VOLUME-8, ISSUE-5, MAY-2019 • PRINT ISSN No. 2277 - 8160

Original Research Paper

Ophthalmology

ACUTE LATERAL RECTUS PALSY FOLLOWING DENTAL EXTRACTION

Dr Subha	Associate Professor, Sree Balaji Medical College and Hospital, Chennai, Tamilnadu, India.
Dr Jigeesha Preethi M*	Junior Resident, Sree Balaji Medical College and Hospital, Chennai, Tamilnadu, India. *Corresponding Author
Dr. B. Chandrasekaran	Professor, HOD, Sree Balaji Medical College and Hospital, Chennai, Tamilnadu, India.

ABSTRACT Dental extraction is one of the commonest procedure done in the dental department. Patient developed acute diplopia following Posterior superior alveolar nerve block. Presented for its rarity and recovery after a couple of hours.

KEYWORDS : Ophthalmic complications, diplopia, posterior superior alveolar nerve block, dental extraction.

Introduction:

The sixth cranial nerve is affected in many ways because of its long and tortuous course. But following dental procedure is rare. As reference, first of this kind dates back to 1946 reported by Goodside and Weigneist. As ophthalmologists, we should be aware of such rare complications and have knowledge to manage the same. So we report a case of sixth nerve palsy following posterior alveolar nerve block for left upper molar tooth extraction.

Case report:

A34 year old female patient presented to ophthal OPD on 19-01-2019 with complaints of sudden onset double vision, more to left gaze(figure 1) following dental extraction for dental caries. On examination the eyes were orthophoric in primary gaze. Swelling is seen in left zygomatic region extending in the periorbital region. Parasthesia of left side of the face was present. Anterior segment examinations of both eyes was normal. Vision in both eyes was 6/6, intra ocular pressure in both eyes was 12 mmHg measured by Goldman applanation tonometer. Diplopia was binocular and more on levoversion. On checking the extra ocular movements, restriction of left lateral rectus was noted. Detailed fundus examination of both eyes was done and were within normal limits. Patient has undergone and elective left second upper molar tooth extraction under posterior superior alveolar block which was routinely administered for this kind of procedure. Posterior superior alveolar nerve block was administered using 26 gauge needle and the anaesthetic agent used was 1.5 ml of 2% Lignocaine with Adrenaline injected into the spheno maxillary foramen area of upper jaw. Induction was smooth. The procedure was completed within 5 minutes and was uneventful. After the completion of procedure, patient noticed double vision and presented to Ophthal OPD after the dental extraction. Acute onset of isolated sixth nerve palsy was found. Diplopia charting revealed uncrossed diplopia on left side.

Patient was observed and reassured for her spontaneous recovery. Paresthesia developed on the zygomatic and infra orbital area disappeared along with recovery of lateral rectus palsy (figure 2) after a couple of hours with no squeale [1]

At presentation (figure 1)

Limitation in movements to left side indicating left lateral rectus palsy

After recovery (figure 2)

Full movements to left side indicating recovery of left lateral rectus palsy

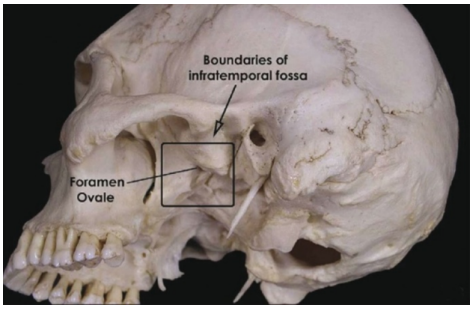
Discussion:

Sixth nerve palsy following PSN block is often unheard of and the mechanism involved is mainly related to the normal anatomical variations, block technique and the anaesthetic agent used. The possible mechanisms are as follows: (1) the inadvertent deposition of local anaesthetic agent passes through the greater superior alveolar foramen in to the inferior orbital fissure through pterygopalatine fossa directly causing anaesthesia of sixth nerve.(2) The local anaesthetic agent reaches the inferior ophthalmic vein via the pterygoid plexus (figure 3)which doesn't have valves and connects directly to extrinsic muscles of eye via infra orbital foramen affecting sixth nerve.[3][2](3) Deposition of the anaesthetic agent within posterior superior alveolar artery reaches middle meningeal artery via maxillary artery. There exists a communication between orbital branch of middle meningeal artery[4] and the recurrent meningeal division of lacrimal branch of ophthalmic artery supplying lateral rectus muscle, lacrimal gland and outer half of upper and lower eyelids which explains all the above mentioned symptoms.(4)the local anaesthetic agent reaches the sixth nerve within cavernous sinus through infra temporal fossa.[4]

