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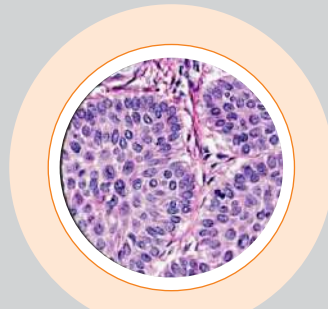
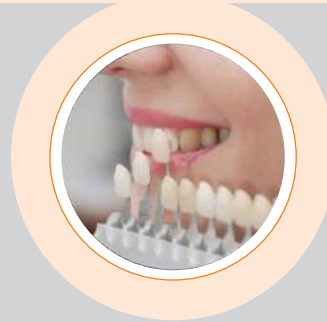
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## ABOUT THE JOURNAL

Journal of MaxilloFacial Science and Research (JMFSR, ISSN 2348-9030) is the official publication of the PMS College of Dental Science and Research. The journal started with the aim of providing our students and faculty a platform to showcase their research projects and interesting clinical cases. We also accept articles from outside the institution on topics related to all the dental specialities and related sciences. Authors are encouraged to submit research papers, case reports (new / interesting / rare cases/ cases with clinical significance and interdisciplinary cases), and short communications. Special effort is made to ensure rapid publication. Articles written in English alone will be accepted provided they have not been and will not be published elsewhere. The editor and or its publisher cannot be held responsible for errors or for any consequences arising from the use of the information contained in this journal. The appearance of advertising or product information in the various sections in the journal does not constitute an endorsement or approval by the journal and or its publisher of the quality or value of the said product or of claims made for it by its manufacturer.



# JMFSR



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**Reference:** Sengupta S, Honavar SG. Publication ethics. *Indian J Ophthalmol*. 2017;65(6):429-432.

**Dr. Ambili R**  
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# DIFFERENTIATING ORAL HARD TISSUES: A COMPARATIVE STUDY USING MODIFIED GALLEGO'S STAIN AND MASSON'S TRICHROME STAIN

Sneha John<sup>1</sup>, Anna P Joseph<sup>2\*</sup>, Varun BR<sup>3</sup>, Reshmi A<sup>4</sup>, Sunjith Sudhakar<sup>4</sup>

### ABSTRACT

Identification of calcified structures becomes difficult when different hard tissues, especially dentin, cementum, and bone are present within the same pathological lesion. This can result in diagnostic difficulties, thereby requiring additional diagnostic methods. Special stains form an integral part of routine histopathology as an adjunct to Haematoxylin and Eosin and give meaningful diagnostic information of the tissues. Masson's Trichrome (MT) and Modified Gallego's (MG) are two special stains used for differentiating oral hard tissues, such as tooth, bone, and other pathologic calcifications. This study compares the efficacy of Masson's Trichrome and Modified Gallego's stain in differentiating between various oral hard tissues as compared to H&E staining. A total of 28 paraffin-embedded decalcified tissues were taken, including 14 normal oral hard tissue structures (comprising of 7 decalcified sections of teeth and 7 decalcified sections of normal bone) and

14 hard tissue pathological lesions containing a combination of dentin, cementum, and bone. Sections were taken from each tissue block and subjected to Masson's Trichrome and Modified Gallego's stains. Modified Gallego's stained dentin bluish green, cementum red, and bone green while Masson's Trichrome stained dentin blue, cementum deep red, and bone blue. Comparing the two, MG stain showed better contrast, staining intensity, and ease of procedure, and hence was found better for differentiating between the different oral hard tissues. H&E, which is routinely used as a gold standard for staining in histology shows poor differentiation of different oral hard tissues. MT and MG stains can be used as differential stain for different oral hard-tissue structures. Of these two, MG stain could be a promising differential stain in hard tissue pathologies.

**Keywords:** Differential stains, Hard tissues, Masson's Trichrome stain, Mineralization, Modified Gallego's stain.

### INTRODUCTION

Oral hard tissues are calcified structures that are histologically and chemically very similar. Enamel, dentin, cementum, and bone can all calcify to different degrees. The most used stain in the histopathology laboratory is hematoxylin and eosin. The dental hard tissues often have a homogenous H&E stain and are undetectable from one another. It might be challenging to identify any calcified structures that are present in pathological lesions, which frequently makes diagnosis difficult.

Differential staining helps to distinguish between various structural types by utilizing multiple chemical stains. Alternative staining techniques exist in addition to the conventional H&E stain, which helps to draw attention to the distinctive characteristics of the tissues. Although there are numerous unique stains, including von Kossa, alizarin red for the bone,

picro-thionin for the dentin, toluidine blue, and alcian blue for the cementum, it is uncommon to utilize a single histochemical stain to distinguish between the hard tissues of teeth.<sup>1</sup> In order to improve the efficacy of these histological staining procedures, a number of stains have been altered or mixed with other stains.<sup>2</sup>

One such stain is the Modified Gallego's (MG) stain, which not only stains the decalcified areas but also differently stains the calcified structures.<sup>2</sup> Hematoxylin, carbol fuchsin, and aniline blue are common chemical compounds used in the MG stain, Lillie's stain variant. Aniline blue, phosphomolybdic acid and acid fuchsin are the three dyes used in Masson's Trichrome (MT) stain, which is used to specifically stain hard tissues.<sup>1</sup> The present study compared the efficacy of MT and MG stain in differentiating between various oral hard tissues and compared it with H&E staining under light microscopy.

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## MATERIALS AND METHODS

A total of 28 paraffin-embedded decalcified tissues were taken, including 14 normal oral hard tissue structures which were normal teeth and bone (7 decalcified sections of teeth and 7 decalcified section of normal bone) and 14 histopathologically diagnosed cases of oral hard tissue pathologies containing a combination of dentin, cementum and bone. Two sections were taken from each tissue block and subjected to Masson's Trichrome, and Modified Gallego's stains. Routine procedures were employed for H&E.

