

**PRO-Media Coordinator's Office  
Jamia Millia Islamia**

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Press Release

**Dental Surgeon from JMI Reports a Novel Discovery in a Human Lower Jaw**

The complexity of a human body has been unraveled yet again, this time from an Oral & Maxillofacial surgeon from Faculty of Dentistry(FOD), Jamia Millia Islamia(JMI).

Dr. Imran Khan who is currently working as a Professor in the Department of Oral & Maxillofacial Surgery, FOD, JMI has recently published this interesting case report in a U.S based Scientific Journal "Oral & Maxillofacial Surgery Cases" September-2020 edition.

His discovery is about a Novel Anatomical opening in the human lower jaw which generally are referred as Foramen in anatomical/medical terminology. This New opening or foramen has been named as Novel Aberrant Mandibular Angle Foramen (NAMAF).

As per the report published NAMAF was masquerading a fracture in the lower jaw, since no one else has ever reported any foramen in the described area of lower jaw it was only during the surgical procedure itself Dr.Imran & his team could identify and record this novel finding. These Foramens in the human body serve as passages through which various blood vessels and nerves supply different structures and organs of human body.

The published novel report also involves Dr Deborah Sybil (Professor, Faculty of Dentistry, JMI), Dr Mandeep Kaur (Professor & Oral & Maxillofacial Radiologist, Faculty of dentistry, JMI), Dr. Nikhat Mansoor (Professor, Department of Biosciences, JMI), Dr. Ifra iftikhar (Maxillofacial surgeon, New Delhi) Dr Rizwan Khan (Orthopedic Surgeon , Jamia Hamdard) & Dr Shubhangi Premchandani (Trainee Intern, Faculty of Dentistry, JMI).

The Dean, Faculty of Dentistry, JMI Prof(Dr) Sanjay Singh who himself is also a vastly experienced Oral & Maxillofacial Surgeon has congratulated the research team on this novel finding and has expressed his pleasure on this unique discovery.

Prof (Dr) Sanjay Singh said that novel structures like the one reported here will make surgeons more alert to exercise utmost precaution while operating on the prescribed area. It will also help other surgeons & anaesthetists executing precise treatment protocols and avoid unexplained local anaesthesia failures.

The FOD, JMI has been ranked 19th best dental college in the country by the MHRD's NIRF-2020.

**Ahmad Azeem**

PRO-Media Coordinator





**FACULTY OF DENTISTRY**  
**JAMIA MILLIA ISLAMIA**



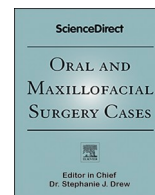




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# Novel Aberrant Mandibular Angle Foramen: A Novel Aberrancy mimicking mandibular angle fracture

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## ABSTRACT

Variations in the presence of Mandibular Foramen and Accessory Mandibular Foramen even though are rare but have been reported before. The author here reports presence of a unique **Novel Aberrant Mandibular Angle foramen (NAMAF)** on the lateral surface of mandibular angle which was mimicking a mandibular angle fracture.

## 1. Introduction

Aberrancy in the location of the mandibular foramen as well as in the structures passing through it poses a risk for the patient undergoing any oral and maxillofacial surgical procedure [1]. Lingual foramen [2], accessory mental foramen [3] and retromolar foramen [4] are some of the frequently reported ones. A recent case report published in 2018, reported presence of bilateral coronoid foramen on the mandible [5].

In this paper, we report presence of an unilateral foramen of its kind, **Novel Aberrant Mandibular Angle foramen (NAMAF)** on the lateral surface of the mandibular Angle region which was interpreted as a possible mandibular angle fracture.

### Case report

A 30 year old male patient reported to the Department of Oral & Maxillofacial Surgery, Faculty of Dentistry, Jamia Millia Islamia, with the complaint of inability to chew and open his mouth accompanied with pain and discomfort. He reported with an alleged history of trauma delivered to the chin due to a road traffic accident one week back. His Clinical Examination revealed a presence of surgical dressing over a Cut Lacerated Wound (CLW) over chin, deranged occlusion with tenderness on palpation on Bilateral Temporomandibular joint (TMJ) and left mandibular parasymphseal area, a diagnosis of bilateral mandibular condylar fracture with Left mandibular symphysis fracture was made on the basis of clinical findings.

Patient was already carrying an Orthopantogram (OPG) which was advised to him by a local dispensary OPG confirmed presence of

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Fig. 1. OPG Confirming Presence of Bilateral Condylar Fracture along with Left Parasymphyseal fracture.

