

**Ranjeet Deshmukh  
Dental College & Research Centre's  
Vibrant  
Interdepartmental  
Scientific  
Activity  
2023-2024**



**VISA**



**Dr. Vrinda Kolte**  
Chairperson, VISA Committee



**Dr. Himija Karia**  
Core Committee Member



**Dr. Rohit Moharil**  
Core Committee Member



## FOREWORD



**Dr. Abhay Kolte**, Dean  
Professor and Head, Department of Periodontics & Implant Dentistry,  
Ranjeet Deshmukh Dental College and Research Centre, Nagpur

**“Interdisciplinary interactions transform the impossible into the possible, where diverse ideas converge to create solutions that no single field could have imagined alone.”**

It's a matter of great pride and satisfaction to see the sapling of VISA Activity growing over the years and establishing itself into one of the major interdepartmental scientific activities conducted by the institute. The primary objective with which the activity was started was to showcase the quality of work performed by every department/specialty amongst the colleagues and to have better interdepartmental cooperation. It also enables others to get motivated in trying innovative treatment modalities for better patient care.

In an increasingly complex profession, we often face challenges which do not apply or work neatly through a single discipline. Ours being a noble profession which is concerned towards providing relief for the patient's dental health care needs, we need to be more aware of the intricate problems and their possible solutions obtained through interdisciplinary approaches. Interdisciplinary activities provide the perfect platform for addressing such challenges by combining expertise, ideas, and methodologies from different fields of the Dental profession.

Whether in research, education, or practice, interdisciplinary activities foster critical thinking, collaboration, and innovation. Students and professionals alike benefit from exposure to diverse viewpoints and skills, gaining a deeper understanding of complex systems and enhancing their ability to think holistically.

Moreover, interdisciplinary interactions are not only about solving problems, it's about learning to communicate across specialities, bridging gaps and building better understanding through shared knowledge. This type of collaboration nurtures skills such as adaptability, teamwork, and open-mindedness, which are essential to succeed in today's competitive world.

This edition of the publication has published interesting cases treated in the respective Departments in the past one year. It is heartening to see the quality of work done in all the departments which really speaks volumes about the overall dental health care we all render to our patients. The commitment of the staff and students involved in the patient care is worth appreciating and reflects upon our own selves in terms of clinical skills and knowledge. Any institution is known by the people working within where some are inclined towards clinical activities and the others in teaching endeavors.

I congratulate the members of the VISA activity who have put in a lot of efforts to bring this publication well in time for all of us. Such initiatives ensure that we all progress together in the profession.

Dr. Abhay Kolte  
Dean  
Ranjeet Deshmukh Dental College and Research Centre



## FROM THE DESK OF VICE DEAN (Administrative)



**Dr. Ramkrishna Sheno**, Vice Dean (Administrative),  
Professor and Head, Department of Oral Surgery, PG Director,  
Ranjeet Deshmukh Dental College and Research Centre, Nagpur

I am delighted with the superlative compilation of this year's interdepartmental activities. This VISA compilation is a testament to the collaborative spirit and clinical excellence within our institute. These cases exemplify the innovative approaches and shared expertise that are essential for advancing patient care in a complex and ever-evolving field like dentistry.

The featured cases highlight the dedication, skill, and commitment of our faculty and students. This initiative serves as a valuable platform for fostering interdisciplinary interactions and inspiring professionals to explore novel solutions for better patient outcomes.

I extend my heartfelt congratulations to the contributors and the Team VISA for their meticulous efforts in curating this publication. It is through such endeavours that we continue to push boundaries, inspire one another, and uphold the highest standards in our profession.

Dr. Ramakrishna Sheno  
Vice Dean (Administrative)  
Ranjeet Deshmukh Dental College and Research Centre



## FROM THE DESK OF VICE DEAN (Clinical)



**Dr. Mukta Motwani**, Vice Dean (Clinical),  
Professor and Head, Department of Oral Medicine and Radiology  
Ranjeet Deshmukh Dental College and Research Centre, Nagpur

Interdisciplinary collaboration drives innovation by merging diverse ideas to solve complex challenges. The VISA activity, established to showcase departmental work and foster cooperation, has grown into a vital platform for enhancing patient care through shared knowledge and innovative approaches.

Dentistry benefits greatly from such efforts, which encourage critical thinking, teamwork, and adaptability, while broadening perspectives on patient care. This publication highlights outstanding cases from the past year, reflecting the dedication and expertise of our staff and students.

Congratulations to the VISA team for their hard work in advancing collaboration and excellence within our profession.

Dr. Mukta Motwani  
Vice Dean (Clinical)  
Ranjeet Deshmukh Dental College and Research Centre



## FROM THE EDITOR'S DESK



**Dr. Vrinda Kolte,**  
Professor, Department of Oral & Maxillofacial Surgery  
Ranjeet Deshmukh Dental College and Research Centre, Nagpur

**Vibrant Interdepartmental Scientific Activity (VISA)** started in 2016 to foster interdepartmental knowledge exchange and its clinical application among all. It gives me immense pleasure to present seventh issue of Ranjeet Deshmukh dental college's VISA report. All departments present their clinical cases which need interdisciplinary approach in their management by rotation. This year we expanded our horizons from department level to inter institute level by participating in **INTERLINK** activity which is Joint venture of GDC, Nagpur, VYWS, Amaravati and SPDC, Sawangi with us. Our postgraduates participated in it with enthusiasm and won prizes at various levels

On behalf of my VISA team, I extend my heartfelt thanks to our management and Dean for shouldering the responsibility on us and support for the smooth conduction of activity throughout the year.

I congratulate all departmental staff and postgraduate trainees and none the less prize winners of INTERLINK 2024 for their wonderful scientific contribution to make this activity successful!

Regards,  
Dr. Vrinda Sunil Kolte  
Convenor, VISA Committee  
Ranjeet Deshmukh Dental College and Research Centre



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## Radicular Cyst: A Case Report

Presented by:

**Prachi Chaudhari**

**Alvina Waghchoure**



**Introduction:** Radicular cyst is the most commonly occurring cystic lesion of the jaw. A cyst is a pathological cavity containing fluid, semi-fluid, or gaseous contents, which are not formed by the accumulation of pus frequently but not always lined by epithelium (Kramer, 1974). Odontogenic cysts are defined as those cysts that arise from odontogenic epithelium in the jaws<sup>(1)</sup>. Radicular cyst is a usual but not inevitable sequelae of periapical granuloma originating as a result of bacterial infection and necrosis of dental pulp nearly always following carious involvement of tooth (Shafers, 1993). It is mostly associated with apical and lateral exits of the infected root canal. Radicular cysts are usually asymptomatic and are discovered accidentally during routine radiographic examination<sup>(2)</sup>. An acute exacerbation of the chronic cystic lesion can develop signs and symptoms such as swelling, tooth mobility and displacement of adjacent teeth. Radiographically, most of them appear as a round and uniform radiolucent lesion with or without sclerotic borders. Histological examination is necessary for the confirmatory diagnosis of radicular cysts<sup>(3)</sup>. The treatment options for radicular cyst varies from conventional nonsurgical root canal therapy for smaller cysts to surgical treatment like enucleation, marsupialization or decompression for larger cysts<sup>(4)</sup>.

**Case Report:** An 18 year old male patient with the chief complaint of palatal swelling since a month and history of trauma 8 years reported to the department of Conservative Dentistry

and Endodontics. On intraoral examination, swelling was round, well defined, 2-3cm in size extending from anterior palatine rugae to the junction of hard and soft palate on the left side without crossing the midline (Figure 1). Swelling was fluctuant in nature, tender on palpation and associated with purulent discharge. 21, 22 and 23 were slightly tender on vertical percussion and showed no response to vitality testing. Grade I mobility was noted with 21.



Figure 1- Intra oral view

On radiographic investigations, a large, unilocular radiolucent lesion involving apices of 21, 22 and 23. Incomplete root formation was seen with 21 (Figure 2). Cone beam computed tomography revealed palatal plate perforation and thinning of nasal floor (Figure 3, 4). Fine needle aspiration revealed turbid





yellowish brown-coloured fluid, consisting dense infiltrate of acute inflammatory cells, predominantly polymorphonuclear leukocytes suggestive of an acute inflammatory lesion. Based on clinical, radiological and analysis of aspirate, a provisional diagnosis of an infected radicular cyst was made.



Figure 2- IOPA

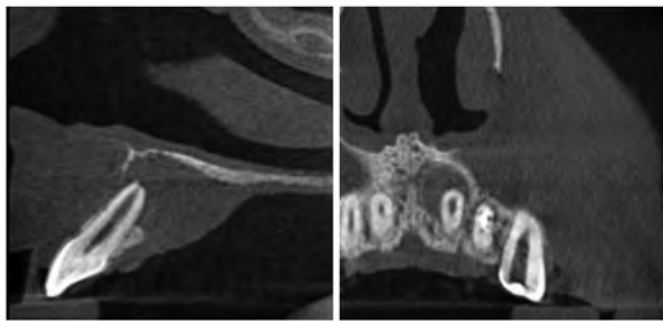


Figure 3 and 4-CBCT

Treatment plan included root canal therapy for 21, 22 and 23 along with apexification of 21 using MTA followed by surgical enucleation of cystic lesion with apicectomy of 21. After patient's informed consent, root canal treatment was initiated under local anaesthesia and rubber dam isolation. After access cavity preparation and working length determination (Figure 5) with apex locator, biomechanical preparation was carried out with Azure Endostar E3 file system along with copious irrigation with normal saline, 2.5% Sodium hypochlorite and 17% EDTA saline being the final irrigant. After drying the canals, intracanal non setting

calcium hydroxide dressing (RC Cal, PRIME Dental) was placed and access cavities were sealed for 10 days. In the second visit, after thorough cleaning and drying, 22 was obturated with sealer (AH plus) using single cone technique. 23 was obturated using sectional method followed by thermoplastic obturation (Figure 6). As 21 presented with incomplete root formation, MTA (PROROOT MTA, DentsplySirona) was used to create an apical plug of 8 mm (Figure 8).



Figure 5-Working length



Figure 6-Obturation with 22 and 23



Figure 7-Apical MTA plug



On the following day, periapical surgery was performed. The operating site was anesthetized with 2% lignocaine with epinephrine (1:100 000). A sulcular incision was made from the mesial region of 13 to 24 and a full thickness mucoperiosteal flap was raised with two vertical releasing incisions on each side (Figure 8). Cystic lesion was enucleated and curettage was done. Apicectomy was performed with 21. Flap repositioning and closure was carried out with 3-0 silk sutures (Ethicon Mersilk). Specimen was sent for histological examination. The histopathological features of the obtained specimen during enucleation were consistent with the provisional diagnosis of infected radicular cyst. The cystic cavity was lined by nonkeratinized, stratified squamous epithelium. Adjacent to cystic cavity, connective tissue wall was fibrocellular consisting of fibroblasts and fibrocytes with severe chronic inflammatory infiltrate (Figure 12)



Figure 8- Mucoperiosteal flap

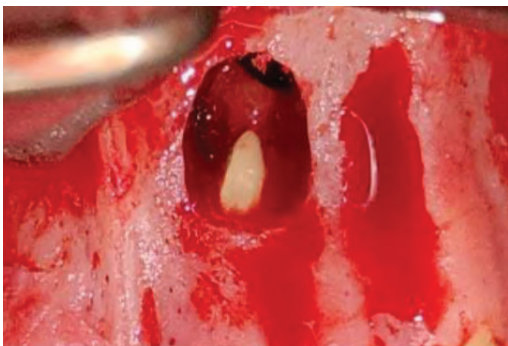


Figure 9- Exposure of root end



Figure 10- Root end resection



Figure 11- Repositioning and closure

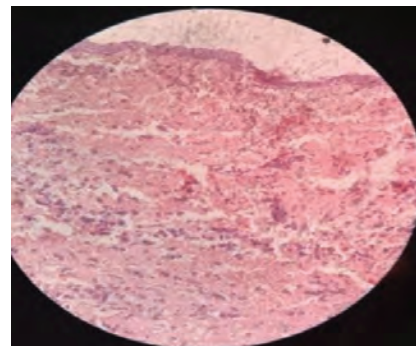


Figure 12- Histopathological examination

Patient was given post operative instructions and prescribed with antibiotics and analgesics. Patient was recalled after 7 days for follow up. After, initial soft tissue healing, 21 was obturated with thermoplasticized gutta percha. Post endodontic restoration was completed with 21, 22 and 23 using composite (Kulzer Charisma smart hybrid).