The following samples were selected for staining procedure:

- 1) Decalcified sections:
  - Tooth (n = 7)
  - Bone (n = 7)
- 2) Pathological lesions:
  - Cemento-osseous dysplasia (n = 5)
  - Odontome (n = 7)
  - Cementoblastoma (n = 2)

## STAINING TECHNIQUES

Sections were stained using Modified Gallego's technique.<sup>1</sup> Sections were initially deparaffinized, stained in hematoxylin for 5-8 minutes and rinsed in distilled water. Later, they were stained with 3ml of carbol fuchsin in 50ml of 0.2 percent acetic acid for 15 minutes and rinse in distilled water. Finally, these sections were stained with 0.01 percent aniline blue in saturated picric acid solution for 30 seconds, dehydrated, cleared with xylene, and mounted in DPX mounting media.

Sections were stained using Masson's Trichrome technique.<sup>3</sup> Sections were initially deparaffinized, stained with Weigert's hematoxylin for 10-15min and washed in running water. Later, they were stained with acid fuchsin solution for 2 min and rinsed in distilled water. Treated with phosphomolybdic acid solution for 5 min and drained. Later, stained with aniline blue solution for 2-5 min and rinsed in distilled water. Finally, treated with and 1% acetic acid. The sections were dehydrated, cleared with xylene, and mounted in DPX mounting media.

## RESULTS

Hard tissue sections of normal teeth, bone and pathological lesions were initially stained with routine

H&E followed by Modified Gallego's stain and Masson's Trichrome stain. The stained sections were viewed using routine light microscopy, interpreted under 4x, 10x and 40x and the following observations were made.

### Normal hard tissue

H&E stained decalcified sections of normal teeth presented with shades of eosin (Figure 1a). In the Modified Gallego's staining technique of decalcified teeth, dentin stained bluish-green and cementum-stained magenta-red (Figure 1b & 1c). In the Masson's Trichrome staining technique of decalcified teeth, dentin stained blue and cementum-stained deep red (Figure 1d).

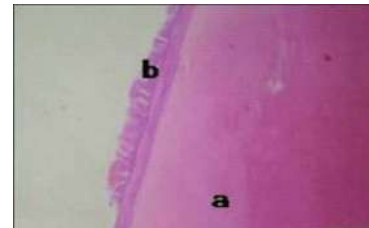


Fig 1a: H & E-stained decalcified section of teeth in varying shades of pink

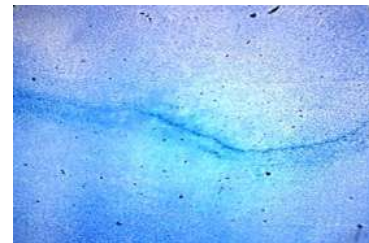


Fig 1b: MG stain; dentin stained bluish-green

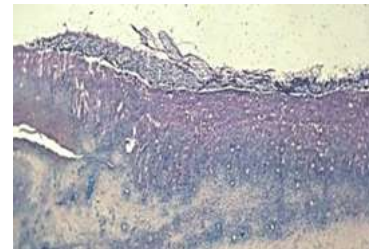


Fig 1c: MG stain; cementum-stained magenta/red



Fig 1d: MT stain; dentin-stained bluish color

Figure 1: (a) H & E-stained decalcified section of teeth in varying shades of pink (b) MG stain; dentin stained bluish-green (c) MG stain; cementum stained magenta-red (d) MT stain; dentin-stained bluish



H&E stained sections of normal bone showed shades of eosin (Figure 2a). In the Modified Gallego's staining technique, decalcified section of bone stained green color (Figure 2b). The decalcified section of bone showed blue color in Masson's Trichrome staining technique (Figure 2c).

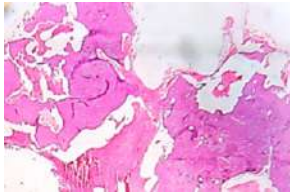


Fig 2a: H & E-stained decalcified section of bone



Fig 2b: MG-stained decalcified section of bone in green color

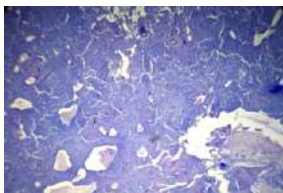


Fig 2c: MT-stained decalcified section of bone in blue color

Figure 2: (a) H & E-stained decalcified section of bone (b) MG-stained decalcified section of bone (c) MT-stained decalcified section of bone

Pathological lesions comprising of cemento-osseous dysplasia, cementoblastoma and odontoma were stained with H & E, Modified Gallego's and Masson's Trichrome stain (Table I).

**Cemento-osseous dysplasia:** H&E stained sections showed shades of eosin (Figure 3a). Staining of cemento-osseous dysplasia with MG stain showed fragments of calcified material exhibiting a haphazard lamellar pattern of resting and reversal lines in green color (Figure 3b) and an area with spherules or droplets of cementum-like material-stained red color (Figure 3c). Staining with MT Stain showed haphazard lamellar pattern of mineralized tissue in blue color and cementum like material in red color (Figure 3d)

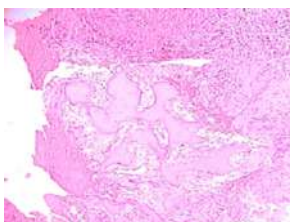


Fig 3a: H & E-stained section of COD shows trabeculae of bone



Fig 3b: MG stain; bone stained in green color

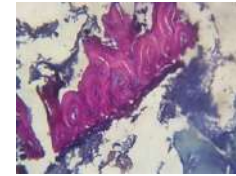


Fig 3c: MG stain; cementum-like material in magenta/red color

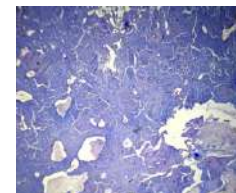


Fig 3d: MT stain; bone stained in blue color and cementum-like material in magenta color

Figure 3: (a) H & E-stained section of COD shows trabeculae of bone (b) MG stain; bone stained in green color (c) MG stain; cementum-like material in magenta-red color (d) MT stain; bone stained in blue color and cementum-like

**Odontome:** The decalcified H&E stained section of odontome showed disorganized arrangement of mineralized tissues resembling teeth, contained in a loose fibrous matrix (Figure 4a). MG staining showed mature tubular dentin in a bluish-green color (Figure 4b). This dentin enclosed clefts or hollow circular structures that contained the mature enamel that was removed during calcification. MT staining showed mature tubular dentin in blue color.