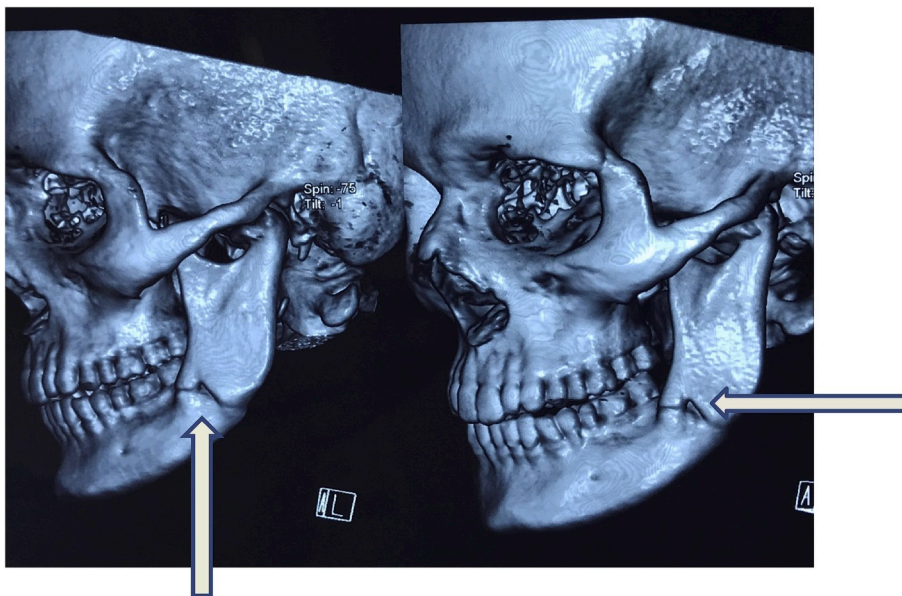


Fig. 2. 3-D Reconstruction Image shows a Unusual defect over the mandibular angle, Mimicking a Angle Fracture, Also Noted is the left mandibular condylar fracture with medial displacement.

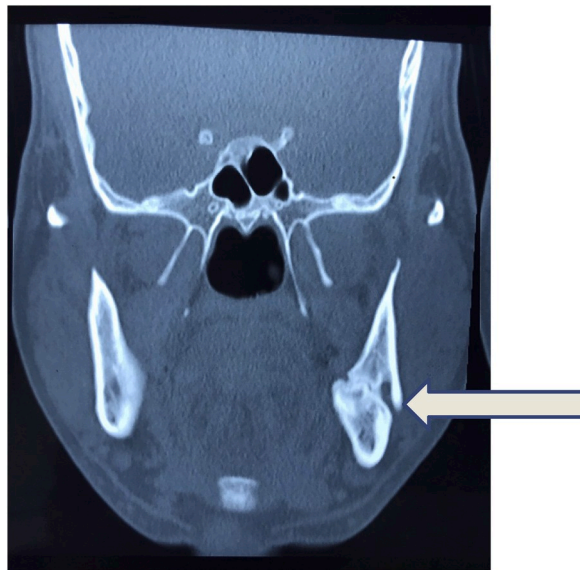
Bilateral Condylar fracture along Left parasymphyseal fracture (Fig. 1). Patient was advised to get a Computed Tomographic (CT) Scan of Brain and Face with mandible done, Plain CT scan of the head ruled out any injury to the brain. CT scan was performed of face with mandible in coronal, axial sections with 3-D reconstructed Images CT images revealed fracture of the bilateral mandibular condyle (Right Side Condylar Neck & Left Side Dicapitular) along with fracture at the left symphysis region. Another peculiar finding on the mandibular CT scan was presence of defect on the lateral surface of mandibular angle region (Fig. 2) which suggested a possibility of mandibular angle fracture even though there were no clinical signs to support it.

The patient was advised an Open Reduction Internal Fixation (ORIF) for the mandibular fractures and was posted for same under General Anesthesia, ORIF for the Right side mandibular condylar fracture and the Left parasymphyseal fracture was achieved favorably, it was decided intraoperatively to conservatively manage the Left Condylar fracture as functionally desirable occlusion was achieved by addressing above two mentioned fracture sites, It was decided to explore the left Mandibular Angle for presence of fracture. Upon reflection of the flap after intra oral incision at the left mandibular angle region, no fracture or discontinuity of the bone could be seen. Instead, a completely formed foramen with a possible neurovascular bundle exiting out of it was appreciated on the lateral surface of the left angle of mandible of (Fig. 3). On carefully reexamining the coronal sections and 3-D reconstructed images of CT Scan intra operatively, an oval shape structure resembling a foramen was appreciated on few of the scan images (Fig. 4) which was correlating to our clinical intraoperative finding of presence of Novel Aberrant Mandibular Angle Foramen (NAMAF) at lateral surface of angle of





**Fig. 3.** Left Mandibular Angle Exposed, NMAF can be visualized just above the pointing instrument with a possible neurovascular bundle exiting out of it.



