Journal Homepage: -www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/22328
DOI URL: http://dx.doi.org/10.21474/IJAR01/22328

RESEARCH ARTICLE

A DIAGNOSTIC DILEMMA OF JUVENILE OSSIFYING FIBROMA OF THE MANDIBLE IN A PEDIATRIC PATIENT– CASE REPORT

Dr. Saranya S[1], Dr. Padma Kumari B[2] and Dr. Reshmi J[3]

1. Junior Resident,Department of Pedodontics,Government Dental College Trivandrum.
2. HOD, Department of Pedodontics,Government Dental College Trivandrum.
3. Assistant Professor,Department of Pedodontics,Government Dental College Trivandrum.

Manuscript Info

Manuscript History
Received: 4 October 2025
Final Accepted: 6 November 2025
Published: December 2025

Key words:-
Juvenile ossifying fibroma,juvenile trabecular ossifying fibroma,juvenilepsa mmomatoid ossifying fibroma.

Abstract

Introduction: Juvenile Ossifying Fibroma (JOF) is an uncommon benign fibro-osseous tumor seen in children under 15 years of age, characterized by aggressive behavior and a high recurrence rate, which poses significant diagnostic and therapeutic challenges and necessitates long-term follow-up. This report describes a seven-year-old girl presenting with a five-month history of swelling in the left mandibular region. Clinical, radiographic, and histopathological findings confirmed the diagnosis of juvenile trabecular ossifying fibroma, and conservative management was planned instead of wide surgical excision. JOF is a distinct variant of ossifying fibroma with trabecular and psammomatoid subtypes, and its aggressive nature, recurrence potential, and resemblan ce to malignant bone lesions often complicate management. Accurate diagnosis, careful histopathological evaluation, and vigilant long-term postoperative monitoring are essential to achieve favorable outcomes in pediatric patients.

Introduction:-

The Juvenile Ossifying Fibroma (JOF) is a rare benign tumor that belongs to the group of fibroosseous tumors[1]. Fibro-osseous lesions of the cranial and facial bones are usually benign and tend to grow slowly. Benign fibro-osseous lesions resemble fibrous dysplasia, ossifying fibroma, and cement ossifiying dysplasia histopathologically[2,3] .The fibro osseous lesions of the jaws represent a diverse group of entities that are characterized by replacement of normal bone by a fibrous connective tissue matrix with varying amounts of osteoid, immature and mature bone.[4]It is distinguished from other fibro-osseous lesions by factors such as age of onset, clinical presentation, and expected behaviour. The lesion shows aggressive growth and has a high recurrence rate[5]. It most commonly affects children between 5 and 15 years of age and can result in significant facial disfigurement.[6]

Corresponding Author:- Dr. Saranyas
Address:-Junior Resident, Department of Pedodontics,Government Dental College Trivandrum.

Benjamin (1938) first described JOF as an ossifying fibroma with atypical calcification, and the term Juvenile Aggressive Ossifying Fibroma was later introduced by Johnson et al(1952). These lesions account for about 2% of oral tumours in children[7]. JOF is further classified into two types: Juvenile Psammomatoid Ossifying Fibroma (JPOF) and Juvenile Trabecular Ossifying Fibroma (JTOF). The psammomatoid type commonly affects the bones of the orbit and paranasal sinuses, whereas the trabecular type more often involves the jaws[8].Juvenile ossifying fibroma typically presents at an early age, with 79% of cases diagnosed before 15 years.[3,9,7] It affects males and females equally and accounts for approximately 2% of oral tumours in children.[10]JOF is thought to originate from the periodontal ligament.[11] Clinically, the tumour exhibits aggressive behaviour and a considerably higher recurrence rate compared with other fibro-osseous lesions.[12] It is usually localized and well-demarcated, though not encapsulated.[13] Because of its aggressive growth and high recurrence potential, early diagnosis and complete surgical excision are crucial.