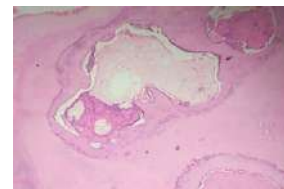


Fig 4a: H & E-stained decalcified section of odontoma shows the disorganized arrangement of mineralized tissue

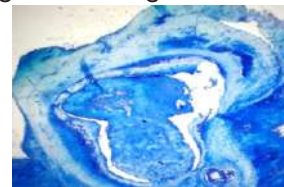


Fig 4b: MG staining showed mature tubular dentin in a bluish-green color

Figure 4:(a) H & E-stained decalcified section of odontoma shows the disorganized arrangement of mineralized tissue (b) MG staining showed mature tubular dentin in a bluish-green color

**Cementoblastoma:** The decalcified H&E stained section of cementoblastoma showed sheets and thick trabeculae of mineralized material with irregularly placed lacunae and the background stroma is composed of cellular fibrovascular tissue (Figure 5a). Cementoblastoma when stained with Modified Gallego's stain showed red color cementum-like material (Figure 5b). and Masson's Trichrome stain showed a magenta color (Figure 5c) (Table I).

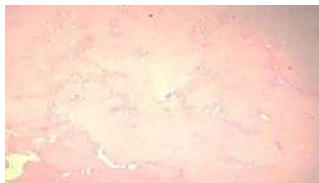


Fig 5a: H & E-stained section of cementoblastoma



Fig 5b: MG stain shows cementum-like material in red

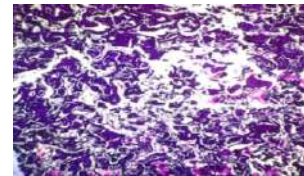


Fig 5c: MT stain shows cementum-like material in magenta-color

Figure 5:(a) H & E-stained section of cementoblastoma (b) MG stain shows cementum-like material in red (c) MT stain shows cementum-like material in magenta-color

**Table I: Interpretation of Normal hard Tissues and Pathological tissues using Hematoxylin and Eosin stain, Modified Gallego's stain & Masson's Trichrome stain**

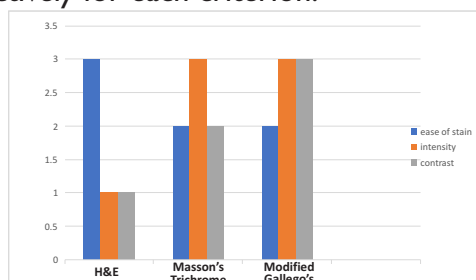
TYPE OF TISSUES	H & E STAIN	MODIFIED GALLEGO'S STAIN	MASSON'S TRICHROME STAIN
<b>Decalcified section of teeth</b>			
Dentin	Pink	Bluish-green	Blue
Cementum	Pink	Red	Deep red
<b>Decalcified section of bone</b>	Pink	Green	Blue
<b>Decalcified section of</b>			
<b>Pathological lesions:</b>		Bone – light green	Bone – blue
Cemento-osseous dysplasia	Varying shades of Pink	Cementum -red/magenta	Cementum - red
Odontome	Pink	Dentin-like – bluish-green	Dentin-like - blue
Cementoblastoma	Pink	Cementum - red	Cementum- magenta

**Evaluation of staining:**

All the stained slides were evaluated for the following criteria:

- ✓ Ease of staining
- ✓ Intensity of stain
- ✓ Contrast

A numerical score was given as 1 and satisfactory; similarly, 2 and 3 were scored good and excellent respectively for each criterion.



Based on the above criteria, the ease of staining was found to be excellent for H&E compared to Masson's Trichrome and Modified Gallego's stain. The intensity of staining and contrast was found to be comparatively more appreciable for Modified Gallego's stain than H&E and Masson's Trichrome stain. The shade of color differs with the degree of mineralization of the hard tissues. The values are represented in graph 1.

**DISCUSSION**

Different mineralized tissues, including cementum, dentin, and enamel, make up oral hard tissue. These hard tissues are uniformly stained with H&E and frequently blend together despite the fact that the degree of calcification differs between them. It might

be challenging to diagnose oral pathological lesions with calcified structures when they can't be seen with ordinary H&E staining.<sup>2</sup>

On reviewing the literature, there are very few studies that used special stains to identify the nature of hard structures of teeth. Special stains contain combinations of dyes that interact in a complex manner and differentially stain tissue components and thus aid in the easier identification of tissue properly.<sup>4</sup> There are a number of other specific stains, such as von Kossa, alizarin red for the bone, picrothionin for dentin, toluidine blue, and alcian blue for cementum, but there are few research on the use of a single histochemical stain to differentiate between the various oral hard tissues.<sup>1</sup>

One such stain that differentially stains hard-tissue components is MG stain. In 1954, Gallego first made it available. In the process of staining calcified structures, a combination of dyes such as carbol fuchsin and aniline blue is employed.<sup>5</sup> The MG stain's dyes compete with one another for binding sites in the tissue; in most cases, larger dye molecules displace the lower-molecular-weight dyes. After then, the tissue and the bigger dye interact by Van der Waals interactions. The binding of dye molecules appears to be dependent on the tissue's permeability, therefore the precise mechanism is still unclear.<sup>6</sup>