Patient remained asymptomatic in follow up period and showed complete resolution of swelling. At 6 months follow-up, periapical



radiograph showed resolution of periapical radiolucency (Figure-13) and 18 months follow up radiographs revealed complete healing with new bone formation at the site of cystic lesion (Figure 14).



Figure 13- 6 months follow up

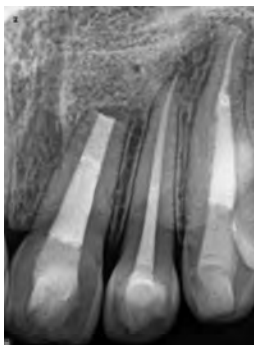


Figure 14-18 months follow up

**Discussion:** Cyst is defined as a pathological cavity that may and may not be lined with epithelium and has a centrifugal, expansive mode of growth<sup>(5)</sup>. Radicular cyst is a usual but not inevitable sequelae of periapical granuloma originating as a result of bacterial infection and necrosis of dental pulp nearly always following carious involvement of tooth. It is most common odontogenic cyst of jaws of which 9% are true cysts and 6% pocket cysts. Prevalence is highest in the third decade of life. Men are more commonly affected than women. Most common site of occurrence is maxillary anterior region. Current report presents a case of 18 year old male with lesion in maxillary anterior region<sup>(6)</sup>.

Trauma is one of the etiological factors for

radicular cyst. Trauma leads to necrosis of the pulp and renders tooth non vital. Persistent chronic infection can lead to formation of a periapical cyst. Patient had history of trauma in the anterior region and 21, 22 and 23 were non vital. It has been stated that as the cyst enlarges, adjacent teeth can become non-vital<sup>(7)</sup>. These findings suggest that trauma could be the possible etiology behind non vitality of teeth and development of radicular cyst in the present case.

The pathophysiology of radicular cyst has three definitive phases; phase of initiation, cyst formation, enlargement. Radicular cysts are usually asymptomatic and often detected accidentally on radiographs, but long-standing cases can have a typical character of the cystic lesion with acute exacerbation which can develop signs and symptoms such as swelling, displacement of an unerupted tooth, tooth mobility, root resorption of the affected tooth. In advanced stages, bone resorption and cortical enlargement exhibits eggshell crackling<sup>(8)</sup>. In the current case, patient was asymptomatic except for mild sensitivity with 21. However, the patient developed palatal swelling and pain following acute exacerbation of lesion.

Radiographically, radicular cyst presents as an osteolytic lesion with well corticated borders. However, in infected or rapidly enlarging cysts, the radiopaque margin may not be present or evident clearly<sup>(9)</sup>. This could potentially explain the current situation, as the lesion appeared with no corticated borders, and the swelling rapidly developed following an acute exacerbation, without any subperiosteal bone formation. Additionally, the presence of palatal plate perforation and thinning of the nasal floor, common manifestations of cyst expansion, were observed.

The line of treatment often depends on multiple factors such as the location of the cyst, cystic wall integrity, and size and proximity of the cyst to vital structures<sup>(10)</sup>. In current case,





root canal treatment was initiated with 21, 22 and 23 as they were non vital. Thorough chemico-mechanical debridement was done to eliminate the necrotic pulp and bacterial products. Irrigation protocol for non vital teeth i.e. 2.5% Sodium hypochlorite along with saline and 17 % EDTA was used<sup>(11)</sup>. Intracanal calcium hydroxide dressing was placed as an intracanal medicament for 10 day as it acts as a bactericidal agent and maintains high pH in periapical tissues and promotes healing<sup>(12)</sup>. In the present case, 23 was obturated with sectional technique followed by thermoplastic obturation due to elliptical canal morphology. AH plus sealer was used for obturation due to its advantages such as excellent sealing, low shrinkage, low leakage and high adhesion to dentin<sup>(13)</sup>.

Due to incomplete root formation was seen with 21, MTA was used to create an artificial apical barrier as MTA is widely used as a root end filling material. MTA has been preferred due to its higher biocompatibility, excellent sealing ability, less microleakage, bactericidal effects and good radiopacity<sup>(14)</sup>.

Conservative approach involves the removal of the infected tissues as compared to procedures like En bloc resection, which involves removal of the normal structure along with diseased tissue. The surgical approach to cystic lesions of the jaws is either marsupialization or enucleation<sup>(5)</sup>. Type of cyst is also plays important role in treatment planning because true cysts are self sustaining and may persist even after root canal treatment. In contrast, the lumen of the pocket cyst is continuous with the root canal and thus dependent on the pulpal infection for its growth and persistence. Pocket cysts, therefore, resolves after conventional root canal treatment and true cysts requires surgical excision. In the current case, surgical enucleation and curettage was considered. Root end resection with 21 was also carried out as it was noted as focus of infection. 3 mm root end was resected

as 99% of ramifications and 93% of lateral canals are believed to be present in apical 3 mm of root<sup>(15)</sup>. In order to aid reparation process, after surgical enucleation, guided bone generation methods are in use. However, there are some controversies regarding the use of guided bone regeneration techniques in periapical defects. Few studies are of the opinion that regenerative techniques are not superior, either with regard to the speed or quality of healing<sup>(16)</sup>. In contrast, other studies stated that conventional treatment results were less predictable in comparison with cases in which regeneration methods were used<sup>(17) (18)</sup>. In our case, we observed complete regeneration of bone without employing any guided tissue regenerative techniques.

The histopathological features of the obtained specimen during enucleation were consistent with the clinical diagnosis of infected radicular cyst. The cystic cavity was lined by nonkeratinized, stratified squamous epithelium. Histopathological analyses in a study reported that, nonkeratinized stratified squamous epithelial lining was found in 98.3% of the radicular cysts, while both mucoepidermoid epithelium and respiratory epithelium were found in 0.9% of the cases, followed by one case (0.4%) which revealed epithelial dysplasia of the epithelial lining<sup>(19)</sup>. At present, there is no strong evidence that cyst epithelium is at particular risk of carcinomatous transformation and no justification regarding cysts as precancerous lesions. Few cases are reported with hyaline bodies which represent a secretory product of the odontogenic epithelium in radicular cyst<sup>(20)</sup>. The deposits of cholesterol crystals arise from the disintegration of red blood cells, lymphocytes, plasma cells and macrophages. Present case specimen revealed acute and chronic inflammatory infiltrate without any Rushton bodies. Mild to moderate vascularity with extravasated RBCs was also evident. Towards periphery connective tissue wall



consisted of parallel arrangement of collagen fiber bundles along with osseous trabeculae.

In the present case, patient remained asymptomatic in follow up period and 18 follow up radiographs revealed complete resolution of periapical radiolucency and bone formation at the site of cystic lesion.

**Conclusion:** Radicular cyst is the most

common inflammatory odontogenic cyst occurring as a result of trauma, dental caries. For accurate diagnosis of radicular cysts, thorough histopathological, clinical, radiological evaluation is needed. Thus, this case report of the radicular cyst summarizes the clinical features, histological features, and radiological features and its treatment.

### Bibliography:

1. Odontogenic Cyst - an overview | ScienceDirect Topics [Internet]. [cited 2024 Mar 15]. Available from: <https://www.sciencedirect.com/topics/medicine-and-dentistry/odontogenic-cyst>
2. Bay cyst and true cyst [Internet]. [cited 2024 Mar 15]. Available from: <https://secure.dentistry.ubc.ca/intranet/visuendo-svn/m5/baycystandtruecyst.html>
3. Kumar J, Vanagundi R, Manchanda A, Mohanty S, Meher R. Radiolucent Jaw Lesions: Imaging Approach. *Indian J Radiol Imaging*. 2021 Jan;31(1):224–36.
4. Kadam NS. Management of Large Radicular Cyst by Conservative Surgical Approach: A Case Report. *J Clin Diagn Res* [Internet]. 2014 [cited 2024 Mar 15]; Available from: [http://www.jcdr.net/article\\_fulltext.asp?issn=0973-709x&year=2014&volume=8&issue=2&page=239&issn=0973-709x&id=4069](http://www.jcdr.net/article_fulltext.asp?issn=0973-709x&year=2014&volume=8&issue=2&page=239&issn=0973-709x&id=4069)
5. Kadam NS, Ataide IDND, Raghava P, Fernandes M, Hede R. Management of Large Radicular Cyst by Conservative Surgical Approach: A Case Report. *J Clin Diagn Res JCDR*. 2014 Feb;8(2):239–41.
6. Narula H, Ahuja B, Yeluri R, Baliga S, Munshi AK. Conservative non-surgical management of an infected radicular cyst. *Contemp Clin Dent*. 2011;2(4):368–71.
7. Elhakim A, Kim S, Kim E, Elshazli AH. Preserving the vitality of teeth adjacent to a large radicular cyst in periapical microsurgery: a case report with 4-year follow-up. *BMC Oral Health*. 2021 Aug 3;21:382.
8. Radicular Cyst: A Case Report [Internet]. [cited 2024 Feb 9]. Available from: <https://jsd.sbvjournals.com/abstractArticleContentBrowse/JSD/24231/JPJ/fullText>
9. Deshmukh J, Shrivastava R, Bharath KP, Mallikarjuna R. Giant radicular cyst of the maxilla. *BMJ Case Rep*. 2014 May 2;2014:bcr2014203678.
10. Salaria SK, Arora S, Goyal S, Khunger A. Management of true lateral infected radicular cyst as well as associated mucosal fenestration that occurred postoperatively through an interdisciplinary approach: A rare case report. *J Indian Soc Periodontol*. 2020;24(6):588–92.
11. Sequence of Irrigation in Endodontics [Internet]. Oral Health Group. 2005 [cited 2024 Apr 1]. <https://www.oralhealthgroup.com/features/sequence-of-irrigation-in-endodontics/>
12. Present status and future directions of intracanal medicaments - PMC [Internet]. [cited 2024 Apr 1]. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9321724/>
13. Physicochemical properties of AH plus bioceramic sealer, Bio-C Sealer, and



- ADseal root canal sealer | Head & Face Medicine | Full Text [Internet]. [cited 2024 Apr 1]. <https://head-face-med.biomedcentral.com/articles/10.1186/s13005-023-00403-z>
14. Solanki NP, Venkappa KK, Shah NC. Biocompatibility and sealing ability of mineral trioxide aggregate and biodentine as root-end filling material: A systematic review. *J Conserv Dent JCD*. 2018;21(1):10–5.
  15. Jang JH, Lee JM, Yi JK, Choi SB, Park SH. Surgical endodontic management of infected lateral canals of maxillary incisors. *Restor Dent Endod*. 2015 Feb;40(1):79–84.
  16. Taschieri S, Del Fabbro M, Testori T, Weinstein R. Efficacy of xenogeneic bone grafting with guided tissue regeneration in the management of bone defects after surgical endodontics. *J Oral Maxillofac Surg Off J Am Assoc Oral Maxillofac Surg*. 2007 Jun;65(6):1121–7.
  17. Dominiak M, Lysiak-Drwal K, Gedrange T, Zietek M, Gerber H. Efficacy of healing process of bone defects after apicectomy: results after 6 and 12 months. *J Physiol Pharmacol Off J Pol Physiol Soc*. 2009 Dec;60 Suppl 8:51–5.
  18. Yoshikawa G, Murashima Y, Wadachi R, Sawada N, Suda H. Guided bone regeneration (GBR) using membranes and calcium sulphate after apicectomy: a comparative histomorphometrical study. *Int Endod J*. 2002 Mar;35(3):255–63.
  19. Chen JH, Tseng CH, Wang WC, Chen CY, Chuang FH, Chen YK. Clinicopathological analysis of 232 radicular cysts of the jawbone in a population of southern Taiwanese patients. *Kaohsiung J Med Sci*. 2018 Apr 1;34(4):249–54.
  20. Jacob S. Rushton bodies or hyaline bodies in radicular cysts: a morphologic curiosity. *Indian J Pathol Microbiol*. 2010;53(4):846–7.