Case report:-

A 7-year-old female patient presented to the Department ofPedodontics, Government Dental College Trivandrum, with a chief complaint of swelling on the lower left side of the face involving the mandible, which had been present for the past five months. She had previously takenmultiple courses of antibiotics prescribed by the Department of Pediatrics, Government Medical College, Thiruvananthapuram, under a provisional diagnosis of bacterial sialadenitis. Her medical and family histories were non-contributory.On clinical examination, a solitary, well-defined, firm mass was observed extendinganterioly from the distal aspect of 75 posteriorly in to entire ramus of the mandible, posterosuperiorlyupto condyle and coronoid process, superiorly into the interdental region between 75,36 and the developing toothbud of 37 and inferiorly up to lower border of mandible , producing mild facial asymmetry on the affected side . The lesion caused expansion of both the buccal and lingual cortical plates, resulting in obliteration of the left buccal vestibule in the canine–molar region.The overlying mucosa appeared stretched but intact. On palpation, the swelling was firm with minimal tenderness, and no regional lymphadenopathy was noted. Mouth opening was within normal limits. Intraoral examination revealed that the patient was in the mixed dentition stage, with no evidence of dental caries, tooth mobility, or pathological tooth displacement.

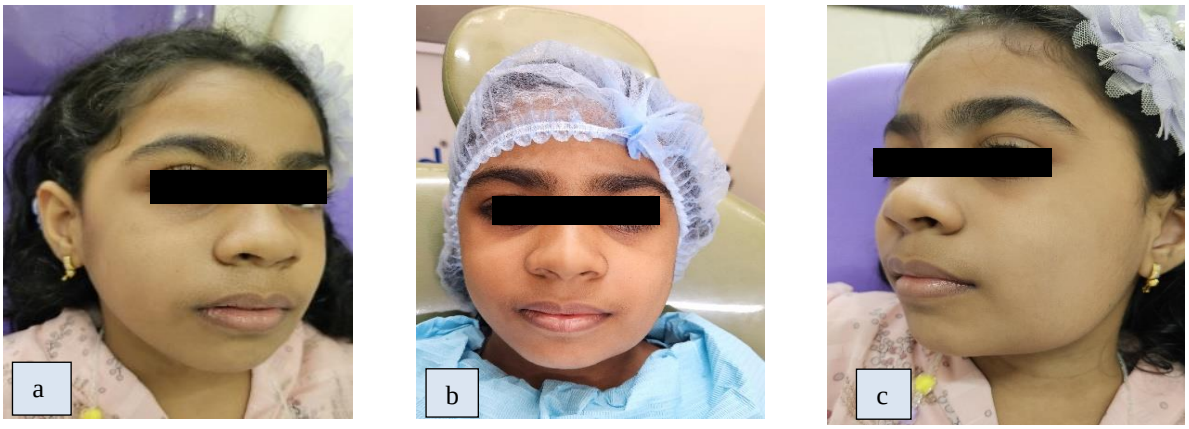


Figure1:(a) Lateral view of the normal right side of mandible.(b) Frontal view shows the facial asymmetry.(c) Lateral view of the extraoral swelling in the left mandibular region

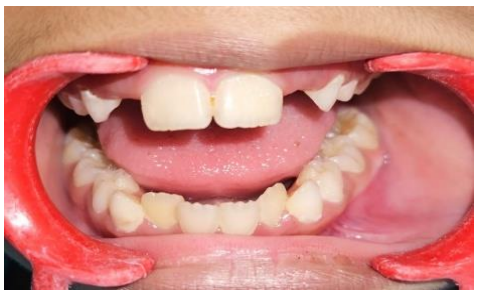


Figure2: Intraoral view showing obliteration of the lower left buccal vestibule from the 73 to 36 region

Radiographic investigations included Intraoral Periapical Radiograph (IOPAR), Orthopantomogram (OPG), Topographic view, and Cone-Beam Computed Tomography (CBCT). The IOPAR findings was within normal limits, whereas the topographic radiograph and OPG showed periosteal new bone formation. CBCT revealed a mixed radiolucent–radiopaque lesion with an altered trabecular pattern and a characteristic ground-glass appearance involving the left body, angle, and ramus of the mandible. Multiple small radiolucent areas with irregular margins were present within the lesion, suggesting a chronic inflammatory process or primary chronic osteomyelitis in the affected region. Anteriorly, the lesion extended from the distal aspect of tooth 75, while posteriorly it involved the entire ramus of the mandible, extending posterosuperiorly to the condylar and coronoid processes. Routine hematological investigations were unremarkable, except for an elevated Erythrocyte Sedimentation Rate (ESR) around 20 mm / 1 hour.

