

## **Clinical Experience in Maxillary and Mandibular division block for Trigeminal neuralgia a review of its use in trigeminal neuralgia.**

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**Summary:-** An observational study of Maxillary and Mandibular division block in 30 patients of ASA grade one and two are selected they are diagnosed as trigeminal neuralgia involving mainly maxillary and mandibular branch. The applied anatomy, methodology, features, complications and limitations have been emphasized. The study shows that it is one of the very useful, easy, and less harmful tool with almost nil complications if practiced with due caution.

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### **I. INTRODUCTION**

A well conducted nerve block technique has much to offer to patients and to the pain physician . owing to its obvious advantages over ganglion block .The success of block not only reduces morbidity and mortality associated with gasserian ganglion block but also provides excellent pain relief . But the warm glow that success endangers is merely the residue of skillful activity.

The pain physician must have perfect knowledge of the anatomy and realistic expectation of the available methods .since each has its own limitations . we carried out a prospective observational evaluation of maxillary and mandibular division block and analyzed pain relief after the block.

Applied Anatomy: Trigeminal nerve emerges from ventral surface of brain at mid pontine level<sup>{1}</sup> .Then it divides into three branches , which come out through foramen ovale .The three branches are ophthalmic ,maxillary and mandibular divisions .The first two branches are purely sensory while the third branch has both sensory and motor component . The trigeminal nerve supplies sensation to most of the scalp,face,teeth,mouth and nasal cavity .<sup>{2}</sup> The motor branch supplies muscles of mastication through mandibular nerve. The trigeminal nerve expands into ganglion in a recess near the apex of the petrous temporal bone . This ganglion is termed as gasserian ganglion . The recess of petrous temporal bone is termed as meckel's cave.

#### **1. The ophthalmic division**

After coming out of Meckel's cave the nerve enters the orbit through the superior orbital fissure and divides into frontal,lacrima and nasociliary nerves .<sup>{3}</sup> These nerves divide into different cutaneous branches .

Frontal nerve

1. Supraorbital branch
  2. Supratrochlear branch
- Nasociliary nerve

1. Infratrochlear
2. External nasal

Lacrimal -- many times this arises from maxillary division.

#### **2.The maxillary division**

This division after emerging from foramen rotundum enters orbit through inferior orbital fissure .<sup>{3}</sup> Subsequently comes out of infraorbital foramen as infraorbital nerve. Cutaneous branch of this division is zygomaticotemporal nerve – this branch sometimes gets replaced by lacrimal nerve and vice versa as mention earlier.

#### **3. The mandibular division**

This division consisting of sensory and motor components , divides into anterior and posterior trunks after emerging from foramen ovale .<sup>{3}</sup>

Anterior trunk

Motor part -- muscles of mastication

Sensory part—buccal nerve

Posterior trunk

Motor part-- branch to mylohyoid muscle

Sensory part

Auriculotemporal nerve

Inferior dental ends as mental nerve

Lingual nerve

## II. METHOD

Our study comprised of 30 adult patients of ASA grade one and ASA grade two physical status aged 30—50 years weighing 50—70 kgs who underwent multiple trial of drugs.

Prerequisites : All the patients were assured and explained the procedures to be performed and informed consent was obtained before performing the block .Baseline investigations were done . Neurological and ophthalmic examination was done . Radiological examination was done to rule out intracranial pathology.

**Position:** The patient is made to lie supine with head resting on a pillow . The head is turned towards the contra lateral side .

Both maxillary and mandibular divisions are accessible for blockade once they come out of Meckel's cave . They can be approached individually through the coronoid notch of the mandible .

The coronoid notch of mandible is identified by asking the patient to open and close the mouth 2—3 times . It is roughly located in front of external auditory meatus and below zygomatic arch in sitting position . Skin over the coronoid notch is painted with povidone iodine. The area is infiltrated with local anaesthetic (1% lignocaine) using 26G 1 ½ nch needle . A 23G spinal needle of 3 ½ Inch length is advanced perpendicular to skull base through the coronoid notch .At about 1 ½ to 2 inch depth ,the lateral pterygoid plate is encountered . The stylet is taken out and the needle aspirated for blood and CSF . For selective maxillary block the needle is withdrawn and then advanced with stylet to slip just above anterior margin of pterygoid plate .<sup>[4,5]</sup> A maxillary area parasthesia might be elicited after about 1 cm beyond pterygoid plate. These maneuvers are usually painful, liberal amount of local anaesthetics should be used within toxic limits .About 4ml of prepared solution (0.5% bupivacaine with 80mgm depomedrol , total 8ml ) is injected to get pain relief. For selective mandibular division block . The needle is withdrawn after hitting the lateral pterygoid plate and then advanced with stylet in situ.<sup>[4,5]</sup> The direction is slightly posterior and inferior trajectory . parasthesia is elicited . About 0.5% bupivacaine (preservative free) with depomedrol 80mgm (total volume 8ml) out of which 4ml of solution is injected after taking usual precautions .