## Leukaemic gingival enlargement, An atypical representation



**Presented By:**  
**Dr. Sheetal Kedar**, MDS-1  
**Dr. Bushra Siddiquee**, MDS-2

### Case Presentation:

**Age:** 52 years  
**Reg. No.:** DC01202311220020  
**Address:** Itwari, Nagpur  
**Occupation:** Painter  
**Martial Status:** Married  
**Sex:** Male



**Chief complaint:** Patient came with the chief complaint of swollen gums since one month.

### History of present illness:

- Patient was apparently alright 1month back when he started noticing
- swollen gums .
- Initially it was small in size and localised to upper front region of jaw which gradually increased and involved complete maxillary and mandibular arches.
- Patient also complaints of bleeding gums on brushing since 20 days.
- Then he visited a private dental practitioner where he was advised with OPG and medications:Tab Cefixime BD, Tab Aceclo SP BD and Cap Rab d OD for 3 days.
- He did not get any relief in swollen gums with the above medications
- H/O dyspnea
- H/O dizziness and nausea.
- H/O malaise
- H/O difficulty in mastication
- H/O difficulty in swallowing
- H/O loss of appetite
- H/O weight loss
- So patient then visited an ayurvedic

physician and was advised with ayurvedic medications and still got no relief.

Looking at clinical presentation and asking further questions pt. gave

- H/O halitosis
- H/O teeth mobility
- H/O recurrent ulcerations in oral cavity.
- H/O burning sensation.
- H/O reduced mouth opening since 1 year.
- No previous H/o similar oral swelling in the past.

So pt then visited RD DC RC OPD for further management of same.

- **Past Medical history:** No h/o any systemic illness like DM,HTN, TB, Asthma, Thyroid.
- **Past Dental history:** history of extraction 6 year back

### Personal history:

- **Oral hygiene habit:** Patient cleaned his teeth with toothbrush and toothpaste, once daily. (until 20 days back)
- **Addictive habits:** Habit of kharra chewing since 10 years 2-3 times a day. Habit of alcohol consumption since 30 years 1 daily.
- **Sleep Cycle:** Normal
- **Bowel & Bladder movements:** Normal
- **Parafunctional Habits:** Absent
- **Pulse:** 80 beats/min.
- **Respiratory rate:** 24 breaths/min.
- **Blood pressure:** 120/80 mm Hg.
- **Pallor:** Present



- **Icterus, cyanosis, clubbing:** Absent
- **Oedema:** Absent

**Extraoral examination:**

- Facial symmetry: Face is bilaterally symmetrical.
- Eyes: normal
- Ears: normal
- Nose: normal
- Skin: normal
- Neck: No signs of swelling or any scar marks.
- Lips: Competent

**TMJ:** Bilateral condylar movements were palpable with no tenderness, clicking or popping sound and no crepitus.

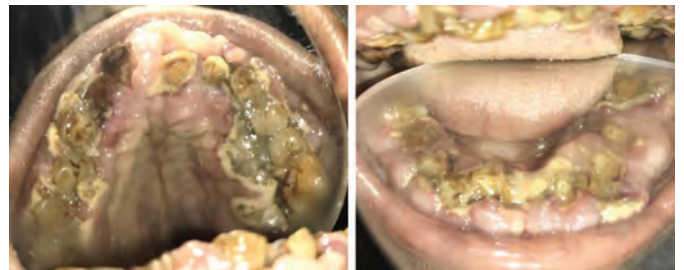
- **Interincisal distance:** 32 mm
- **Lymph Nodes:** Two left and right submandibular lymph nodes were palpable of size approx. 1 cm in diameter round in shape, soft to firm in consistency, mobile and non tender on palpation.



**Intraoral examination:**

**Hard tissue examination:**

- **Teeth present:**
- 17 16 15 14 13 12 11 21 22 23 24 25 26
- 47 45 44 43 42 41 31 32 33 34 35 36 37
- **Missing:** 27 and 46
- Grade II mobility with 14 21 44
- Grade I mobility with 11 34 36
- Stains +++
- Calculus ++



**Gingiva:** Generalised severe gingival enlargement almost covering the entire incisal and occlusal third of Maxillary and Mandibular teeth.

- Generalised pseudo pockets were noted.
- Overlying surface: Bulbous
- Borders: Irregular
- Exudate: Absent
- Tenderness: Absent



Clinical Features	Maxillary	Mandibular
Colour	Pale pink	Pale pink
Contour	Loss of scalloping	Loss of scalloping
Consistency	Firm	Firm
Surface texture (stippling)	Absent	Absent
Bleeding on probing	Absent	Absent





**Soft tissue examination:**

- Blanching seen on left and right buccal mucosa, upper and lower labial mucosa ,hard and soft palate.

**Differential diagnosis:**

- Chronic generalised inflammatory gingival enlargement.
- Generalised gingival fibromatosis secondary to systemic diseases.
- Generalised idiopathic gingival enlargement

**Provisional diagnosis:**

- OSMF Stage II ( According to the classification by Khanna and Andrade, 1995).

**Investigations:**

- Blood investigations: Complete Blood Count
- Radiographic examination: OPG

**Radiological Findings:**



**Treatment Plan for OSMF:**

- Diet and habit counselling.
- Complete oral prophylaxis.

**Medications:** Antioxidants OD for 1month

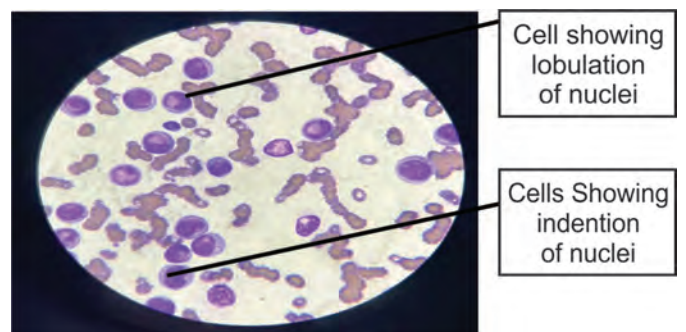
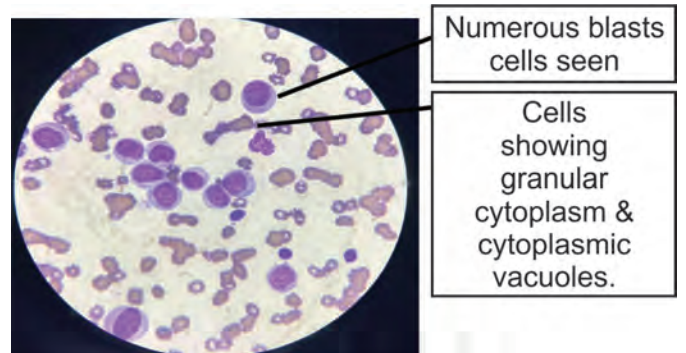
Patient visited to the Department of Oral Pathology & Microbiology for further investigation.

**Blood Investigations:**

Test	Result	Normal values
HB	5.6 gm/dl	13-18 gm/dl
TLC	1,13,000 c/mm3	4000-11,000 c/mm3

Test	Result	Normal values
DLC		
Neutrophils	2%	40-75%
Lymphocytes	10%	20-40%
Eosinophils	0%	1-6%
Monocytes	8%	2-10%
Basophils	1%	0-1%
Blast like cells	79%	-
RBC	1.78 millions/mm3	5-6.5 millions/mm3
Platelet count	34000/mm3	1.5-4 lakhs/mm3

**Peripheral Blood Smear:**



Peripheral Blood Smear features were suggestive of:

Acute Myeloid leukaemia (AML) M5

French American British Classification





Patient was referred to NKP salve institute for opinion for further management.

<b>N.K.P. Salve Institute of Medical Sciences &amp; Research Centre and Lata Mangeshkar Hospital</b> Digdoh Hills, Hingna Road, Nagpur - 440 019 Phone (07104) 665000,244291, Fax:(07104) 306111 Website: www.nkpsims.in Mail:cd_lmh@nkpsims.edu.in & cpt_lmh@rediffmail.com			
<b>CENTRAL CLINICAL LABORATORY</b>			
<b>Patient Name</b>	Mr. ISHWAR SHANKAR CHOUHDHARI	<b>Lab No</b>	4788265
<b>UHID No.</b>	232220985	<b>Sample Collection Date</b>	22/11/2023 2:03PM
<b>Age/Gender</b>	52 Yrs /Male	<b>Receiving Date</b>	
<b>Bed No/Ward</b>	OPD	<b>Report Dates</b>	
<b>Department</b>	MEDICINE UNIT	<b>Report Status</b>	Final
<b>Patient Add.</b>	MAHAL	<b>Manual Lab No.</b>	
<b>Pt.Mobile No.</b>	7821015929		
<b>ULRN NO :</b>	NC 5653 23 004788265 F		
<b>NOTE</b>	Hematological features are suggestive of acute leukemia, morphologically suggestive of Acute myeloid leukemia-M5. Kindly correlate clinically considering bicytopenia. <b>CRITICAL ALERT</b> for leucocytosis with shift to left showing many blasts few of which show cytoplasmic granules, occasional show cytoplasmic vacuoles, few show indentation and lobulation of nuclei with 1-2 prominent nucleoli; marked thrombocytopenia (occasional large large platelets seen).		
<b>ADVICE</b>	Flow cytometry will be helpful for confirmation and subtyping. Close follow up with clinical details.		
<b>SEEN BY</b>	DR. KM/ST/VG/ADP/ARW.		
	* Reports are subjected to Clinical Correlation. * **End Of Report**		

## Discussion:

- Leukemia is cancer that starts in blood-forming tissue such as the bone marrow and causes large numbers of abnormal blood cells to be produced and enter the bloodstream.
- Leukaemias are broadly classified as
  - Based on Histogenesis
    - Lymphocytic / Lymphoblastic
    - Myeloid
  - Based on Clinical Behaviour
    - Acute
    - Chronic
- They are abrupt in onset. If untreated, become fatal in nature

## Etiology:

Congenital disorders - down syndrome, immunodeficiency syndrome.

- Ionizing radiation- x-ray, radiotherapy.
- Chemicals -benzene, alkylating agents.
- Viruses - EBV, human T-lymphocyte leukemic virus

## Clinical features:

- Reduction in number of normal white &

red blood cells.