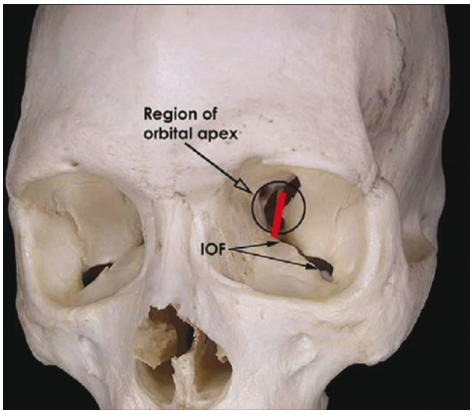
Several bony anatomical features are responsible for unintended spread of the agent as follows: (1) pterygopalatine fossa and inferior orbital fissure are in open communication with greater palatine canal (figure 5). Thus patient with wider foramens as normal variants are at higher risk. (2) Sixth nerve is most vulnerable at orbital apex where it lies on the inner surface of the lateral rectus muscle and thus causing direct exposure of the nerve (figure 4)

Ocular/visual complications are attributed due to improper block techniques [5] as well. Proper positioning [6], length of the needle inserted into the tissues, amount of agent given, force used for injecting also plays a role.

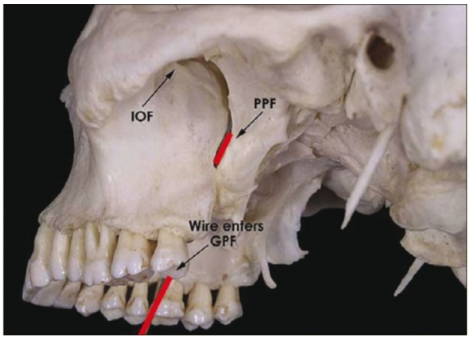
Since the effect of the local anaesthetist agents is short[7], medications like steroids are not required. Hence, observation, reassurance, and transient nature of the complication should be understood.



(figure 3)Rectangle approximates the extent of infra temporal fossa, where pterygoid venous plexus would be found.



(figure 4)The red marker indicates the continuity from the pterygopalatine fossa to the orbital apex where abducent nerves normally lies on inner surface.



(figure 5)Red wire showing straight path to orbital apex from greater palatine foramen around which local anaesthesia is administered while block

Conclusion:

Complications can occur at any point in any procedure. However certain rare and not well documented complications during a very common procedure will alarm the experienced surgeon as well as the patient. Along with Oro maxillofacial surgeons, ophthalmologists also should be aware of these rare ophthalmic complications following PSN block which will enable the surgeons to manage the complications well.

Declaration of patient consent

The author declares that they have obtained all the appropriate patient consent forms. In the form the patients has given his/her consent for his/her images and other clinical information to be reported in the journal. The patient understands their names and initials will not be published and du efforts will be made to conceal their identity, but anonymity cannot be guarantied.

REFERENCES

[1] Panarrocha-Diago M, Sanchis-Bielsa JM. Ophthalmic complications after intraoral local anesthesia with articane. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2000;90:21–24. doi: 10.1067/moe.2000.107506.
[2] Goldenberg AS. Transient diplopia from a posterior alveolar injection. J Endod. 1990;16:550–551. doi: 10.1016/S0099-2399(07)80220-2.
[3] Chun-kei L. Ocular complications after inferior alveolar nerve block. Dent Bull. 2006;11:4–5.
[4] Crean SJ, Powis A. Neurological complications of local anesthetics in dentistry. Dent Update. 1999;26:344–349.
[5] Freuen NF, Feil BA, Nortal NS. The clinical anatomy of complications observed in a posterior superior alveolar nerve block. FASEB J. 2007;21:776.
[6] Walker M, Drangsholt M, Czartoski TJ, Longstreth WT., Jr Dental diplopia with transient abducens palsy. Neurology. 2004;63:2449–2450. doi: 10.1212/01.WNL.0000147323.73848.BE.
[7] Magliocca KR, Kessel NC, Cortright GW. Transient diplopia following maxillary local anesthetic injection. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2006;101:730–733. doi: 10.1016/j.tripleo.2005.08.012.