In muscular diseases, the MT stain is a differential stain used to distinguish between collagen fibres and smooth muscle. The principle behind the staining is that the less porous tissues are coloured by the smallest dye molecule, whereas larger molecule dye will stain more porous tissue.<sup>3</sup> The purpose of using MT stain in the present study was to know whether it stains differentially different dental hard tissue components. Since collagen is an organic component of both dentin and bone, MT stain was able to stain the collagen fibres in a variety of colours, making identification simple.<sup>1</sup>

In the present study, initially decalcified sections of normal teeth and bone were stained with MG and MT stain and the staining characteristics were obtained.<sup>1</sup> During decalcification, the inorganic content of the enamel gets removed, and the enamel matrix get disrupted thereby it will not take up the stain. The decalcified sections of teeth stained with Modified Gallego's stain revealed dentin in a bluish-green hue and cementum in red, while the decalcified bone sections appeared green in color. In Masson's

Trichrome staining technique, dentin stained blue and cementum-stained deep red and bone stained blue. Our results with the MG stain revealed light green-colored dentin, red or magenta-colored cementum, and dark green-colored bone, which were in agreement with the results of the studies by Mudhiraj et al.,<sup>2</sup> and Tamgade et al.<sup>5</sup>

Cemento-osseous dysplasia is one of the pathological disorders that manifests as fragments of cellular fibrovascular connective tissue with dispersed haemorrhage, woven bone, lamellar bone, and cementum-like particles.<sup>7</sup> When stained with MG stain, cemento-osseous dysplasia fragments displayed a random lamellar pattern of resting and reversal lines in green color, and a region containing spherules or droplets of cementum-like material colored red color. Staining with MT stain revealed cementum-like material in red and a random lamellar pattern of mineralized tissue in blue. Odontomas, also known as hamartomas or developmental anomalies, are characterized by the disorganized organization of the dental hard tissues, depending on the level of morphodifferentiation. The calcified/mineralized masses of dentin may contain cementum or cementum-like structures that are frequently intermingled with the dentinoid substance.<sup>7</sup> Mature tubular dentin appears bluish-green when stained with MG. The mature enamel that was removed during calcification was contained in clefts or hollow circular formations that are enclosed by this dentin. Mature tubular dentin is blue when stained with MT. Masses of hypocellular cementum embedded in a fibrovascular stroma are the distinguishing feature of cementoblastoma. Cementum appears reddish-brown in MG staining and magenta in MT stain.

A study was done by Gallego in 1954 in which he stained the ground, decalcified and frozen sections of normal tooth and bone. He saw that the cementum was dyed red, whereas the dentin and hard tissues, like as bone, were tinted green.<sup>2</sup> A similar investigation was carried out later in 2014 by Sandhya et al., who stained a few oral calcifying lesions along with ground, decalcified tooth pieces and found identical outcomes. These results imply that Modified Gallego's stain may be a useful tool in the diagnosis of these lesions.<sup>5</sup>

The soft and hard tissue components of mixed lesions can be distinguished using various stains. However, it is rare in the literature, particularly in dental literature, to employ histochemical stains to distinguish between

distinct hard tissues.<sup>1</sup> In this study, the intensity, contrast and identification of hard tissue structures was found to be comparatively appreciable in Modified Gallego's stain than in H&E and Masson's Trichrome stain.

The limitation of this staining procedure is technique sensitive and the intensity of the colour in the stained sections increases as the time duration increases and becomes difficult to differentiate between the colours.

## CONCLUSION

MG stain can be used in conjunction with standard H&E staining techniques to provide a more accurate and conclusive diagnosis. It is an effective differential stain for determining the type of hard-tissue components present in diverse clinical lesions.

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# AESTHETIC ENHANCEMENT OF PINK AND WHITE HARMONY WITH CONVENTIONAL SURGICAL AND LASER TECHNIQUES -A CASE REPORT

L R Renuka<sup>1</sup>, Ambili R<sup>2</sup>, Arunima PR<sup>3</sup>, Reejamol MK<sup>4</sup>

### ABSTRACT

Gingival health is one of the key factors in determining the success of most dental treatments. The harmony of the smile is determined not only by the shape, position, and color of the teeth but also by the gingival tissues. Melanin, carotene, and hemoglobin are the most common natural pigments which contribute to the normal color of the gums, which ranges from light pink to heavily pigmented. Inflammatory gingival enlargement, also synonymous with the terms gingival hyperplasia or gingival hypertrophy, can be defined as an abnormal growth of gingival tissues. The frenum is a mucous membrane fold that attaches the lips and

cheeks to the alveolar mucosa and/or gingiva and underlying periosteum. In addition, the abnormal frenal attachments lead to aesthetic and functional problems and interfere with the orthodontic treatment outcome in midline diastema cases, causing a recurrence after the treatment. This article presents anterior esthetic correction managed with conventional surgical technique along with adjunct use of laser for a case presented with Gingival enlargement, hyperpigmentation and aberrant maxillary labial frenum.

**Keywords:** *Gingiva, Pigmentation, Laser, Hypertrophy*

### INTRODUCTION

Gingival health and appearance are essential component of an attractive smile<sup>1</sup>. Gingival enlargement, a globally accepted terminology for an increase in the size of the gingiva, is a general feature of gingival diseases. Gingival enlargement can be caused by a wide variety of etiologies<sup>2</sup>. It may result from acute or chronic inflammatory changes, but chronic changes are more common. Chronic inflammatory gingival enlargement is caused by prolonged exposure to dental plaque. Plaque removal is complicated by the presence of fixed orthodontic devices that prevent proper maintenance of oral hygiene and promote plaque retention<sup>3</sup>.