- Because of this there is subsequent reduction of in oxygen carrying capacity of blood so patient complains of fatigue
- easy tiring & dyspnea on mild exertion
- splenomegaly
- hepatomegaly
- lymphadenopathy -Fever
- pneumonia
- urinary tract infection
- Septicaemia

## Common Oral manifestation include:

- Swollen gingiva,
- Oral ulcers,
- Spontaneous bleeding,
- Pale mucosa,
- Gingival overgrowth may vary in severity from minimal to complete tooth coverage and hinders with functions & aesthetic.
- Petechial haemorrhage of posterior hard palate
- Bleeding on brushing

French American British Classification Of Leukemia

<b>Acute Leukemia:</b>
<b>Morphological Classification</b>
<b>Acute Myeloid (AML)</b>
M <sub>0</sub> : minimally differentiated
M <sub>1</sub> : without maturation
M <sub>2</sub> : With maturation
M <sub>3</sub> : hypergranular promyelocytic
M <sub>4</sub> : myelomonocytic
M <sub>5</sub> : (a) monoblastic (b) monocytic
M <sub>6</sub> : erythroleukemia
M <sub>7</sub> : megakaryoblastic
Rare types (e.g. eosinophilic, natural killer)
<b>Acute Lymphoblastic (ALL)</b>
L <sub>1</sub> : small, monomorphic
L <sub>2</sub> : large heterogeneous
L <sub>3</sub> : Burkitt-cell type



### **Diagnostic Investigation For Leukaemia:**

- Peripheral Blood Smear
- Bone Marrow Biopsy
- IHC Markers
- Flow Cytometry
- Cytogenetic typing
- DNA Markers

**Histopathology:** Microscopic examination of leukaemia affected tissue shows diffuse infiltration & destruction of normal host tissue sheets of poorly differentiated cells

### **References:**

1. Sivapathasundharam B. Shafer's textbook of oral pathology-E book. Elsevier Health Sciences; 2016 Jul 25.
2. Neville BW. Update on current trends in oral and maxillofacial pathology. Head and neck pathology. 2007 Sep;1:75-80.
3. Kumar V, Abbas AK, Aster JC, editors. Robbins Basic Pathology: Robbins Basic Pathology E-Book. Elsevier Health Sciences; 2017 Mar 8.
4. Greer JP, Arber DA, Glader B, List AF, Means RT, Paraskevas F, Rodgers GM. Wintrobe's clinical haematology. Lippincott Williams & Wilkins; 2013 Aug 29.
5. Hasan S, Khan NI, Reddy LB. Leukemic gingival enlargement: Report of a rare case with review of literature. International Journal of Applied and Basic Medical Research. 2015 Jan 1;5(1):65-7.
6. Telagi N, Ahmed BM. A case of chronic myeloid leukemia presenting as oral ulcers. Journal of Oral and Maxillofacial Pathology. 2021 May 1;25(2):372.

either myelomonocytic or lymphoid features.

### **Treatment and prognosis:**

- Chemotherapy
- Drug therapy combined with radiation therapy
- Appropriate antibiotics
- Success rate is less favourable in older patients
- In patients under 60 years 5 year survival rate is approximately 40%
- is 80% remission after treatment



## The stone in saliva: A sialolithic saga



**Presented By:**  
**Dr. Shahoo Bahale**  
**Dr. Hrushikesh Malakar**

**Age:** 28 Years

**Sex:** Male

**Reg. No.:** DC01202306160089

**Address:** Rajiv Nagar

**Occupation:** Shopkeeper

**Marital Status:** married

**Chief complaint:** Patient complaints of pain and swelling below the tongue on right side since 6 days.

**History of present illness:** Patient was apparently alright 6 days back then he started experiencing pain below the tongue on right side followed by swelling while eating food.

Pain was colicky type, intermittent, localized, dull aching, mild in intensity and associated only with mastication and salivation.

But since 4 days patient was experiencing severe pain in the same region which was continuous, throbbing, moderate in intensity. Patient also noticed pus discharge from the same region since 4 days.

Although patient was not sure if that swelling has reduced noticeably between meals.

Patient gives h/o unilateral swelling below the tongue on right side.

Patient gives h/o raised tongue due to swelling on right side.

Patient gives h/o taste alteration

Patient also gives h/o visit to private general practitioner two days back where he was prescribed with medication i.e antibiotics & analgesics but he did not get any relief after taking medication.

H/o fever associated with the swelling.

No h/o similar complaints in the past in the same region.

No h/o trauma in that region

So, patient visited RDDC & RC OPD for the management of the same.

### Personal History & General Examination:

- The patient brushes his teeth once daily, has a 6-year history of kharra chewing 2-3 times a day, and has habit of quid keeping in the lower left buccal mucosa for 5-10 minutes. Sleep, bowel, and bladder movements were normal.
- The patient was thin, 5'6", weighs 68 kgs, and is afebrile. Vital signs: pulse 78 bpm, respiratory rate 18 breaths/min, blood pressure 126/82 mmHg, with no pallor, icterus, cyanosis, clubbing, or edema.

### General examination:

- The patient was conscious, co-operative and well oriented with time, place and person.
- Built : Thin
- Gait : Normal
- Height : 5'6"
- Weight : 68 kg
- Temperature : afebrile
- Pulse : 78 beats /min.
- Respiratory rate : 18 breaths/min.
- Blood pressure : 126 / 82 mm Hg.
- Pallor, icterus, cyanosis, clubbing : Absent
- Odema : Absent





**Extra oral examination:**



- TMJ – bilateral condylar movements synchronous
- no clicking or popping sound was heard.
- no deviation and deflection seen.
- Interincisal distance – 45 mm
- Regional lymph node - Not palpable

**Intraoral examination:**

**Hard tissue examination:**

- 17 16 15 14 13 12 11 21 22 23 24 25 26 27
- 47 46 45 44 43 42 41 31 32 33 34 35 36 37
- Attrition with 26, 36
- Stains +
- Calculus +
- Soft Tissue Examination
- Buccal mucosa: Normal
- Palate ( hard/ soft): Normal
- Retromolar area: Normal
- Tongue : Normal
- Floor of mouth: swelling present on lower right floor of mouth.
- Buccal Vestibule: Normal

**Gingiva:**

- Colour: Pink
- Consistency: Firm
- Surface texture: Stippling present
- Bleeding on probing: Absent
- Exudate: Absent

**Area of chief complaint: Intra oral Inspection:**

- A single localized swelling which was approximately of size 2x1 cm, cylindrical in shape is seen in right sublingual region.

- Extending A/P approximately 0.5 cm from lingual aspect of 41 upto distal margin of 46.
- Extending- M/L from the lingual frenum upto lingual sulcus.
- Overlying mucosa – pale pink
- Surrounding mucosa – normal
- Prominent Wharton’s ductal opening(sublingual caruncula) which is yellowish in color.



**On palpation:**

- All inspectory findings were confirmed on palpation.
- Hard calcified mass with well-defined



borders were palpable with smooth overlying surface

- Swelling was noncompressible, non fluctuant, non reducible.
- On pressure ,pus discharge was visible which was yellow in color and thick in consistency.

**Examination of the gland:**

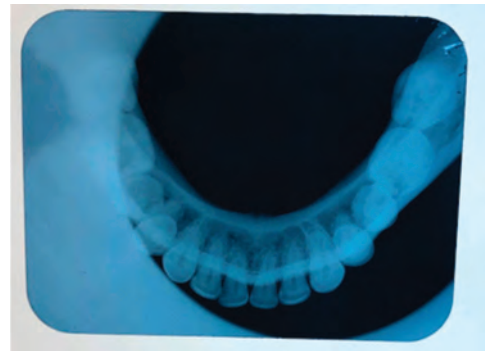
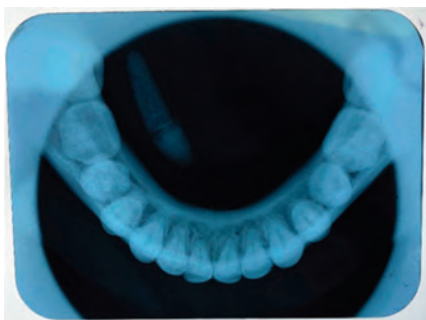
- Bimanual palpation of the gland is performed by pressing the index finger into the floor, while the finger of the other hand are placed extra orally to palpate the submandibular salivary gland.
- The openings of the Wharton’s duct are wiped dry using sterile gauze and the quality and quantity of saliva is assessed.
- A forward and upward pressure is applied at the posterior portion of submandibular triangle over the region of submandibular gland by drawing the fingers anteriorly.
- This helps in expressing saliva through the ductal orifice.

**Other Findings: Inspection:**

- Blanching seen on left buccal mucosa. Palate (hard/soft), retromolar area , upper and lower labial mucosa
- Tongue movements : Restricted upto the vermilion border of lower lip.

**Palpation:**

- Horizontal fibrous bands palpable on left buccal mucosa extending S/I from upper buccal vestibule upto the lower buccal vestibule and extending A/P from the corner of mouth on left buccal mucosa extending upto left retromolar region.



**Provisional diagnosis:**

- Bacterial sialadenitis in association with sialolith involving right submandibular gland (Wharton’s duct)
- Oral Submucous Fibrosis group I (according to the classification by Khanna and Andrade, 1995)

**Investigations: Occlusal radiograph:**

- A well defined single radiopaque mass cylindrical in shape seen on right mandibular side which is of 2x 0.8 cm size. It extends from 44 to distal of 47 & internally this mass appears completely radiopaque with few radiolucent areas s/o non homogenous radiopacity.

**Ultrasonography:**

- A large calculus of size 2.3cm is noted at the distal portion of right Wharton’s duct on right causing its dilatation measuring 0.4cm.
- Few moving internal echoes and debris are noted within the duct.
- Submandibular gland appears normal in shape, size, echogenicity and vascularity.



### **Impression:**

Above features s/o sialolithiasis with duct ectasia

### **Final Diagnosis:**

- Sialolithiasis of right Wharton's duct along with bacterial sialadenitis.
- Oral Submucous Fibrosis group I (according to the classification by Khanna and Andrade, 1995)
- Bacterial sialadenitis in association with sialolith involving right submandibular gland (Wharton's duct)
- Oral Submucous Fibrosis group I (according to the classification by Khanna and Andrade, 1995)

**Treatment plan:** The treatment plan was made with medication followed by surgical removal of stone.

### **Emergency phase: Medications:**

- Tab amoxclav 625 mg (BD for 5 days) [contents : amoxicillin 500mg + clavulanic acid 125mg]
- Tab zerodol sp (BD for 5 days) [contents : aceclofenac 100mg + paracetamol 325mg + serratiopeptidase 15mg]
- Tab pan 40 (OD for 5 days) [content : pantoprazole 40 mg]

**Surgical phase:** Surgical removal of sialolith

### **Maintenance phase:**

- Post operative recall of 7 days
- Complete stoppage of habit.
- Complete oral prophylaxis.

The patient was recalled after 5 days for surgery.

After 5 days patient was called for surgical excision and no visible pus discharge was seen from the region of swelling.

**Surgical excision:** After induction of local anesthesia, giant sialolith was removed in a minimally invasive manner, following isolation of the duct, longitudinal incision was placed into the duct over the stone with the scalpel, by using a number 11 blade mounted in a

number 3 handle, dissection was done and sialolith was exposed and removed completely in fragments.

Sutures were placed to close the surgical area.

A calcified, well defined, brownish giant sialolith cylindrical in shape, brownish giant sialolith approximately measuring 2.5 cm was removed.

Ground section of the sialolith revealed concentric laminations depicting organic and inorganic material.

Follow up

**Discussion:** Sialoliths (salivary calculi or salivary stones) are calcified organic masses that form within the secretory system of the salivary glands.

Sialoliths occur most commonly in the submandibular glands (80–90%), followed by the parotid (5–15%) and sub-lingual (2–5%) glands, and only very rarely occur in the minor salivary glands.

**Pathophysiology:** Why submandibular gland is predominantly asso. with sialolith?

Sialolith formation in the submandibular gland is due to

- (1) the torturous course of Wharton's duct,
- (2) higher calcium and phosphate levels, and
- (3) the dependent position of the submandibular glands, which leaves them prone to stasis

**Gender predilection:** Sialolithiasis is more common in males and can occur in a wide age range of patients including childrens.

**Age:** The average age of patients with sialolithiasis in the submandibular gland is 40.5 years, for the parotid gland is 47.8 years, and for the minor salivary glands is 50 years.

1. factors favoring decreased saliva production or stasis
  - a. Dehydration,
  - b. use of anticholinergics or diuretics,





- c. irregularities in the duct system,
  - d. local inflammation,
  - e. changes in saliva composition
2. Bacterial infection also promotes sialolith formation due to increased salivary pH favoring calcium phosphate supersaturation.

Patients with sialoliths most commonly present with a history of acute, colicky, periprandial pain and intermittent swelling of the affected gland(s).