**Fig. 4.** Careful Reexamination the Coronal Images of Preoperative CT scan confirms clinical findings about NMAF. NMAF mimicking a Mandibular Angle Fracture.

**Mandible.** Post-operative recovery of the patient was uneventful and he was stable systematically and functionally

Two weeks post-surgery the patient was informed about the unusual anatomical findings in relation to the left mandibular angle, to further investigate and visualize about the exiting neurovascular bundle from NMAF, the patient was advised to get a Magnetic Resonance Imaging (MRI) done, the patient refused a MRI citing phobia to enter gantry of a MRI machine, though he agreed to get a Cone Beam Computed Tomography (CBCT) done to review the NMAF in finer section slices (1mm). CBCT was performed using I CAT imaging solutions machine using standard settings (85 kV; tube current: 5–7 mA; acquisition period: 14 s; effective radiation time: 2–6 s; voxel size:  $0.3 \times 0.3 \times 0.3$  mm). Our Preoperative CT findings and intraoperative clinical findings were reconfirmed via post-surgical CBCT images too, where in the coronal sections we could easily distinguish between the NMAF and the inferior alveolar canal (IAC) (Fig. 5).

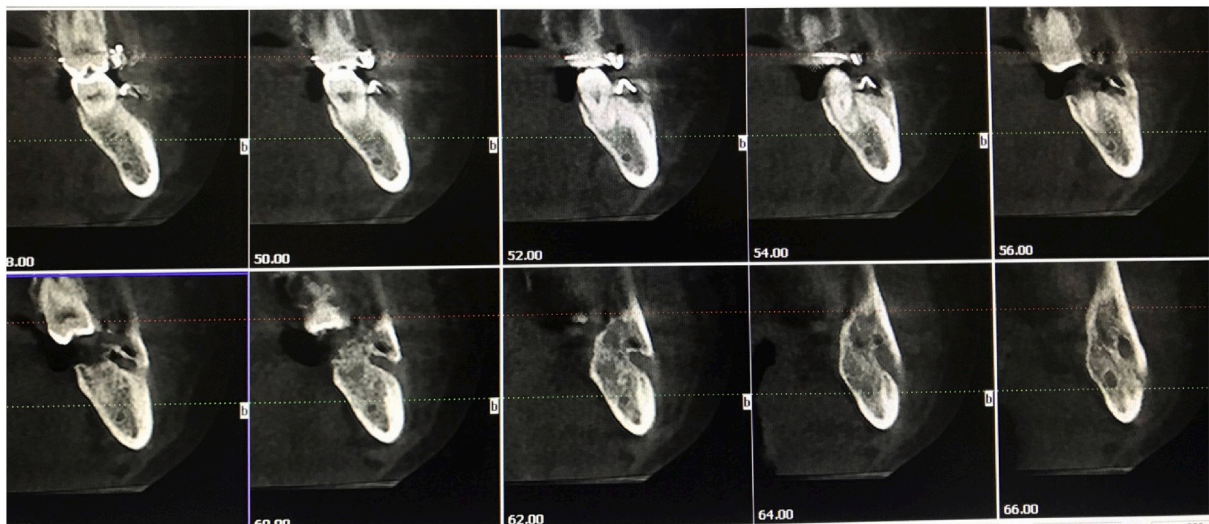
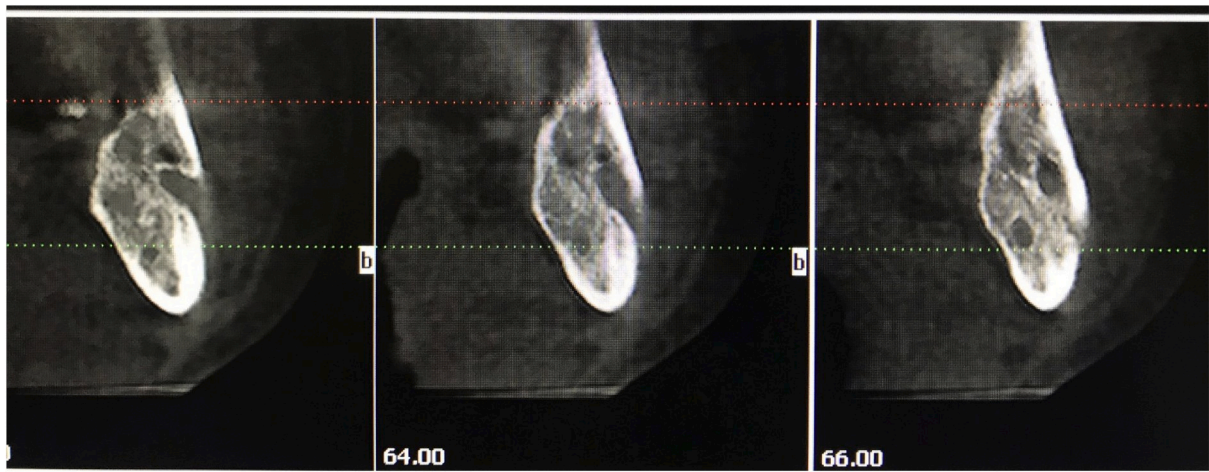