The color of the gingiva depends on the number and size of blood vessels, epithelial thickness, the degree of keratinization, and pigments within epithelium like melanin, carotene, reduced hemoglobin, and oxyhemoglobin. Melanin is the most common natural pigment contributing to the color of gums. Gingival hyperpigmentation is presented as a diffuse deep

purplish discoloration or irregularly shaped brown and light brown or black patches, striae, or strands. It is seen as a genetic trait in some populations and is more appropriately termed physiological or racial gingival pigmentation which immensely disturbs the aesthetics, especially when smiles<sup>4</sup>.

A frenum is a mucous membrane fold that contains muscle and connective tissue fibers that attach the lip and the cheek to the alveolar mucosa, the gingiva, and the underlying periosteum. The abnormal frenal attachment may jeopardize gingival health by causing gingival recession when they are attached too closely to the gingival margin, either because of interference with the proper placement of a toothbrush or through the opening of the gingival crevice because of a muscle pull leading to plaque accumulation. The continuing presence of diastema between the maxillary central incisors in adults have often been considered an aesthetic problem. The labial frenal attachments have been classified as mucosal, gingival, papillary, and papilla penetrating, by Placek et al (1974)<sup>5</sup>.

## Case Report

A 27-year-old female reported to the Department of Periodontology, with a referral from the Department of Orthodontics, PMS College of Dental Science and Research. The patient complained about enlargement of gums in the upper front teeth for 3 months. The patient gave a history of fixed orthodontic therapy completed 3 months back. No relevant medical history or history of medication was reported. Intraoral examination revealed enlargement of the gingiva to the coronal one-third of the upper and lower anterior teeth along with an aberrant upper labial frenal attachment. She was also concerned about deeply pigmented gingiva. Her oral hygiene status and periodontal health was found to be satisfactory. This case was diagnosed with Grade 2 gingival enlargement with Grade 3 heavy clinical pigmentation<sup>6</sup>. The treatment plan was to perform Professional Mechanical Plaque Removal (PMPR) and reevaluation after 4 weeks to determine the need for gingivectomy/gingivoplasty. Frenectomy of the maxillary labial frenum and depigmentation on both upper and lower labial gingiva were planned to be performed with surgical and laser techniques. On reevaluation, after 4 weeks of PMPR, it was decided to perform a gingivectomy also due to the persistence of the fibrous component of gingival enlargement.

## Procedure

The entire procedure was explained to the patient and written consent was obtained. Surgical treatment was planned in two visits. The first visit included gingivectomy, frenectomy, and gingival depigmentation on the maxillary labial gingiva using a Diode laser [AMD Picasso 810nm at a power of 1.5J/s]. The second visit included gingivectomy and gingival depigmentation in the lower anterior region using a scalpel technique.

A pre-surgical rinse of chlorhexidine (0.2%) was performed. Infiltration of the surgical site with 2% lignocaine containing adrenaline at a concentration of 1:80,000 was carried out. The aberrant frenum was excised using a single hemostat technique using a diode Laser. The excision was performed using diode laser at 1.5 watts continuous mode with an activated tip. For depigmentation laser was used initially in a non-contact continuous mode which ablated

the epithelium following which contact mode in painting strokes was used for the deepithelialization. The laser tip was directed on the pigmented part of the gingiva and parallel to the root surfaces not to cause overheating, and the area depigmented was wiped with gauze soaked in saline (Figure 1). No pain was experienced by the patient during the procedure. The patient was advised to take paracetamol (500 mg) immediately after the procedure. Following the procedure, no periodontal pack was given, and no antibiotics were administered. Review after 1 week was done and healing was satisfactory, gingival inflammation subsided and the color of the gingiva turned out to be normal.

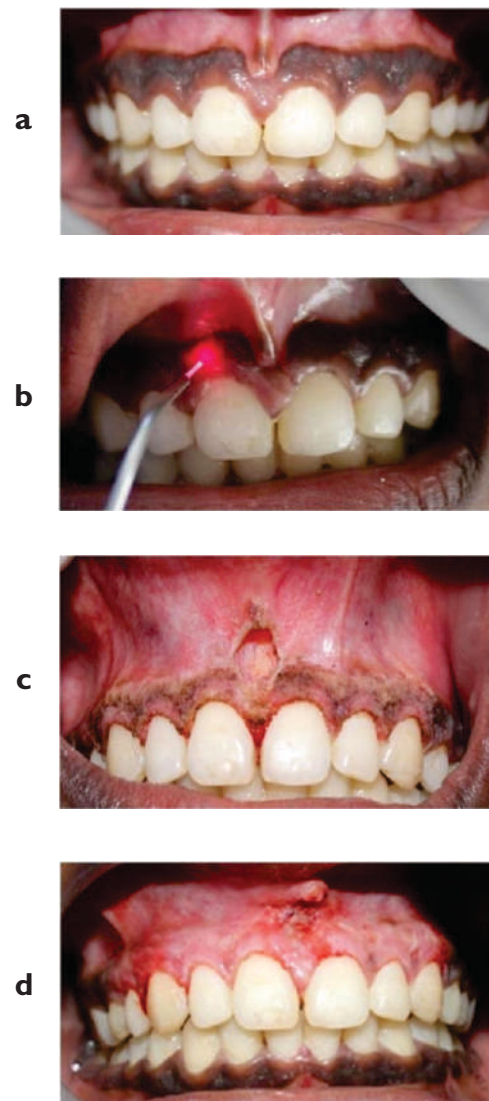


Figure 1: (a) Pre-operative photographs (b) Depigmentation using a laser (c) Immediate followup (d) Review after 1 week.