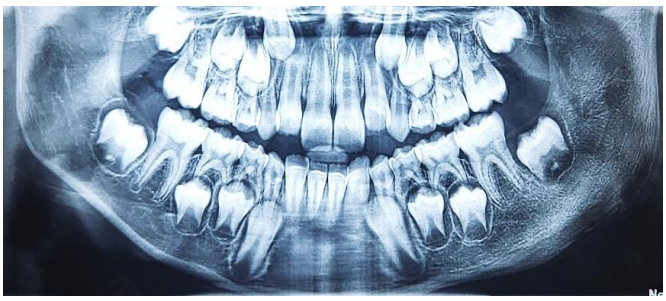


Figure3 :OPG showing mixed radiolucent– radiopaque lesion in the left second mandibular-premolar– ramus region with periosteal new bone formation.

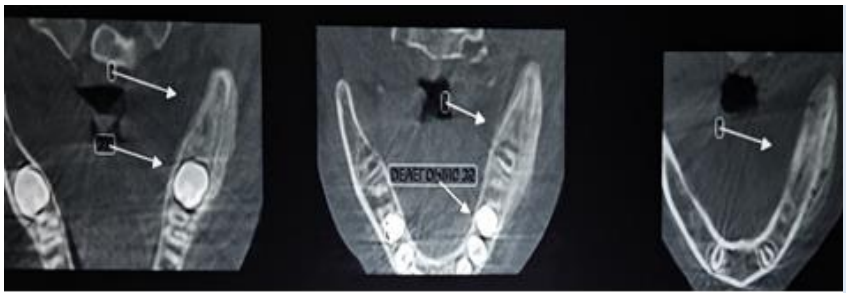


Figure4 : Axial section CBCT view showing expansion of both the buccal and lingual cortical plates

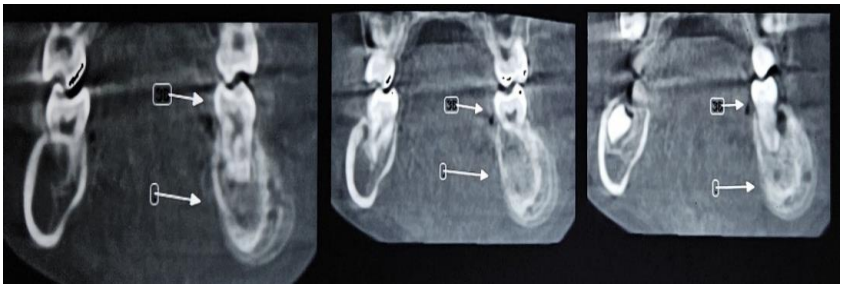
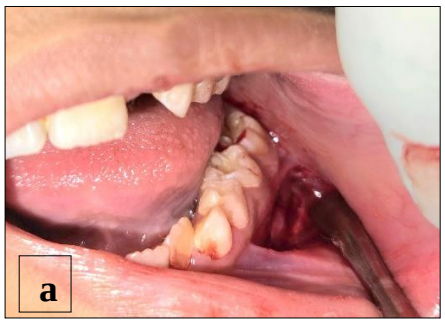


Figure5 : Coronal section CBCT view reveals thickening of cortical plate

An incisional biopsy was performed under local anesthesia (2% lignocaine with adrenaline).A vestibular incision was made extending from the canine to the molar region, followed by reflection of a subperiosteal flap. A bony specimen was obtained using a chisel and mallet and fixed in 10% neutral buffered formalin for histopathological examination. Hematoxylin and eosin (H&E)–stained sections showed trabeculae of fibrillary osteoid and woven bone fragments embedded within a highly cellular, storiform stroma composed of spindle-shaped and polyhedral cells with minimal collagen production. The osteoid formations appeared as characteristic paint-brush–like strokes. Based on the correlation of clinical, radiographic, and histopathological findings, a final diagnosis of juvenile trabecular ossifying fibroma was made. Considering the younger age of the patient, conservative surgical management of the affected mandibular region was planned under general anesthesia.