Fig. 5. Post Surgical CBCT images IAC can be clearly distinguished with NAMAFA.

## 2. Discussion

Aberrancy in the location and number of foramina in human mandible though rare but have been reported in the literature. The Accessory Mandibular Foramina (AMF) are defined as any opening on the medial surface of the ramus of the mandible other than mandibular foramen, mental foramen, accessory mental foramen, lingual foramen and sockets of teeth [6]. Retromolar Molar Foramen (RMF) has also been previously reported in literature and can be described as inconsistent foramen situated in the central portion of the retromolar fossa which is bounded by the anterior border of ramus of the mandible and temporal crest [7]. Accessory Mental Foramen (AMTF) has been reported in the literature as an accessory foramen located in the region surrounding the mental foramen and showing a connection with the mandibular canal [8]. The incidence of AMF, RMF and AMTF has been reported to vary from a range of 0.88%–10.66% [9], 3.2%–72% [7] and 1.4–10% [10] respectively. There have been other reports too which state that accessory foramen on the mandibular surface having no connections to the mandibular canal can be Nutrient Foramens (NF) nourishing the bone with vascular structures [11]. Nonetheless a clear correlation between NF and AMF cannot be established. Fuakami et al. [12] in a cadaveric study found a branch of the facial artery which coursed beside the mandible and re-entered through an Accessory Buccal Foramen (ABF) which showed a connection with the mandibular canal; additionally they also found out that a branch of the mental nerve re-entered the mandible through an ABF which showed no connection to the mandibular canal. Therefore, neurovascularization of these foramina may be more complicated than it is thought to be. Y Sisman [8] et al. in their study evaluated mandibular CT scans of 504 patients, they too used the term Accessory Buccal Foramen (ABF) for all foramina located on the buccal perimandibular surface. They reported presence of 14 ABFs out of 504 patients (2.7%). Important point here to be noted in the above study was in all cases the ABF was found in the dentulous tooth bearing area, with the farthest ABF lying 6.1 mm infero distal to the mental foramen [8].

In the present reported case the findings of NAMAFA were purely incidental. There is a famous saying by Lawrence [13] “what the eye doesn’t see and the mind doesn’t know, doesn’t exist”, even if it does”. Even though the Pre operative CT scan images and 3-D Reconstruction findings were clearly indicating a presence of a unique foramen in that region the author could only confirm this one of its kind findings once they surgically accessed the mandibular angle trying to locate a mandibular angle fracture (Fig. 3). A recent case report published by NFC Subhan [5] reported a presence of Novel bilateral “coronoid foramen” which were present at lateral mandibular surface but at the Coronoid Process. The foramen reported here is an unique entity in context of its location i.e at the lateral surface of mandibular angle and does not fit in the any of the criteria previously described similar entities about AMF, RMF, AMTF and Coronoid Foramen, that is why the authors feel that the term *Novel Aberrant Mandibular Angle Foramen* (NAMAFA) is best suited for it. The sensitivity of CT scans in determining the course of mandibular nerve, inferior alveolar canal (IAC) as well as these aberrancies has been well established [14]. Though the post-surgical CBCT also reconfirmed the preoperative and intraoperative findings and could very well demarcate the IAC with NAMAFA (Fig. 5) the authors wanted MRI study of the mandible, to further trace the details of neurovascular bundle exiting out of NAMAFA, the patient unfortunately refused it. Another unique aspect about this current report is most of the studies which are cited here as well as which have reported similar aberrant structures are on dried mandibles, cadaveric studies or are studies based on imaging studies. This is one of its kind report where the author re confirms the preoperative CT scan finding with relevant clinical evidence in an alive patient. The authors strongly emphasize to keep all these aberrant structures in mind while performing a surgery in the mandibular posterior region to avoid possible related complications.