The severity of symptoms is dependent on the extent of duct obstruction and whether secondary infection is present.

In this case patient complaints of colicky, periprandial pain before eating food after which he noticed swelling with pus discharge from the same region.

**Investigations: Chair side investigation:**

- Meticulous clinical examination of clinical symptoms.
- Bimanual palpation: Bimanual palpation of the gland is performed by pressing the index finger into the floor, while the finger of the other hand are placed extra orally to palpate the submandibular salivary gland.
- Radiographic investigations
- (Conventional + advanced)
- plain film radiography
- ultrasonography
- Conventional sialography
- cone beam computed tomography + sialography
- Computed Tomography (CT) + sialography
- Sialendoscopy
- MR sialography

**Management: conservative measures:**

- Manual manipulation
- Analgesics
- hydration
- antibiotics and antipyretics.
- Sialogogues, massage, and heat applied to

the affected area.

- Smaller stones at or near the duct orifice can often be removed transorally by milking the gland.
- Surgical management
- Traditional Intraoral Submandibular Sialolithotomy
- Sialendoscopy with laser lithotripsy
- Interventional sialendoscopy
- Extracorporeal shock wave lithotripsy
- Sialoadenectomy (transcervical submandibulectomy)

**Conventional surgical approach: Traditional Intraoral Submandibular Sialolithotomy**

- Local or general anesthesia
- Administer local anesthesia with a vasoconstrictor in the floor of mouth at the site of the planned incision
- Place two 3/0 silk sutures around the duct, posterior to the stone, to isolate the stone and to prevent displacing the stone to the proximal part of the duct or hilum of the gland

**Sialendoscopy With Laser Lithotripsy:**

Submandibular stones between 5-7 mm in size may be fragmented in the duct lumen using endoscopically guided laser lithotripsy before manual extraction.

Holmium : YAG (yttrium-aluminum-garnet) laser-assisted lithotripsy is the most common variation of this technique utilized for salivary gland stones and has shown to be an effective, safe, and relatively simple method for treating larger submandibular sialoliths .

Results from recent studies show that the rate of successful stone extraction for carefully selected patients undergoing sialendoscopy and laser lithotripsy ranges from 81% to 100%.

One of the major advantages of this method is the direct visualization of the stone as well as assessment of the ductal system before, during, and after the intervention, as compared to extracorporeal shockwave



lithotripsy (ESWL).

By using laser lithotripsy with sialendoscopy, larger stones that otherwise would not be amenable to sialendoscopy alone may be removed.

This also obviates the need for more invasive surgical management. However, there are still risks of perforation, stricture, and thermal injuries to nerves and vessels with this technique, which may occur at rates as high as 13%.

With continuous cold saline rinsing and avoidance of exposing the ductal walls to the laser, these risks can be minimized.

Stents may also be placed after laser utilization to prevent the formation of ductal stenosis.

### **Extracorporeal Shockwave Lithotripsy (ESWL):**

Another option for the fragmentation of large sialoliths is to perform ESWL.

For this technique, US imaging is used to focus an electromagnetic or piezoelectric shock wave on a submandibular sialolith to fragment the stone.

US is also used to continuously monitor the degree of stone fragmentation during each therapeutic session and to avoid lesions to the surrounding tissues.

ESWL permits fragmentation of stones of any size and location, which are then excreted either spontaneously by salivary flow through Wharton's duct or manually with sialendoscopy.

Since ESWL is performed as an in-office procedure, it offers several advantages over other interventions in that it is easy to perform, repeatable, and well-tolerated. Most notably, if stone fragments can pass spontaneously, the greatest benefit of ESWL is the avoidance of anesthesia in the operating room.

The main drawback of ESWL is that stones

often cannot be completely cleared by salivary flow and residual fragments can cause recurrences.

For this reason, sialendoscopy is often performed following ESWL treatment, although this combination precludes the advantages of using ESWL as an in-office procedure.

### **Interventional Sialendoscopy:**

When a stone or another ductal disorder is located, an interventional sialendoscopy is planned.

For sialoliths smaller than 5 mm, it is performed during the same stage, with the interventional sialendoscope.

The custom wire basket is passed behind the stone and deployed, the stone is trapped and the whole sialendoscope is re-moved.

For larger stones, fragmentation is required before extraction.

### **Sialoadenectomy (transcervical submandibulectomy)**

Transcervical approach entails a relatively simple procedure, involves low risks for the nerve structure around the gland, permits wide resection margins for neoplasm.

The transcervical approach is the safest and most suitable for submandibular sialoadenectomy.

It guarantees the best exposition of the gland and, consequently, gives the operator the greatest facility over the surgical field.

The ease of the technique allows it to be used by nonexpert operators

**Patient Preparation:** The patient is positioned with their head turned contralaterally and the neck mildly extended. Nasotracheal intubation is performed.

**Incision:** A cervical incision is made 3 cm below the lower edge of the mandible, parallel to it, and about 5 cm long.

The incision cuts through the skin, subcutaneous tissue, and platysma muscle,



while carefully avoiding injury to the marginal mandibular nerve.

**Initial Dissection:** The superficial cervical fascia is cut to expose the gland.

Dissection proceeds from back to front, starting by identifying, tying, and cutting the facial vessels both above (near the mandibular edge) and below (at the back of the gland).

Pulling the tied ends of the facial vessels helps protect the facial nerve.

**Blunt Dissection:** Blunt dissection is used to separate the gland from the surrounding tissue, though in cases of prior inflammation, scar adhesions may necessitate sharp dissection.

It's crucial to carefully identify anatomical structures such as the hypoglossal nerve to avoid surgical injuries.

**Wharton Duct:** The Wharton duct (duct of the submandibular gland) is tied and cut.

**Complications:** Sialendoscopy is considered to be a safe procedure but several types of complications may occur. Reported side effects and complications include ductal strictures, temporary swelling caused by

irrigation, perforations, ranula, and lingual nerve paresthesia.

Strictures are one of the main complications following sialendoscopy that may occur in 0.3–3.5 % of patients. Ductal wall perforation can happen at the orifice of the duct during endoscope insertion or intraductally during mechanical procedures like stone removal or dilation of strictures.

**Complications of surgeries:** Risks associated with submandibular gland removal include temporary (1–2%) or permanent (1–8%) injury to the marginal mandibular nerve, temporary (1–2%) or permanent (3%) hypoglossal nerve palsy, or temporary (2–6%) or permanent (2%) lingual nerve damage.

Other complications include hematomas, salivary fistulas, sialoceles, wound infection, hypertrophic scars, and inflammation caused by residual stones.

**Recent Treatment:**

1. Deeper and larger stones may require sialendoscopy or surgical intervention.
2. Sialendoscopy with LASER Lithotripsy for Sialolithiasis
3. extracorporeal shock wave lithotripsy





## Periodontally Accelerated Osteogenic Orthodontics (Corticotomy)



**Presented By:**  
**Dr. Jyotshna Shinde**  
**Dr. Amruta Verma**

### Introduction:

- Adult orthodontics has been the fastest growing type of orthodontic treatment in recent years, going from a relative rarity before the 1980s to a common place procedure today.
- Adult orthodontics, at this point, is a major component of orthodontic practice.
- This is probably because of improved dental and orthodontic awareness, as well as increased social acceptability of appliance therapy.
- Adults have more specific objectives and concerns related to facial and dental aesthetics, the type of orthodontic appliance and the duration of treatment.
- Growth is an almost insignificant factor in adults compared to children, and there is increasing chance that hyalinization will occur during treatment.
- In addition, cell mobilization and conversion of collagen fibers is much slower in adults than in children.
- Finally, adult patients are more prone to periodontal complications since their teeth are confined in non-flexible alveolar bone.

**Review of Literature: Orthodontic Acceleration:** Periodontally Accelerated Osteogenic Orthodontics (PAOO):

- PAOO was introduced by the Wilcko brothers, Dr. Thomas Wilcko (Periodontist) and Dr. William Wilcko (Orthodontist) in the year 2001.

- Also known as “Wilckodontics”.
- Uses full-thickness mucoperiosteal flaps and cortical cuts.

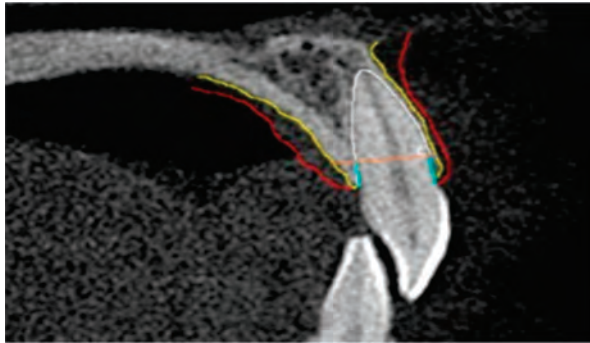


- Promotes bone healing and remodeling, often combined with particulate bone grafting.
- This procedure facilitates faster orthodontic tooth movement and is theoretically based on the bone healing pattern known as the Regional Acceleratory Phenomenon (RAP).
- PAOO results in an increase in alveolar bone width, shorter treatment time, increased post treatment stability and decreased alveolar bone dehiscence.



**Labial Cortex:**

- Labial cortical bone may influence the outcome of several orthodontic treatment.
- A thin labial plate may contribute to increased risk of periodontal consequences during dental procedures.



**Gingival Biotype:**

- Gingival biotype is described as the thickness of gingiva in faciopalatal/faciolingual dimension.
- Reduced gingival thickness can cause periodontal attachment loss and marginal recession, which is a major concern for periodontal disease progression.



**Case Report:**

**Name:** Shailendra Bijewar

**Age/Sex:** 29 years old, Male

**Chief Complaint:** Proclined upper and lower anterior teeth.

**Medical and Dental History:**

**Past Medical History:** Not significant.

**Past Dental History:** Not significant.

**Habit History:** Not significant.

**Extraoral Examination:**

**Nasolabial Angle:** Reduced.

**Mento-Labial Sulcus:** Deep.

**Lips:** Potentially incompetent.

**Dentition:**

**Teeth Present:** All permanent teeth are present.

**Molar Relation:** Class I molar relation on both sides.

**Canine Relation:** Class I canine relation on both sides.

**Overjet:** 3 mm.

**Overbite:** 2 mm.

**Diagnosis:**

**Skeletal Base:** Class I with a prognathic maxilla and orthognathic mandible.

**Growth Pattern:** Average to vertical.

**Dental:**

- Angle's Class I malocclusion.
- Proclined maxillary and mandibular incisors.
- Class I molar relationship on both right and left sides.
- Class I canine relationship on both sides.

**Soft Tissue:**

- Potentially incompetent lips.
- Constricted maxillary arch.
- Non-consonant smile.
- Reduced nasolabial angle.

**Additional Observations:**

- Increased buccal corridor.
- Thin upper and lower anterior cortical bone.
- Upper and lower anterior root prominence.

**Treatment Objectives:**

- Correct proclined upper and lower incisors.
- Address potentially incompetent lips.
- Improve non-consonant smile.
- Enhance nasolabial angle.



- Manage increased buccal corridor.
- Ensure stability and health of thin anterior cortical bone and root prominences.

## Treatment Plan:

- Extractions: 14, 24, 34, 44.
- Appliance: MBT -0.022 slot.
- Anchorage: TPA (Transpalatal Arch) and lingual arch.

## Treatment Stages:

### Stage I: Leveling and Alignment

#### 1. Initial Alignment:

- 0.016 NiTi in upper and lower arches for 6 weeks.

#### 2. Further Alignment:

- 0.016 x 0.022 SS in upper and lower arches for 6 weeks.

#### 3. Completion of Alignment:

- 0.017 x 0.025 SS in upper and lower arches for 6 weeks.

### Stage II: Corticotomy and Space Closure

1. Corticotomy.

2. Space Closure:

- Sliding mechanics for en-mass retraction with frictional mechanics.
- 0.019 x 0.025 SS wire in upper and lower arches.
- 0.021 x 0.025 SS wire in upper and lower arches for 6 weeks.