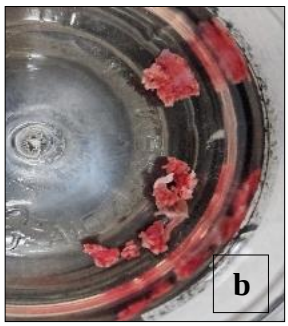
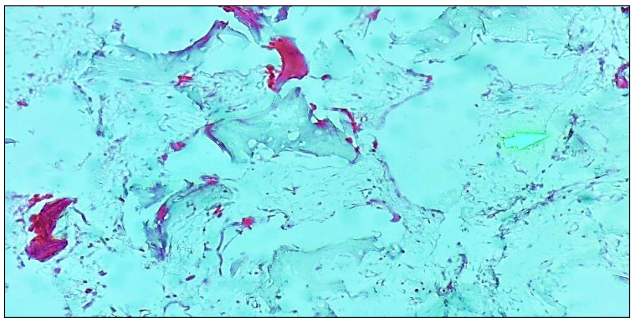


Figure 6: (a) Intra oral view of left buccal cortical plate after subperiosteal flap elevation. (b) Bony specimen collected with chisel and mallet

Figure 7: H&;E stained serial sections ofcellular stroma is delicately collagenous & numerous trabeculae of bone with osteocytes. Some of the trabeculae show osteoblastic rimming.Scanty inflammatory infiltrate is present.



Discussion:-

Benign fibro-osseous lesions of the head and neck region are uncommon and include several entities with overlapping clinical and radiographic features. These lesions comprise Fibrous Dysplasia (FD), Ossifying Fibroma (OF), and Cemento-Osseous Dysplasia (COD).[14] According to the World Health Organization (WHO) classification of odontogenic tumors (2017), OF can be categorized into conventional ossifying fibroma and juvenile ossifying fibroma (JOF).[8] JOF is a rare neoplasm characterized by replacement of the normal bone matrix in children. It is typically observed in individuals under 15 years of age, with a slightly higher incidence reported in males. These tumors are generally large and expansile, frequently extending into the ethmoid and sphenoid sinuses, nasal cavity, orbital walls, and maxillary bone, although mandibular lesions are also documented. JOF is further subdivided into juvenile psammomatoid ossifying fibroma (JPOF) and juvenile trabecular ossifying fibroma (JTOF).[8]Both variants occur at considerably younger ages compared with other fibro-osseous lesions. The trabecular type tends to present in individuals aged 8.5–12 years, whereas the psammomatoid variant appears at a slightly older mean age of 16–33 years.[15] The psammomatoid variant is more common and more aggressive, demonstrating a higher recurrence rate than the trabecular form.[16] In its trabecular form, JOF may resemble osteosarcoma in terms of aggressiveness.[17] In the present case, despite the lesion's relatively slow progression and the intact appearance of the mucosa, its underlying pathology was significant.

The hallmark characteristics of JOF include early age of onset, localized tumor growth, distinct clinical presentation, aggressive behavior, and a high recurrence potential.[6,8,10] Clinically, JOF may present as an asymptomatic, slowly or rapidly expanding bony swelling that results in facial asymmetry. The tumor may attain considerable size and often demonstrates aggressive features such as rapid enlargement, cortical thinning, cortical perforation, and invasion of adjacent anatomical structures.[2,4] Reported symptoms vary and may include facial swelling, a progressively enlarging hard mass, sinusitis, nasal obstruction, tooth displacement, root resorption, cortical perforation, ocular proptosis, and epistaxis. Pain and paraesthesia are uncommon. The tumor may erode bone partitions and invade adjacent orbital, nasal, and cranial compartments, resulting in facial deformity, displacement of orbital structures, and obstruction of sinus drainage.[18]JOF is believed to arise from the differentiation of mesenchymal cells of the periodontal ligament or multipotent precursor cells that form fibrous tissue, cementum, or osteoid. Controversy exists regarding its predilection site; while some studies suggest the maxilla is more frequently involved, others report a higher incidence in the mandible.[6,19] Johnson et al. reported a higher incidence in females, whereas Bertrand et al. noted equal distribution between genders.[10,17]