### Observations :

1. Pain on VAS scale before the procedure was 8 on 10 in 12 cases and 9 on 10 in three cases . After half an hour after the procedure the pain on VAS scale averagely was 2 on 10 . Patients were called for follow up after 15 days 12 patients had pain 1 on 10 on VAS scale and three patient had 2 on 10 on VAS scale . The patient were called after one month 10 patient had 50% of their pain back for which repeat block was given using 50% of the previous dose (total 40mgm for both blocks) . The patients were called after one month they had 25% of the pain remaining for which again repeat block was given. They were followed after further two months they had satisfactory pain relief.

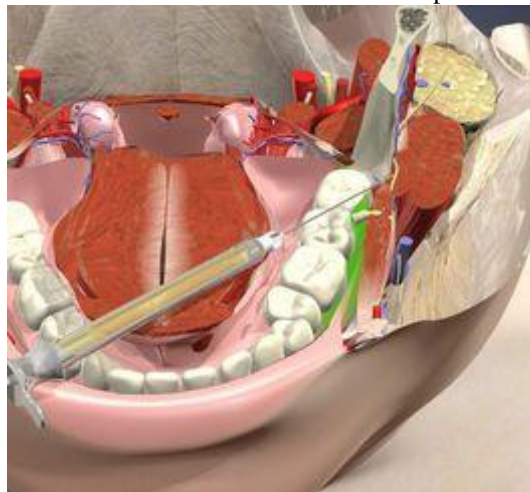
Complications encountered : Complications encountered were very few except increase in pain for a short period , mild hematoma and slight facial muscles weakness .

The complications of gasserian ganglion block like injection into CSF ,loss of consciousness, cardiac arrest ,apnea resulting from high spinal blockade ,diplopia etc are avoided by using maxillary and mandibular divisional branch.

## III. DISCUSSION

The block was effective in 14 out of 15 cases . inadequate block in 1 patient was because the patient was uncooperative . Maxillary and Mandibular nerve block is a safer and easier method for patients with trigeminal neuralgia involving mainly mandibular and maxillary branch . The addition of steroid makes the block effective and prolong .The basic action of steroid is breaking up of adhesions around the nerves (which cause oedema through the obstruction of free fluid flow in the nerves and cause direct damage to the nerves by compression). Steroids also accelerates healing of the irritated and inflammatory states of nerve root and reduces oedema ,it also inhibits phospholipase and A2 and cyclo-oxygenase enzyme .depo mederol used is the safest steroidal agent when used in small doses and other agents which can be used are betamethasone acetate ,dexamethasone and triamcinolone out of which dexamethasone has very short duration of action .Different workers have done work on gasserian

ganglion block and individual nerve block and individual division block, this study was undertaken to evaluate whether the individual nerve block is effective in trigeminal neuralgia involving mandibular and maxillary branch. We had 15 patients out of which 14 had excellent pain relief.



In our study we found that acute cases had excellent to good results while chronic cases had good results. The effect of successful injection can last anything from a few weeks to several months. It causes very few or insignificant side effects; they are minimal and mainly consist of mild tenderness in the area of injection, which disappears within one to two days. We had few significant complications in our cases; there was a small hematoma.

In our study, the procedure failed in one case as the patient was uncooperative. The role of mandibular and maxillary nerve block in the conservative management of neuropathic pain

is simply to facilitate earlier pain relief, allowing the patient to return to full functions. The patients are advised to make sure that they enlist services of professionals with experience in their work; they should follow the general guidelines of limiting the number of injections to a maximum of 3 within one year period. Further evaluation is required to prove superiority.

Of this technique over the classical approach of Gasserian ganglion block.

**Conclusion:**

As shown in our study, acute cases had better results than chronic cases. No serious complications occurred. We are finding that individual division block (mandibular and maxillary) are good conservative means of treatment for trigeminal neuralgia involving mandibular and maxillary nerve block.

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