### Stage III: Finishing and Detailing

1. Final Adjustments:

- 0.021 x 0.025 TMA wire in upper and lower arches.
- 0.014 HANT wire for detailing and settling.

2. Settling:

- Settling elastics.

### Stage IV: Retention

- Upper Arch: Wraparound retainer (full-time wear for 6 months, then part-time/night wear for 6 months).
- Lower Arch: Lingual bonded retainer.

## Pre-treatment photograph:







**Corticotomy Procedure:**







Under LA with adrenaline sulcular incision were given in maxillary anterior region from canine to canine followed by vertical incisions distal to canine. A full thickness mucoperiosteal flap was elevated extending 3-4 mm beyond the mucogingival junction



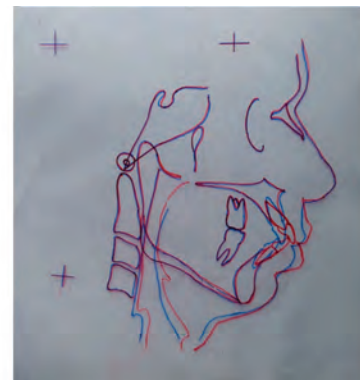
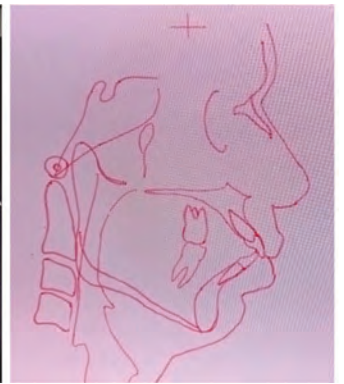
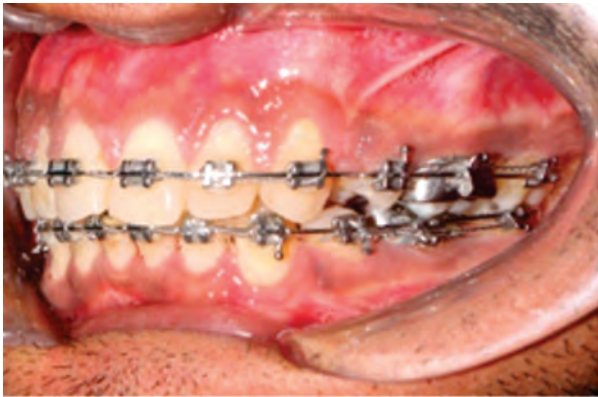
**Retraction photograph:** A full thickness mucoperiosteal flap was elevated lingually and buccally extending 3-4 mm beyond the mucogingival junction.



**Current Status of the patient:**











## Case Report on Plexiform Neurofibroma



Presented By:

**Dr. Sheetal Kedar**, MDS I

**Dr. Karishma Jadhav**, MDS II

**Dr. Radha Goverdhan**, MDS II

**Introduction:** Plexiform neurofibromas represent an uncommon variant of Neurofibromatosis Type-1 (NF-1) in which neurofibromas arise from multiple nerves as bulging and deforming masses involving connective tissue and skin folds-hence the clinical description of lesions as “bags of worms.” It arises from nerve sheath cells and can grow along multiple nerve branches, creating a complex, tangled mass. These tumours can cause disfigurement, pain, and functional impairment depending on their location and size. Malignant transformation is rare but possible.

Plexiform neurofibromas can occur anywhere in the body outside of the brain and spinal cord. They can occur on the face (including around the eye), neck, arms, legs, back, chest, abdomen, and internal organs. It commonly manifests in childhood and can lead to significant cosmetic and functional impairments, affecting speech, vision and breathing. Diagnosis typically involves clinical evaluation, imaging studies, and biopsy. Management is challenging due to the tumour’s diffuse nature, with treatment options ranging from surgical removal to newer targeted therapies aimed at reducing tumour size and improving patient quality of life.

Surgical treatment options are limited and focus on tumour reduction, osteotomies, face lifting, and especially measures improving visual pathway clearance in orbital-periorbital manifestations of the lesion. The surgical

treatment chosen in this case was resection of the tumour with partial maxillectomy because of the biologic behaviour of this lesion which shows higher incidence of recurrence and tendency towards aggressive spread into the soft as well as hard tissues.

**Case Report:** A 10 years old male child reported to the outpatient department with the chief complaint of swelling over left side of face since 6 years. Patient was apparently alright 6 years back when his parents started noticing a swelling over left cheek. Initially, the swelling was small in size (pea size) which gradually increased to attain present size (tennis ball size). Patient was then taken to a private hospital 6 years back where CECT Scans were performed and Incisional biopsy was done which was suggestive of plexiform neurofibroma. Patient was also prescribed certain medications for the same at the private hospital (Name of medications not known). Patient’s parents give history of bluish discoloration over the swelling, history of brownish spots over the skin (café au lait spots). There is no history of pus discharge or spontaneous bleeding. There is no history of similar swellings anywhere else in the body. Patient’s parents deny of history of headaches, vision impairment or ticks and give no history of difficulty in mastication, deglutition, breathing or speech. There is no history of associated pain, fever episodes, balm application and hot or cold fomentation. General examination revealed presence of café au lait spots over the trunk and back and presence of axillary freckling.



Café au lait spots on trunk and back



Axillary freckling

Extraoral examination revealed asymmetry due to swelling over left side of the face extending anteroposteriorly from left corner of mouth upto 1.5cm anterior to left angle of mandible. Superoinferiorly, 1cm above ala tragus line upto 1cm above inferior border of mandible. The shape was irregular with ill-defined borders. The size of the swelling was 6cm x 4cm approximately. The skin over the swelling presented sagging but no tension was noted. No discharge was noted. Primary involvement of the lower half of the nose presented with a bulbous tip, alar flaring and deviation of nose towards right side. Involvement of the upper lip resulted in excess tissue in the transverse dimension with caudal displacement of the oral commissure from left side. Obliteration of left nasolabial fold was noted. Ocular movements were intact. Lips were competent with 4 fingers mouth opening.



Extraoral examination

On palpation, the consistency was soft. Paresthesia was noted with infraorbital nerve. There was no tenderness noted, no fixity with underlying tissues. There was no local rise in temperature over the swelling. There was no pulsatility, no reducibility, no compressibility or fluid thrill. The transillumination test and slip sign was negative.



Intra oral examination revealed flat brownish spots over attached gingiva of 22 to D. Obliteration of upper left buccal vestibule was noted due to presence of swelling which was soft, non-tender with no discharge on provocation. Bony expansion was noted over hard palate extending anteroposteriorly from incisive papilla upto tuberosity involving left maxillary alveolus laterally upto 1 cm lateral to midline medially.

Contrast enhanced computed Tomography (CECT) revealed a subcutaneous soft tissue density mass lesion measuring 2.6 x 5.1 x 4.8cm involving the anterior half of left cheek, nasal ala, nasolabial fold, upper lip and extending inwards upto the anterior aspect of floor of nose on left side. Elevation of overlying skin was noted. It showed post contrast enhancement. Few subcentimetric lymph nodes were noted bilaterally in the neck. Incidental finding of mucosal thickness was noted in bilateral maxillary sinuses suggestive of sinusitis. Visualized muscles and salivary glands appeared normal.



Intra oral examination



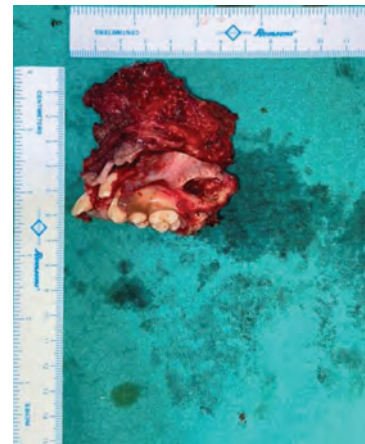




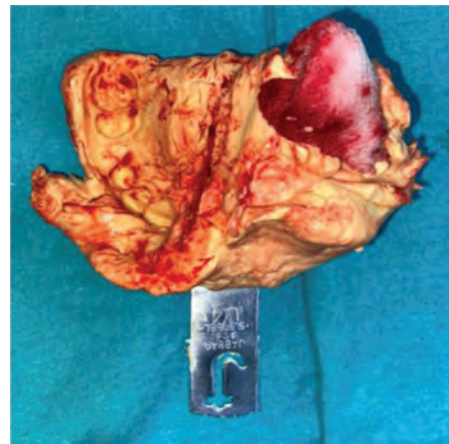
MRI was done which showed an altered signal intensity lesion in the left maxillofacial region involving subcutaneous plane with elevation of overlying skin largest size measuring 3.7 x 5.0 x 4.9cm (AP, Transverse and CC dimensions respectively). The lesion appeared isointense on T1 and hyperintense on T2 extending superiorly upto orbicularis oculi muscle with maintained fat planes. Laterally, upto skin surface causing its elevation. Medially, involving nasal ala, nasolabial fold, upper lip and extending inwards up to anterior aspect of nose. Inferiorly, extending subcutaneously up to level of mandible. Fat planes with orbicularis oris and zygomaticus appeared effaced. Multiple homogenous subcentimeter to mildly enlarged lymph nodes were noted in cervical levels Ia, bilateral Ib, II, III and V regions.

An incisional biopsy (soft tissue and bone) was performed and the specimen was sent for histopathological examination. The biopsy revealed presence of proliferation of giant cells in the bony medulla with soft tissue showing irregularly contoured, enlarged subcutaneous nerves containing large nerve fascicles and a cellular matrix containing fibroblasts, Schwann cells, collagen, and mucin suggestive of Plexiform Neurofibroma.

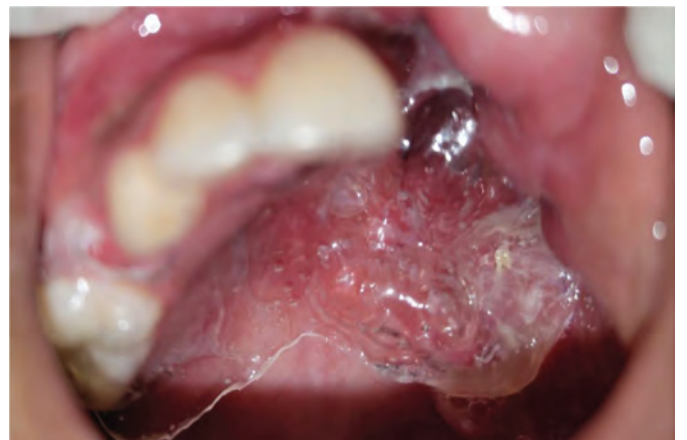
**Treatment:** Partial maxillectomy for radical excision of the pathology along with involved soft tissues was performed via the Weber Ferguson approach.



An intraoperative impression was made for immediate obturator fabrication.



After primary closure of the defect using Vicryl 3-0 and Prolene 6-0 sutures, an immediate obturator was given for the patient. The case was followed up for future definitive prosthesis. No complications were noted.



Interim obturator





**Conclusion:** Craniomaxillofacial lesions can be divided into massive plexiform, cranioorbital, and cervical neurofibromas. Different clinical presentations can be observed, depending on the prevalent clinical locations. The definitive approach to the pathology remained surgical treatment due to aggressive nature of the lesion. Options for reconstruction were limited due to the growing

age of the patient. Therapy of plexiform neurofibromas is usually surgical, aiming at resecting deforming masses and cancerous tissue when malignant transformation occurs. However, these masses tend to recur in 20% of cases despite an appropriate approach. The prognosis is still unpredictable due to the high risk of progression of the disease.