Radiographically, JOF may appear as a unilocular or multilocular radiolucency, or as a mixed radiolucent–radiopaque lesion with well-defined borders. Root displacement and resorption may occur but are uncommon.[19] Most lesions are well-defined and demonstrate mixed radiodensity, as also reported by Chrcanovic and Gomez.[20] Although JOF is not encapsulated, it is usually separated from surrounding bone by a radiopaque border—an important feature distinguishing it from fibrous dysplasia. It typically exhibits a concentric or centrifugal pattern of growth and may show a characteristic "ground-glass" appearance on radiographs.Histologically, the present case demonstrated classic features of trabecular JOF (TrJOF), including spindle-shaped fibroblastic cells arranged in a whorled pattern, osteoid trabeculae, and multinucleated giant cells. These findings align with those described by Slootweg and Panders,[7] who emphasized the highly cellular nature of JOF, with abundant osteoid and the presence of multinucleated giant cells. These cellular characteristics are common to both variants; however, they are more pronounced in the trabecular type, where the stroma is densely packed with fibroblasts arranged in a storiform pattern.[21] Additionally, the presence of psammomatous calcifications supports the diagnosis of PsJOF when present, as these structures are considered pathognomonic for the psammomatoid variant, as described by Eversole et al.[22]

Regarding treatment, Slootweg and Müller[7] reported no significant differences in outcomes between limited surgical procedures and more extensive surgeries, whereas Waldron et al.[23] advocated local excision and curettage as preferable treatment options, also recommending local excision for recurrent cases. Incomplete resection is associated with recurrence, particularly in aggressive tumors. Therefore, some authors recommend en bloc resection as the most adequate treatment. Curettage combined with peripheral osteotomy, or in some cases segmental mandibular resection with reconstruction, is suggested for extensive or recurrent lesions. Long-term recurrence may lead to sarcomatous transformation.[24,21]It is widely accepted that JOF behaves as a locally aggressive lesion with a high recurrence rate when inadequately treated. The recommended management is en bloc resection with free surgical margins[12,21] Radiotherapy is contraindicated, and a "wait-and-see" approach is generally not advised.[25,7] Marginal resection is recommended for large lesions with cortical perforation or severe cortical thinning. Total resection or partial mandibulectomy is reserved for cases in which the lower border of the mandible cannot be adequately identified.[25] Nonetheless, for both trabecular and psammomatoid variants, conservative surgical excision remains an acceptable treatment approach, despite reports of multiple recurrences. The extent of surgical management should be tailored to the patient's age, tumor location, and involvement of adjacent vital structures.[26]

Conclusion:-

The aggressive nature and rapid growth of juvenile ossifying fibroma necessitate early diagnosis, careful histopathological evaluation, and comprehensive management with long-term follow-up due to its high recurrence rate. This case highlights the importance of identifying the trabecular variant of juvenile ossifying fibroma, which presented in the mandible of a female patient in the mixed dentition stage. It also emphasizes the value of conservative treatment to preserve the developing permanent tooth germs, in contrast to more aggressive surgical approaches.The management necessitates a multidisciplinary approach involving Pediatric Dentistry, Oral and Maxillofacial Surgery, and Oral Pathology.

References:-

1. Haitami S, Oulammou H, Bouhairi M, Jalil ZE, Yahya IB. Juvenile ossifying fibroma: 2 cases and literature review. Oral Surg Oral Med Oral Pathol. 2015;21:183–187.
2. MacDonald-Jankowski DS. Fibro-osseous lesions of the face and jaws. Clinical Radiology. 2004 Jan;59(1):11–25.
3. Khoury NJ, Naffaa LN, Shabb NS, Haddad MC. Juvenile ossifying fibroma: CT and MR findings. Eur Radiol. 2002 Dec;12(S3):S109–13.
4. Dr.Ravikumar.R1, Dr.Raghavendra.K2, Dr.Santhosh Kumar. (PDF) Aggressive Juvenile Ossifying Fibroma of the Anterior Mandible [Internet]. [cited 2025 Oct 16]. Available from: https://www.researchgate.net/publication/281612624_Aggressive_Juvenile_Ossifying_Fibroma_of_the_Anterior_Mandible
5. Kashyap RR, Nair GR, Gogineni SB. Asymptomatic Presentation of Aggressive Ossifying Fibroma:A Case Report. Case Reports in Dentistry. 2011;2011:1–4.
6. Williams HK, Mangham C, Speight PM. Juvenile ossifying fibroma. An analysis of eight cases and a comparison with other fibro-osseous lesions. J Oral Pathology Medicine. 2000 Jan;29(1):13–8.
7. Slootweg PJ, Müller H. Juvenile ossifying fibroma. Report of four cases. Journal of Cranio-Maxillofacial Surgery. 1990 Apr;18(3):125–9.