Treatment of maxillary gingiva rendered a satisfying result, and the patient was willing to continue her therapy for the mandibular arch which included gingivectomy and depigmentation (Figure 2A).Gingivectomy was done by removing excess gingival tissue and gingival epithelium from canine to canine was excised to remove the pigmented layer with a Bard- Parker handle with a blade number 15 (Figure 2B). Pressure was applied with a sterile gauze to control hemorrhage during the procedure. A periodontal pack was placed over the wound area and post-operative instructions were given Patient was advised to take paracetamol (500 mg) immediately after the procedure and no antibiotics were administered.



Figure 2: (a): Pre-operative photographs (b) Gingivectomy and depigmentation using a scalpel (c) Immediate Post-operative.

The patient was reviewed at the end of 1 week and the pack was removed, and the area debrided. Healing was uneventful without any postsurgical complications. The gingiva appears pink, healthy, and firm. The patient

was highly satisfied with the newly changed color of the gingiva. It was noticed that a combination of procedures like laser gingivectomy, depigmentation, and frenectomy created a beautiful and confident smile on the patient's face.

The case was followed up to 1 year after the procedure. Evaluation of melanin repigmentation was carried out using Dummett and Gupta score. At the end of one year, there was diffuse gingival repigmentation involving attached gingiva and interdental papilla in the lower anterior region compared to the upper anterior (Figure 3).

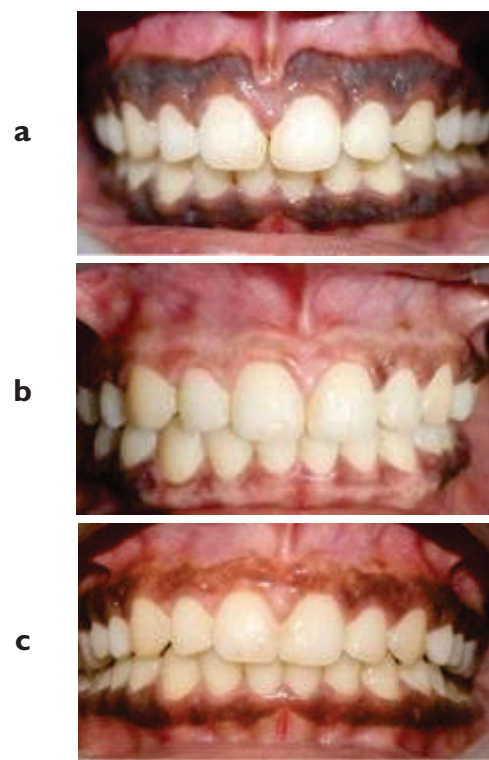


Figure 3: (a) Pre-operative photograph (b) 6 month followup (c) 1 year followup

## DISCUSSION

Deciding whether to do a conventional gingivectomy by scalpel or to use a laser depends on many factors. In the present case, we compared conventional methods using a scalpel with Laser. The main advantage of the laser was a bloodless surgical field. Post-operative discomfort was also less compared to conventional gingivectomy, and this could be attributed to the heat generated by the laser that inhibits the pain receptors and the coagulation which provided a dry and isolated environment, creating less infection to the wound<sup>7</sup>.

Melanin pigmentation is basically caused by melanin deposition by active melanocytes located mainly in the basal layer of the oral epithelium<sup>8</sup>. Hyperpigmented gingiva, many times, forces the patients to seek cosmetic treatment. The choice of technique for depigmentation of the gingiva should be based on operator experience, the patient's economic conditions, and individual preferences. The various surgical treatment modalities available for gingival hyperpigmentation are Scalpel surgical techniques, cryosurgery, electrosurgery, and laser<sup>9</sup>. Scalpel surgical technique is more cost-effective. However, the Conventional scalpel procedure could cause unpleasant trauma throughout the procedure and it's necessary to cover the exposed tissue with periodontal dressing for 7-10 days<sup>10</sup>.

An aberrant frenum can jeopardize gingival health by causing difficulty in oral hygiene maintenance when they are attached too closely to the gingival margin. In addition to this, the maxillary frenum may present aesthetic problems by creating midline diastema. The present case presented an aberrant maxillary labial frenum managed with a laser- assisted frenectomy procedure, surgical area healed after one week, reattaching the frenum in the correct anatomic position. The patient did not have any post-operative complications. Though the initial result of the depigmentation surgery is highly encouraging, repigmentation is a common problem. Repigmentation was pronounced in the lower anterior region treated with a conventional scalpel procedure as compared to the Laser-assisted depigmentation procedure. Our finding supports the clinical evidence published by Jagannathan et al 2020<sup>11</sup> who conducted a randomized controlled trial to compare three different techniques using a scalpel, electrosurgery, and laser for gingival depigmentation and concluded that Laser is an effective and fast tool that causes less pain, discomfort, faster healing, and delayed repigmentation compared with other techniques.

## CONCLUSION

For many intraoral soft tissue surgical procedures, the laser is a viable alternative to the scalpel. In modern dental practice using laser technology, diode laser is a minimally invasive treatment option for the elimination of unesthetic gingival melanin pigmentation. Demand for depigmentation therapy is

seen in patients with excessive gingival display. Gingival biotype, clinician's expertise, patient preferences, and recurrence rate, greatly determine the selection of a technique. Relapse or repigmentation is a critical concern and it depends on the technique employed and the follow-up period. In this case report, Gingival repigmentation occurred in the lower anterior region compared to the maxillary anterior in the one year follow-up and it shows that laser treatment is more advantageous than conventional treatment using a scalpel.

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### ENHANCEMENT OF SUNKEN CHEEKS WITH SNAP FASTENER PRESS STUD DETACHABLE CHEEK PLUMPER: A CASE REPORT

Varsha Ammu Varghese<sup>1</sup>, Sudeep Sharathchandran<sup>2</sup>, Abha S Nair<sup>3</sup>

#### ABSTRACT

Senescence and lengthened status of being edentulous can result in the resorption of oral hard tissues as well as loss of tonicity and integrity of the associated musculature. Resorption of the maxillary residual ridge, results in narrowing of the arch and loss of facial muscle support that leads to the sunken appearance of cheeks. Slumped cheeks are highly unaesthetic and will add upon to patient's aging thereby imparting a negative psychological impact.