### 3. Conclusion

In conclusion the author will like to accentuate that a surgeon or a radiologist should try to make a sense of what eye is transmitting to them. Not all the times there can be matched anatomical similarities as described in books and in literature. This open attitude of a surgeon or a radiologist can greatly help the patient in the final prognostic outcome for any procedure in this region. Aberrancies previously reported and the one reported here should be kept in mind while planning procedures in this region.

### References

- [1] Iwanaga J, Kikuta S, Tanaka T, Kamura Y, Tubbs R. Review of risk assessment of major anatomical variations in clinical Dentistry. *Clin Anat* 2019;32(5):672–7.
- [2] Bernardi S, Bianchi S, Continenza M, Macchiarelli G. Frequency and anatomical features of the mandibular lingual foramina: systematic review and meta-analysis. *Surg Radiol Anat* 2017;39(12):1349–57.
- [3] Paraskevas G, Mavrodi A, Natsis K. Accessory mental foramen: an anatomical study on dry mandibles and review of the literature. *Oral Maxillofac Surg* 2015;19:177–81. <https://doi.org/10.1007/s10006-014-0474-1>.
- [4] Kumar Potu B, Jagadeesan S, Mr Bhat K, Rao Sirasanagandla S. Retromolar foramen and canal: a comprehensive review on its anatomy and clinical applications. *Morphologie* 2013;97(317):31–7.
- [5] Firdoose Chintamani Subhan N. Bilateral ‘coronoid foramina’ with accessory foramina on the ‘lateral aspect of ramus’ of mandible: an unseen variance discovery in humans. *Surg Radiol Anat* 2018;40(6):641–6.
- [6] Shalini R, Ravi Varman C, Manoranjitham R, Veeramuthul M. Morphometric study on mandibular foramen and incidence of accessory mandibular foramen in mandibles of south Indian population and its clinical implications in inferior alveolar nerve block. *Anatomy and Cell Biology* 2016;49:241–8.
- [7] Kumar Potu Bhagath, Kumar Vinod, Abdel-Halim Salem, Abu-Hijleh Marwan. Occurrence of the retromolar foramen in dry mandibles of south-eastern part of India: a morphological study with review of the literature. *Anatomy Research International* 2014;2014:296717. <https://doi.org/10.1155/2014/296717>.
- [8] Sisman Y, Sahman H, Sekerci AE, Tokmak TT, Aksu Y, Mavili E. Detection and characterization of the mandibular accessory buccal foramen using CT. *Dentomaxillofacial Radiol* 2012;41:558–63.
- [9] Pancer B, Garaicoa-Pazmiño C, Bashutski JD. Accessory mandibular foramen during dental implant placement: case report and review of literature. *Implant Dent* 2014;23:116–24.
- [10] Igarashi C, K obayashi K, Yamamoto A, al e t. Double mental foramina of the mandible on computed tomography images: a case report. *Oral Radiol* 2004;20:68–71.
- [11] Naitoh M, Hiraiwa Y, Aimiya H, Gotoh K, Arijji E. Accessory mental foramen assessment using cone-beam computed tomography. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2009;107:289–94.
- [12] Fuakami K, Shiozaki K, Mishima A, Shimoda S, Hamada Y, Kobayashi K. Detection of buccal perimandibular neurovascularisation associated with accessory foramina using limited cone-beam computed tomography and gross anatomy. *Surg Radiol Anat* 2011;33:141–6.
- [13] Squires M. *Lady Chatterley’s lover; a propos of Lady Chatterley’s Lover/Lawrence DH*. United Kingdom: Cambridge University Press; 2002. p. 18.
- [14] Khan I, Halli R, Gadre P, Gadre KS. Correlation of panoramic radiographs and spiral CT scan in the preoperative assessment of intimacy of the inferior alveolar canal to impacted mandibular third molars. *J Craniofac Surg* 2011;22:566–70.