8. Smith SF, Newman L, Walker DM, Papadopoulos H. Juvenile Aggressive Psammomatoid Ossifying Fibroma: An Interesting, Challenging, and Unusual Case Report and Review of the Literature. Journal of Oral and Maxillofacial Surgery. 2009 Jan;67(1):200–6.
9. Mehta D, Clifton N, McClelland L, Jones NS. Paediatric fibro-osseous lesions of the nose and paranasal sinuses. International Journal of Pediatric Otorhinolaryngology. 2006 Feb;70(2):193–9.
10. Bertrand B, Eloy Ph, Cornelis JP, Gosseye S, Clotuche J, Gilliard Cl. Juvenile aggressive cemento-ossifying fibroma: Case report and review of the literature. The Laryngoscope. 1993 Dec;103(12):1385–9.
11. Dominguete PR, Meyer TN, Alves FA, Bittencourt WS. Juvenile ossifying fibroma of the jaw. British Journal of Oral and Maxillofacial Surgery. 2008 Sep;46(6):480–1.
12. Bertolini F, Caradonna L, Bianchi B, Sesenna E. Multiple ossifying fibromas of the jaws: A case report. Journal of Oral and Maxillofacial Surgery. 2002 Feb;60(2):225–9.
13. Makek MS. So called "Fibro-Osseous Lesions" of tumorous origin. Journal of Cranio-Maxillofacial Surgery. 1987 Jan;15:154–67.
14. Sarode SC, Sarode GS, Waknis P, Patil A, Jashika M. Juvenile psammomatoid ossifying fibroma: A review. Oral Oncology. 2011 Dec;47(12):1110–6.
15. Osunde O, Iyogun C, Adebola R. Juvenile aggressive ossifying fibroma of the maxilla: A case report and review of the literature. Ann Med Health Sci Res. 2013;3(2):288.
16. Odin G, Benchetrit M, Raybaud H, Balaguer T, Soler C, Michiels JF. Une tumeur maxillaire à ne pas méconnaître : le fibrome ossifiant de type juvenile. Annales de Pathologie. 2012 Feb;32(1):65–7.
17. Johnson LC, Yousefi M, Vinh TN, Heffner DK, Hyams VJ, Hartman KS. Juvenile active ossifying fibroma. Its nature, dynamics and origin. Acta Otolaryngol Suppl. 1991;488:1-40. PMID: 1843064.
18. Rathore AS, Ahuja P, Chhina S (2014) Juvenile Ossifying Fibroma - WHO Type. J Case Rep Stud 2(2): 202. doi: 10.15744/2348-9820.1.502
19. Lawton MT, Heiserman JE, Coons SW, Ragsdale BD, Spetzler RF. Juvenile active ossifying fibroma: Report of four cases. Journal of Neurosurgery. 1997 Feb;86(2):279–85.
20. Chrcanovic BR, Gomez RS. Juvenile ossifying fibroma of the jaws and paranasal sinuses: a systematic review of the cases reported in the literature. International Journal of Oral and Maxillofacial Surgery. 2020 Jan;49(1):28–37.
21. El-Mofty S. Psammomatoid and trabecular juvenile ossifying fibroma of the craniofacial skeleton: Two distinct clinicopathologic entities. Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology. 2002 Mar;93(3):296–304.
22. Eversole LR, Leider AS, Nelson K. Ossifying fibroma: A clinicopathologic study of sixty-four cases. Oral Surgery, Oral Medicine, Oral Pathology. 1985 Nov;60(5):505–11.
23. Waldron CA. Fibro-osseous lesions of the jaws. Journal of Oral and Maxillofacial Surgery. 1993 Aug;51(8):828–35.
24. Shetty SK, Kasrija R, Choudhary A, Hariani A, Kale RM. Sculpting Solutions: A Case Report of Resection and Reconstruction in an Aggressive Mandibular Juvenile Ossifying Fibroma and Review of Literature. Cureus. 2025 Feb 14;17(2):e79026. doi: 10.7759/cureus.79026. PMID: 40104476; PMCID: PMC11914857.
25. Din Q ud. Ossifying Fibroma of Maxillofacial Region. J Postgrad Med Inst [Internet]. 2011 Sep.15[cited2025Oct.16];14(1).Availablefrom:https://jpmi.org.pk/index.php/jpmi/article/view/678.
26. Alawi F. Benign Fibro-osseous Diseases of the Maxillofacial Bones. Pathology Patterns Reviews. 2002 Dec 1;118(suppl_1):S50–70.