As prosthodontists we practice numerous techniques for the enhancement of facial aesthetics in patients with sunken cheeks by fabricating customizable cheek

plumpers. Cheek plumpers can be attached to the conventional dentures to make them aesthetically pleasing as well as to boost up the confidence in geriatric patients by improving the fullness as well as the tonicity of musculature encircling the denture portion. This is a case report that highlights the advantages and depicts the sequential steps undertaken to fabricate a complete denture with cheek plumper attached maxillary denture base by metal snap fastener press on studs on a completely edentulous patient with sunken appearance for the purpose of improving aesthetics and self-esteem.

**Keywords:** Cheek lifting appliance, completely edentulous, cheek plumper, sunken cheeks

#### INTRODUCTION

Remodeling of the facial skeleton that takes over a period with aging and their impact, they part on the facial appearance shouldn't be overlooked by a maxillofacial prosthodontist while delivering dentures especially to geriatric patients. Complete denture treatment includes not only the replacement of missing teeth but also the enhancement of facial appearance. It is evident that certain areas of the midface skeleton have a strong predilection to undergo resorption with aging, particularly the maxilla. These areas resorb in a specific manner with aging resulting in sunken or hollowed cheek appearance. The resultant deficiencies of the skeletal foundation contribute to the stigmata of the aging face.<sup>1</sup> Besides age-related factor, loss of subcutaneous fat and elasticity of connective tissue causes the collapsed cheek appearance. The aged appearance further adds on to create a feeling of social rejection imparting negative psychological effect on patients due to poor facial aesthetics.<sup>2</sup> In such cases, delivering a conventional denture alone would fail to address the requirement of that additional support required for the cheek.

Enhancement of sunken cheek appearance can be facilitated either by invasive or noninvasive techniques.

The invasive approach includes different strategies such as reconstructive plastic surgical procedures, skin-tightening procedures and infusing of Botox in the facial muscles whereas the non-invasive ones can be managed by using prosthetic method which would be more convenient for geriatric patients owing to their medical condition.

A "cheek plumper" or "cheek lifting" appliance is a specially designed dental prosthesis used for the correction of facial disfigurement and to support sunken cheeks intraorally and can restore these facial contours.<sup>3</sup> Cheek plumper have been also fabricated for improving esthetics and the psychological profile of patients with maxillofacial defects and facial paralysis.<sup>4</sup> Extended denture flanges were provided to improve support to the overlying facial tissues in patients with facial paralysis. Literature has well evidenced the extensive usage of different methods as attachments, such as magnets, double die pins, hollowed cheek plumper etc. This case report describes the sequential steps required in the fabrication of a non-invasive detachable cheek plumper prosthesis for a completely edentulous patient with a sunken appearance using metal snap fastener press stud attached to the maxillary denture base.

## CASE REPORT

A 72-year-old male reported to the Department of prosthodontics with a chief complaint of missing teeth and bilateral sunken cheek appearance. He gave a history of teeth extracted over a period of 5 years due to periodontal problem. He was completely edentulous for seven months. On examination, significant findings reported were poor esthetics, unsupported oral musculature, and sunken buccal cheeks with completely edentulous maxillary and mandibular arch.[Figure 1,2,3].The treatment plan was formulated according to patient's demand for delivering a complete denture prosthesis with buccal cheek plumper on either side of the maxillary denture to improve esthetics.



Figure 1 :  
Right profile view

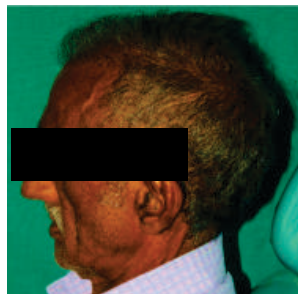


Figure 2 :  
Left profile view



Figure 3 : Front view

## CLINICAL PROCEDURE

The primary impression was taken with alginate irreversible hydrocolloid impression material(Zhermack Tropicalgin) for both upper and lower arch,and the primary cast was made with dental plaster. Self-cure acrylic resin special tray was fabricated, and sequential step border molding was performed by putty addition silicone impression material and the final wash impression was made with light body material.(Zhermack Elite Hd+ Soft Putty and Light Body)

Master cast was made in dental stone(Gyprock Dental stone) on to which denture bases were fabricated with

self-cure acrylic resin, and occlusion rims were constructed. During the jaw relation procedure, it was found that the occlusal rim does not provide enough support for the cheek muscles resulting in sunken cheek appearance. Hence detachable cheek plumper wax up try in was planned for during trial insertion.



Figure 4 : Intra oral trial



Figure 5 :Waxed up denture with cheek plumper

## TRY-IN APPOINTMENT

The trial denture base was made by selecting semi-anatomic teeth(Ruthinium Acryrock Teeth set) based on the patient age, sex, and personality and tried in the patient mouth to evaluate, the esthetics, phonetics, and occlusion. To improve the esthetics, the extra waxes were softened up and adapted on both sides of the upper trial denture from first premolar to first molar region. Wax were added in an incremental manner along with repetitive border movement until it provided enough support to the cheek muscles as well improvement of facial esthetics could be visually appreciated [Figure 4,5]

Functional movements were asked to be performed by the patient to verify that the addition waxes did not cause dislodgment of record bases. Necessary adjustments were made until the denture bases were stable while patient performed functional movements. Adjustments were done until there was no inconvenience or impingement reported by the patient. Orientation depth marks were made on both

trial denture and wax pattern to facilitate exact repositioning after processing. The cheek plumper wax patterns were then detached from trial base. The routine flasking, dewaxing, packing, and heat curing procedures were done for both denture and cheek plumpers separately [Figure 6]



Figure 6 : Index after dewaxing  
After deflasking, the complete denture and cheek plumper were retrieved, finished, and polished.