### Referances:

1. Tchernev G, Chokoeva AA, Patterson JW, Bakardzhiev I, Wollina U, Tana C. Plexiform Neurofibroma: A Case Report. *Medicine (Baltimore)*. 2016 Feb;95(6):e2663.
2. Collins-Sawaragi YC, Ferner R, Vassallo G, De Agrò G, Eccles S, Cadwgan J, Hargrave D, Hupton E, Eelloo J, Lunt L, Tang V, Burkitt Wright E, Lascelles K (2022) Location, symptoms, and management of plexiform neurofibromas in 127 children with neurofibromatosis 1, attending the national complex neurofibromatosis 1 service, 2018–2019. *Am J Med Genet A* 188(6):1723–1727.



## Conservative surgical management of cystic lesion in an 11 year old child.



**Presented By:**

**Dr. Abhilasha Dugad**, MDS II

**Dr. Anvesha Ramteke**, MDS II

**Dr. Sheetal Kedar**, MDS I

**Introduction:** According to etiology Odontogenic cyst are classified into:

**Developmental**

1. Dentrigerous cyst
2. Eruption cyst
3. Gingival cyst of newborn
4. Gingival cyst of adult
5. Lateral periodontal cyst

**Inflammatory**

1. Periapical cyst
  2. Residual cyst
- Radicular cyst is most common odontogenic cyst.
  - Prevalence: 1.60% of jaw cyst 2. More common in 3rd to 6th decades 3. Male predominance

**Clinical Features:**

1. Involved tooth: Non-vital
2. Asymptomatic and detected only with radiograph
3. Slow enlarging, bony hard swelling of jaw
4. Expansion, distortion and thinning of cortical plates.

**Chief Complaint:**

- An 11 year old male patient reported to the department of Pediatric and Preventive Dentistry with the chief complaint of decayed tooth in lower left back region of jaw since 4- 5 months.

**History of present illness:**

- Patient was apparently alright 4 months back when his father noticed decayed milk tooth in lower left back region of jaw.

- No H/O trauma, pain, swelling, fever or any pus discharge

Past Medical History- Non contributory

Past Dental History- Non contributory

**Extraoral examination:**

- Face: Bilaterally Symmetrical with convex profile.
- Lips: competent
- TMJ: No tenderness, clicking, crepitus, mobility

**Intraoral Examination:**

- Mixed dentition

**Clinical examination:**

- U shape maxillary and mandibular arch
- Occlusal pit caries with 55 65
- Palatal pit caries with 65
- Grossly carious with 74
- Proximal caries with 84 (Grade 1 mobility)
- Occlusal pit caries with 75,85,46
- Spacing seen with 11 21
- Stains ++

**Investigation:**

- Intra oral periapical radiographs (IOPA)
- CBCTFNAC
- Hemogram
- Histopathologic examination

**Radiographic examination:**

- Root piece seen with 74.
- A well-defined radiolucent lesion is seen with 74 with loss of lamina dura.
- The lesion has breached the follicular space of 34.



### CBCT:

- Well-defined radiolucent lesion in the periapical region of 74.
- Measures 13.7 mm (SI), 15.5 mm (MD), 10.8 mm (BL).
- Loss of lamina dura; root resorption in 73 and 74.
- Lesion breaches follicular space of 33 and 34.
- Thinning of buccal cortical plate seen 73 and 74.
- 33 obliquely below apex of 32 and 73.
- 34 obliquely in the furcation of 74.

### Aim of treatment:

- To remove the lining totally or to remove a part of lining to enable body to rearrange the position of abnormal tissue so that it is eliminated from within the jaws.
- To preserve important adjacent structures such as nerves healthy soft and hard tissue.
- To achieve rapid healing of operating site.
- To restore the part to near normal form and to restore normal function.

### Treatment Plan:

- Preparatory and preventive Phase – Oral prophylaxis
- Surgical Phase- Extraction with 73, 74 followed by removal of cystic lining with preservation of permanent successors
- Restorative phase - Preventive resin restoration with 46 Glass ionomer cement restoration with 55, 65, 75, 85
- Maintenance Phase- 7 days follow up

### Clinical Procedure:

- Local Anesthesia
- Extraction Of 73, 74
- with removal of cystic lining through curettage.
- Following through irrigation, the socket was filled with sterile gauze

- infused with glycerin and iodoform to facilitate decompression.

### Histopathologic Assessment:

- 4 bits of soft tissue specimen
- Greyish black in colour
- Firm in consistency
- Irregular in shape

H & E stained section shows multiple bits of lesional tissue.

H & E stained section shows lesional tissue composed of dense fibrocellular connective tissue stroma with inflammatory cells infiltrate.

H & E stained section shows lesional tissue with densely arranged collagen fibre bundles & chronic inflammatory cells predominantly lymphocytes & plasma cells. Endothelial lined blood capillaries are also seen.

H & E stained section shows lesional tissue with chronic inflammatory cells lymphocytes & plasma cells and many endothelial cell lined blood capillaries are seen.

Clinicopathological & Radiological correlation – Features suggestive of **Radicular Cyst/ Periapical Cyst.**

Radicular cyst shows lumen which is lined by variable thickness of stratified squamous epithelium. It also shows few cells thick or exceeding thick with great deal of proliferation (arcading). Lining epithelium may demonstrate linear and arc shaped calcification known as Rushton bodies. Squamous epithelium seldom exhibit keratin formation.

Lining epithelium also shows ulceration secondary to inflammation. Surrounding thick connective tissue capsule shows dense chronic inflammatory cell infiltrate mostly lymphocytes & plasma cells. Diagnosis of radicular cyst is mostly on the clinical, radiological & histopathological basis. Clinically it shows carious lesion or restoration & radiologically radiolucency seen at apical region of teeth/tooth.

**References:**

1. Mridula Goswami<sup>1</sup>, Neha Chauhan<sup>2</sup>, Radicular Cyst with Primary Mandibular Molar: A Rare Occurrence. *International Journal of Clinical Pediatric Dentistry* (2023):
2. Limbu et al. Radicular Cyst associated with Deciduous Molar: A Clinical Case Report *Journal of Nepalese Association of Pediatric Dentistry* : Vol. 3, No. 1, Jan-Jun, 2022
3. Shafer's Textbook of oral pathology 9th edition.
4. Pinkham Textbook of pediatric dentistry infancy through adolescent south asia edition.
5. Manekar VS, Chavan A, Wadde K, Dewalwar V. Cysts in Periradicular Region of Deciduous Molars in Mixed Dentition: Retrospective Study of Five Cases. *Int J Clin Pediatr Dent* 2014;7(3):229-235.
6. Da Silva FMF, Marques AL, Soares TRC, Martins C, Castro GF (2017) Radicular Cysts in Primary Dentition with Different Clinical and Radiographic Characteristics. *Clin Med Rev Case Rep*.
7. Talukdar M, Kumar A, Goenka S, Mahajani M, Ambhore MP, Tattu VD. Management of radicular cyst in deciduous molar: A case report. *J Family Med Prim Care* 2020;9:1222-5.





## Inter disciplinary Approach For Salvaging Carious Multirooted Teeth With HEMISECTION: CASE SERIES



### Presented By:

Dr. Humaira Siddique, MDS III

Dr. Radha Govardhan, MDS III

### Introduction:

- The modern dentistry prioritizes the preservation of natural teeth. Successful treatment outcomes depends on the preservation of natural tooth structure.
- However achieving these outcomes requires thorough assessments in periodontics, prosthodontics and endodontics to ensure that cases are selected and treated appropriately.
- Hemisection is a procedure in which one root and corresponding crown portion are removed.
- Also known as bicuspidization or separation or root resection because it changes molar into two separate roots
- Appropriate case selection is essential for an interdisciplinary assessment.

### Periodontal indications:

- Only one root of a multirooted tooth suffers from severe vertical bone loss.
- Complete destruction of the furcation.
- The roots of adjacent teeth are too close to one another, making it difficult to maintain proper cleanliness in close quarters.
- Serious root exposure as a result of dehiscence.

### Restorative indications:

- Extremely destructive process: Resorption, caries and trauma.
- Prosthetic failure of abutments within a splint.

- Endodontic failure, perforation, root fracture and instrument breakage.
- Vertical fracture of a single root.

### Contraindications:

- Strong adjacent teeth available for bridge abutments as alternatives to hemisection.
- Inoperable root canals to be retained.
- Fusion of the roots makes separation impossible.
- Non-strategic treatment.

### Criteria for case selection:

#### Local Considerations:

- Tooth anatomy
- Mobility
- Crown to root ratio
- Degree of attachment loss
- Interaction between the inter and intra arch teeth.

#### Patient factors:

- Health of patient
- Costs and time factor

#### Case Report-1:

- A 48 year old male patient reported to the department with the chief complaint of pain and sensitivity in the lower left back region for three months.
- Past medical history : Not relevant
- Past dental history: History of extraction 2 years back
- History of removable prosthesis 2 years back
- Habit: Absent



**Intraoral examination:**

- Generalized gingival inflammation
- Probing depth of 5mm was found with 36
- No mobility and no furcation involvement with 36
- Radiographic examination
- Root caries was evident in the distal root involving the furcation area.
- The bony support of distal root was completely intact.
- It was decided that the distal root should be hemisected after completion of endodontic therapy of the tooth.

**Treatment Plan:**

- I) Endodontic Phase
- II) Periodontic Phase
- III) Prosthetic Phase

**Periodontic Phase:**

- Under local anesthesia, full thickness flap was reflected after giving a crevicular incision from 2nd premolar to the 2nd molar.
- After reflection, the distal root resected using vertical cut (towards the bifurcation region) method using a tapered fissured bur using adequate coolant.
- The distal root was extracted.
- The socket was irrigated with sterile saline to remove bony chips and debris.
- The remaining portion of the tooth structure(mesial) was contoured to remove any ledges or sharp spicules, for proper maintenance oral hygiene.
- The flap was then repositioned and sutured with 4/0 black braided silk sutures.

**Review of literature:**

- Basten et al. reported that 92% of all resected molars survived an average of 12 years.If proper periodontal treatment is rendered, involved molars can be maintained for a long period of time and serve successfully as abutments in complete-mouth restorations.

- Park et al. stated that root resection to treat periodontal problems had a better prognosis than for non-periodontal problems. To achieve a good result, it was important that the remaining roots had >50% bone support.
- Magerbane et al. stated that the overall survival rate was 94.8% and high survival rates can be obtained with root resection and hemisection.The results are satisfying when a proper case selection, endodontic treatment, restorative design, and good maintenance program are given.

**Why to consider hemisection over dental implants:**

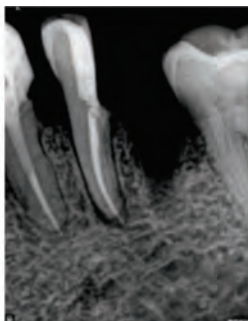
- Hemisection is viable alternative to implant placement, especially since it is always better to preserve the natural tissues.
- It preserves tooth structure, alveolar bone, and is cost-effective compared to implant placement, offering a conservative approach with successful restorative outcomes in selected cases.
- In cases where implants are contraindicated or challenging such as in medically compromised patients treatment with hemisection is possible.
- In cases of proximity to anatomical landmarks which limits the implant placement, hemisection is the choice of treatment.
- Complications such as peri implant mucositis and peri implantitis can occur after implant placement.

**Case 1:**

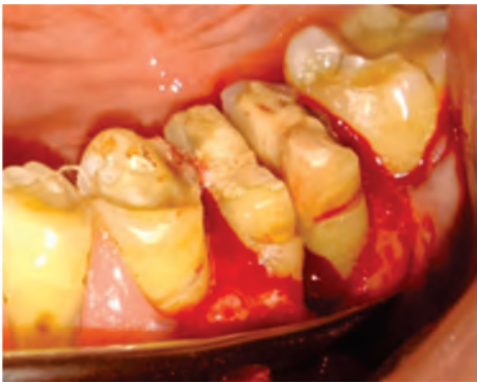




Case 2:





**Case 3:****Conclusion:**

Hemisection is an alternative, effective and conservative treatment modality over conventional procedure or extraction of

periodontally and endodontically affected teeth. Also reduces financial burden, psychological trauma and occlusal dysfunction associated with tooth loss.

