) cream was applied over surgical location for half an hour. The patient was sedated with intravenous midazolam 1 mg and fentanyl 50 µg.

A 10 mL mixture of 5 mL of 0.5% bupivacaine and 5 mL of 1% lidocaine was prepared. The mental foramen was palpated externally as well as inside mouth between the lower premolar teeth area on right side. Percutaneous 25 gauge needle was inserted and advanced 5-6 mm into the buccal fold near the foramen and between the approximate premolar teeth area with the needle bevel facing the bone (Figure 1A and 1B).



**Figure 1:** Four 6F catheters were placed and fixed in the lower lip.

Caution was used not to place the needle directly into the mental foramen because nerve injury may occur. After negative aspiration for blood, 2.5 mL of the local anesthetic mixture was injected on right side. On the left side old PMMC flap area was palpated and the demarcation of line between normal mucosa and Graft area was identified. Using 25 G long needle the anastomotic line was infiltrated with 7.5 ml of local anesthetic as field block. Once the lower lip area was adequately anesthetized, the surgeon proceeded with placement of the guide needles. Hollow trocars were placed through skin stab wounds spaced 1 cm apart. Four 6F catheters were placed and fixed in the lower lip.

The patient tolerated the procedure without any discomfort and was discharged home next day. The patient returned for 6 cycles of external

beam radiation after which the catheters were removed without edema or erythema.

## Discussion

The insertion of brachytherapy implants is often painful and usually performed under general anesthetic technique. The risks of general anesthesia in a patient with already having a PMMC flap with recurrence of lower lip carcinoma include a difficult airway anatomy and the obstruction. Additionally, patients with known lesions of the lip and/or mouth may have limited mouth opening and require more advanced airway management practices. Since the insertion of lip brachytherapy implants is usually done remotely in non-operating room locations, one must consider challenges including potentially unfamiliar resources and limited access to emergency assistance [4]. This can be further complicated by sedating patients with a difficult airway.

Use of mental nerve block and local anesthetic infiltration of existing PMMC flap allows lip brachytherapy implantation without pain and sedation, thereby avoiding the risks associated with providing anesthesia in remote locations, and the risk of development of impaired airways.

Nerve damage can occur from physical trauma to a nerve during administration or from neurotoxicity of the anesthetic solutions [4]. Nerve damage can occur if local anesthetic is injected directly into the mental foramen. Other complications of the mental nerve block are similar to peripheral nerve blocks and include bleeding, infection [5]. Despite the oral cavity being highly vascularized, the incidence of bleeding and intravascular injection with mental nerve block is low because of the anatomic location of the nerve. Nevertheless, aspiration is always recommended before injection. Percutaneous approach was utilized for the mental nerve block and field infiltration after EMLA application thereby making the small pricks with even less discomfort. This technique involves injection midway between the upper and lower edge of the mandible along the second bicuspid [6]. Alternative intraoral approaches to mental nerve blockade could also be used but it was difficult to identify exact premolar teeth location due to deviated mouth with extracted tooth, rather intraoral approach has a higher success rate of lower lip anesthesia when compared to percutaneous approaches.

In this case, Pectoralis major flap was done after segmental mandibulectomy on left side five years back, on examination the flap was healthy and relatively hypoaesthetic compared to normal mucosa hence we identified the anastomotic border towards the midline and infiltrated with local anesthetic. Intraoral approach was used with a mixture of lidocaine and bupivacaine to ensure rapid onset of analgesia for placement of catheters and a longer duration.

Once the injection was completed, a needle prick was used to map the anesthetized region of the lower lip area and mentum. The patient was comfortable for the entire one-hour visit. Postprocedural pain assessment was done after three hours which was barely minimal. Mesgarzadeh et al. [7] was able to demonstrate up to 2-4 hours of pain relief when performing mental nerve blocks with 2 mL of 0.5% bupivacaine. In addition to the safety concerns discussed above, mental nerve blocks in oncologic patients carry the potential of mitigating immunosuppression associated with general anesthesia and opioids. Meta-analyses have shown an association between narcotic sparing anesthetic techniques and cancer survival [7]. Use of regional anesthetic techniques has been hypothesized to improve cell-mediated immunity by decreasing the neuroendocrine stress response mounted during a surgical procedure [8]. Several prospective, well designed trials are still needed to confirm this association.

In conclusion, our experience suggests that mental nerve block and field infiltration can be considered a valid alternative to the general anesthesia for the placement of lower lip brachytherapy catheters. It provides a safe approach to practice especially as non-operative room anesthesia (NORA).

## References

1. Gupta N, Gupta R, Acharya AK, Patthi B, Goud V et al. (2016) Changing Trends in oral cancer - a global scenario. *Nepal J Epidemiol* 6: 613-619.
2. Aggarwal V, Singla M, Miglani S, Kohli S (2016) Comparative evaluation of mental incisal nerve block, inferior alveolar nerve block, and their combination on the anesthetic success rate in symptomatic mandibular premolars: a randomized double-blind clinical trial. *J Endod* 42:843-845.
3. Tan FE, Schiere S, Reidinga AC, Wit F, Veldman PH (2015) Blockade of the mental nerve for lower lip surgery as a safe alternative to general anesthesia in two very old patients. *Local Reg Anesth* 8: 11-14.
4. Krishnan U, Moule AJ (2015) Mental nerve paraesthesia : A review of causes and two endodontically related case. *Saudi Endod J* 5: 138-145.
5. Metzner J, Domino KB (2010) Risks of anesthesia or sedation outside the operating room: the role of the anesthesia care provider. *Curr Opin Anaesthesiol* 23: 523-531.
6. Syverud SA, Jenkins JM, Schwab RA, Lynch MT, Knoop K et al. (1994) comparative study of the percutaneous versus intraoral technique for mental nerve block. *Acad Emerg Med* 1: 509-513.
7. Mesgarzadeh AH, Afsari H, Pourkhamne S, Shahamfar M (2014) Efficacy of bilateral mental nerve block with bupivacaine for postoperative pain control in mandibular parasymphysis fractures. *J Dent Res Dent Clin Dent Prospects* 8: 172-175.
8. Boland JW, Graham Pockley A (2017) Influence of opioids on immune function in patients with cancer pain: from bench to bedside. *Br J Pharmacol* 14: 2726-2736.