**References:**

- 1 Basten CH, Ammons WF Jr, Persson R. Long-term evaluation of root-resected molars: a retrospective study. *Int J Periodontics Restorative Dent.* 1996;16(3):206-219.
- 2 Park SY, Shin SY, Yang SM, Kye SB. Factors influencing the outcome of root-resection therapy in molars: a 10-year retrospective study. *J Periodontol.* 2009;80(1):32-40.
- 3 Mokbel N, Kassir AR, Naaman N, Megarbane JM. Root Resection and Hemisection Revisited. Part I: A Systematic Review. *Int J Periodontics Restorative Dent.* 2019;39(1):e11-e31.
- 4 Taori P, Nikhade PP, Mahapatra J. Hemisection: A Different Approach From Extraction. *Cureus.* 2022;14(9):e29410.





### Esthetic rehabilitation of a patient with fractured anterior tooth and spacing – A multidisciplinary approach

Presented By:  
**Aditi Dhanvijay**  
**Prabhnoor Tuli**  
**Rina Nagrare**



**Introduction:** The need to rehabilitate severely compromised teeth is frequent in daily clinical practice. When a significant amount of dental tissue is lost due to extensive dental caries, fractures, or other causes, treatments are often required to restore any violated biological width, in order to save the dental element. However, the survival rate for implants is lower than for teeth, even if severely damaged but properly treated. In order to re-establish a physiological supracrestal tissue attachment of damaged teeth and to organize an efficient ferrule effect, three therapeutic options can be considered: crown lengthening, orthodontic extrusion and surgical extrusion. However, all these treatment modalities have some limitations especially when the aesthetic zones are involved. Surgical extrusion—also known as intra-alveolar transplantation, intentional implantation or intra-alveolar repositioning was described 24 years ago as crown lengthening technique for CRF. The aim of this report was to describe a minimally traumatic surgical extrusion technique performed to save a severely compromised tooth in the anterior region followed by its aesthetic rehabilitation.

**Case Report:** A 27-year-old male patient reported with the chief complaint of poor esthetics due to a fractured tooth and spacing in the upper front teeth region of the jaw.

On clinical examination Ellis class III fracture was seen with 12, Ellis class I fracture with 11 and 21. (Fig. 1) Spacing was present between 11-21, 33-32, 32-31, 31-41, 41-42. On

percussion, Tenderness -ve wrt 12. Mobility was Absent wrt 12.

The next steps were to evaluate the radicular length and the width of remaining radicular and coronal walls and to consider the possible different treatment options to save the tooth (Fig 2).

After a complete evaluation, it was decided to perform a surgical tooth extrusion to obtain a proper supragingival sound structure, thus offering to the patient a reliable long-term result. Clinical procedures were performed as follows: Orthograde endodontic treatment was initiated. Working length was determined using a 15k hand file (Mani). Endostar E3 Azure 4% 40 rotary file along with irrigation with sodium hypochlorite followed by normal saline and 5.25% NaOCl was used for the biomechanical preparation. After selection of master cone, Sectional obturation as done using Gutta Percha at the level of 5 mm from apex, which was as per the requirement of Post length. Post space preparation using Largo Drill Size 4 (Angelus Reforpost Fibre Glass Kit) was done according to the conservationist's philosophy, followed by fit check of fiber post. the fiber post was cemented using a dual-cure composite cement (Multilink, Ivoclar) followed by building up the core to reconstruct the missed coronal tooth structure (Fig. 3).

After 7 days the procedure of surgical extrusion was carried out. after disinfection of the affected area using a wet gauze with 2% chlorhexidine, syndesmotomy was made using a 15c scalpel and luxation of the tooth



was achieved using a fine elevator applying luxating forces just at the first 3-4 mm of the radicular structure to prevent damaging to the periodontal ligament that will remain in an infra-bony position.

The tooth was carefully extruded to the desired situation using root forceps and it was placed at a level such that the fractured margin would be situated at least 3 mm from the alveolar crest, while being kept inside the socket. It is important to limit the extrusion quantity to preserve an adequate crown-root ratio that should always be inferior to 1. The tooth was maintained at the radicular portion, supposed to be kept in a supra-bony position after the procedure. A slight pressure was applied in a bucco-palatal direction, using a gauze, to obtain hemostasis and to keep the tooth in the right position. Simple interrupted sutures were placed to stabilize the tooth. A 0.3-mm diameter monofilament (violet braided of PGA Lac Synthetic Absorbable Suture, NEOFIL+) was used to achieve primary stabilization, thus obtaining a correct reorganization of the periodontal ligament fibers (Fig.4 and 5). After that, a semi-rigid splinting was placed using a flowable nano-hybrid composite (Reflectys Flow, ITENA, France) on the adjacent teeth (Fig. 6).

The splinting time was 15 days, as this splinting lapse is advisable for providing tooth stability and decreasing risk of ankylosis. It has been reported that mobility can decrease after a period of 3-4 weeks after the splint is removed.

After evaluation of the extruded tooth, 30 days after the surgical extrusion procedure, confirming that a proper ferrule height and thickness was effectively present, further prosthodontic planning was done for smile designing and restoration of 12 (Fig. 7).

Firstly a wax mock-up was done on a diagnostic model of maxillary arch. This helped for two things, to judge the kind of restoration needed for individual tooth and

accordingly the kind of preparation that will be needed. After considering all the possibilities a treatment plan with Laminate veneers with 11,21,22 and full veneer crown with 12 was finalised.

A test drive of the future smile was given to the patient and after the satisfaction of both the patient and operator, tooth preparation was carried out. Tooth preparation for the laminate veneers was done with chamfer finish line which was kept equigingival and without palatal overlap. Bevelling was done on the fractured margins on the incisal edges for better adaptation and bonding of the final prosthesis. For 12 a shoulder margin was prepared to receive a full veneer crown (Fig. 8 and 9). Temporization was done with Luxa Temp Ultra DMG. This also allowed the margins around the preparation to adapt in accordance with the temporary veneers.

The material used for the final prosthesis was E-max i.e. lithium disilicate, which gives the best esthetics owing to its translucent nature and natural appearance.

On the next visit, the temporaries were removed and cleaned. A bisque trial was taken to evaluate the esthetics, fit, marginal adaptation, shape and shade of the prosthesis. Changes were made to the patient's and operator's satisfaction (Fig. 10 and 11).

After final glazing (Fig.12) each prosthesis was bonded to the tooth following a proper protocol (Fig.13-15). Restorations must be bonded because the preparation lacks inherent retention and resistance form. Bonding means following a protocol of creating a hybrid zone by etching, priming and applying a resin. It is imperative to follow the resin manufacturer's instruction to bond the restorations.

After bonding the restorations no further adjustments were needed and the patient was utterly satisfied with the results obtained (Fig 16-18).



**Discussion:** The basic principle for biologic width care says that there should be at least 2-3 mm of tooth between the bone and the margin of the final restoration. If biologic width is invaded during restorative procedures, they may lead to periodontal breakdown. When crown lengthening is planned to increase the length of affected available teeth for restorative preparations, some anatomic and biologic considerations need to be done. Different techniques have been proposed for clinical crown lengthening procedures; particularly in anterior aesthetic regions the preservation of gingival margin and interdental papilla is required in order to obtain satisfactory final aesthetic outcome. Surgical extrusion is recommended to be used by clinicians as this procedure does not require special clinical skills.

A clinical study investigating surgical extrusion introduced an atraumatic extraction system (AES), specifically the Benex®, aiming to minimize trauma to the alveolar socket.

However, caution is warranted as the AES screw utilized for retention in the post space and the axial force applied during extrusion may induce microcracks in the dentin, potentially leading to vertical root fractures and affecting the overall outcome. Additionally, the vitality of periodontal ligament cells plays a pivotal role in successful reattachment, with viable cells on the root surface being more influential than those on the alveolar socket wall.

**Conclusion:** Surgical extrusion is a straight forward and simple process. It can be recommended as an appropriate course of treatment for the management of severely damaged anterior teeth.

Smile enhancement can be successfully carried out with Laminate veneers with promising results. A multi-disciplinary approach should be taken to rightfully save a natural tooth while expecting an overall successful treatment.



Figure 1

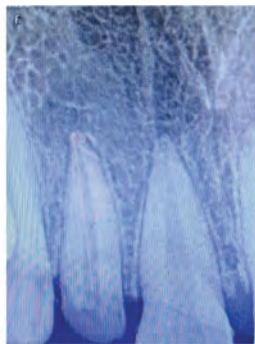


Figure 2



Figure 3



Figure 4



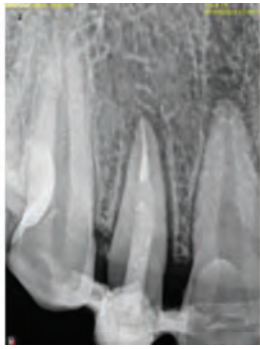


Figure 5



Figure 9



Figure 6



Figure 10



Figure 7

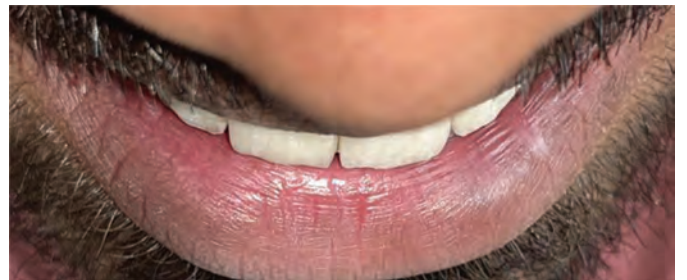


Figure 11



Figure 8



Figure 12





Figure 13



Figure 16



Figure 14



Figure 17



Figure 15



Figure 18

### References:

1. Grira I, Mahjoubi B, Belkacem Chebil R, Amor A, Douki N. Surgical extrusion: A reliable alternative for saving fractured anterior teeth. *SAGE Open Med Case Rep.* 2021 Jul 29;9:2050313X211036780. doi: 10.1177/2050313X211036780. PMID: 34377489; PMCID: PMC8327232.
2. Das B, Muthu MS. Surgical extrusion as a treatment option for crown-root fracture in permanent anterior teeth: a systematic review. *Dent Traumatol* 2013; 29(6): 423–431.
3. Predictable, precise, and repeatable tooth preparation for porcelain laminate veneers. Gürel G. <https://pubmed.ncbi.nlm.nih.gov/12680057/> *Pract Proced Aesthet Dent.* 2003;15:17–24.
4. Minase DA, Sathe S, Bhojar A, Dahihandekar C, Jaiswal T. Porcelain Laminate Veneers: A Case Report. *Cureus.* 2023 Jan 26;15(1):e34220. doi: 10.7759/cureus.34220. PMID: 36852350; PMCID: PMC9960061.



Felicitation of winners at Ranjeet Deshmukh Dental College and Research Centre



2nd prize in clinical case presentation category in Iterlink 2024  
Presented by Dr. Rutuja Deshmukh (Oral Surgery), Dr. Ashwini Dhotarkar (Oral Radiology),  
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**Intelink: Intercollegiate interdepartmental activity**





Dr. Shahoo Bahale: 1st prize in poster presentation



Dr. Amruta Verma: 2nd prize in poster presentation

**Intetlink: Intercollegiate interdepartmental activity**

# Facilities available

Dental x rays

OPG

CBCT

Tooth coloured Restorations

Root Canal Treatment

Regenerative endodontics

Laser assisted restorative treatment

Magnification assisted endodontics

Prosthesis

Partial dentures

Complete dentures

Laminates & Veneers

Maxillofacial Prosthesis

Dental implants

Scaling and polishing

Flap surgeries

Bleaching

Smile designing

Fixed Orthodontics

Removable orthodontics

Growth Modulation

Biopsy

Cytology

Hematology

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Dark field polarization & fluorescent photography

Dental extractions

Trauma care

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