### ATTACHING STUD FASTENER

The metal snap fastener press studs, two on each side, were positioned accurately with respect to the orientation mark embedded into the denture base and wax pattern. The area required; 2mm deep and 5mm diameter holes for embedding the male and female counterparts were drilled and established within the posterior flange area of denture base and intaglio surface of the cheek plumpers. The male part was attached to the cheek plumper and female part on to the either side of upper denture posterior buccal flange region [Figure 7,8]. They were securely positioned and cured by using autopolymerising resin.



Figure 7 : Final prosthesis with detached



Figure 8 : Final prosthesis with attached plumper

The prosthesis was tried on to patient's mouth and the fit and retention was verified by making the patient do functional movements. [Figure 9,10,11] Phonetics was also checked to identify if any difficulty occurred while delivery of speech. No loss of retention, speech or fit inconvenience was to be observed.

It was noted that there was significant change in the facial appearance. [Figure 12,13]



Figure 9 : Intra oral view without plumper



Figure 10 : Intra oral view with plumper



Figure 11 : Profile view after prosthesis placement

After proper evaluations the prosthesis was taken out from the mouth and patient was taught, how to attach and detach the press stud. Post insertion instructions were given for the maintenance of the denture as well as cheek plumpers inclusive of cleansing part (mild detergent and soft brush). Patient was recalled after a week for review. Patient had adapted to the new dentures and was content with it.

Regular recall check-ups were done after one week, a month and after 3 months. The prosthesis has significantly increased the patient's confidence and improved his facial profile.



fig.12 : Preoperative



fig.13 : Postoperative

## DISCUSSION

In this case, a detachable cheek plumper prosthesis was planned to owe to reduction of the weight of final prosthesis and as an option to the patient to wear them only when absolutely required. Due of their extensive size and weight, conventional cheek plumpers posed problem with retention and stability of maxillary dentures. They also resulted in muscular fatigue with repetitive usage.<sup>5</sup> Muscle fatigue can be eliminated if the patient had the option to remove the cheek plumpers while feeling discomfort. Additionally, the limited mediolateral width of the oral cavity might hinder the placement of cheek plumpers in a single step.<sup>6</sup> Detachable plumpers permit the patient to easily detach them when not in use as well as facilitate easier cleansing.

Literature has reported evidence for enhancing facial esthetics by using several invasive and non-invasive techniques. Quick short-term effect could be delivered through injectable fillers as such as BOTOX, but long-term results are awaited.<sup>7</sup> More invasive surgical procedures like reconstructive plastic surgery can be performed as well but it involves the risk of a

postsurgical scar sometimes contra-indicated in old patients from systemic diseases.<sup>8</sup> Hence use of non-invasive cheek enhancers are preferred for geriatric patients such as conventional non detachable and currently advocated detachable ones without compromising the retentive and esthetic capacity of the prosthesis.<sup>9</sup>

Several techniques are used for fabrication of these cheek plumper such as magnet retained cheek plumper, but magnets have susceptibility to corrode and result in loss of magnetism<sup>10,11</sup>. Other techniques such as using a stainless-steel double die in a cheek plumper, hollow detachable cheek plumper, press stud cheek plumpers, ball bearing attached cheek plumper were also practiced.<sup>12,13,14</sup>

For this case, metal stud fastener press studs were used to fabricate the customizable cheeks plumper.<sup>15</sup> The male part was incorporated into the intaglio surface of cheek plumper and female part into posterior buccal flange area of denture base.

Advantages of using detachable press stud cheek plumpers

- Easier insertion in patient with reduced mouth opening
- Affordability and non-invasive technique
- Provides snug fit
- Ease of cleaning
- Enhanced facial esthetics
- Light weight and size
- Easiness of laboratory manipulation.

Major disadvantages are

- Depends on dexterity of the patient
- Increase bulk of denture
- Food accumulation
- Wearing of metal parts in long term use.

## CONCLUSION

This article describes a simple, cost effective, non-invasive technique to improve esthetics in completely edentulous individuals with hollow cheeks by using stud press fasteners. An effort was undertaken to improve the patient's appearance by providing better support to the cheeks by uplifting them. These customized attachments retained cheek plumper prosthesis successfully restored the contour of cheek improving esthetics and served as a psychological inspiration of the patient.

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## PERIOSTEUM ROTATED FLAP FOR ISOLATED GINGIVAL RECESSION: A CASE REPORT

Aathira Vijayakumar<sup>1</sup>, Ambili R<sup>2</sup>

### ABSTRACT

Gingival recession is defined as the displacement of the gingival margin apical to the cemento-enamel junction of a tooth. This condition is associated with the loss of periodontal tissues, including gingiva, periodontal ligament, root cementum, and bone at dental sites as well as the loss of mucosa and bone around dental implants. Gingival recession is a multifactorial condition which increases the risk of tooth loss secondary to clinical attachment loss. Although mitigating the causes of gingival recession decreases its incidence and severity, implementing practical management and prevention strategies in the

clinical setting can be challenging. Identifying susceptible patients and evaluating them for modifiable risk exposures are essential first steps in developing action plans for appropriate interventions. Certain situations may enhance recession, such as subgingival restorations and toothbrushing trauma, but if inflammation is controlled and the etiology eliminated, minimal amounts of keratinized gingiva can be maintained in a state of health without further recession.

**Keywords:** Gingival recession, root coverage, periosteum

### INTRODUCTION

Gingival recession is one common clinical sign of periodontal disease associated with apical displacement of the gingival margin and is one of the major esthetic concerns<sup>1</sup>. A narrow zone of keratinized gingiva/attached gingiva is thought to be insufficient to protect the gingival margin from injury caused by frictional and pull forces produced by adjacent muscles during mastication, thus resulting in dentinal hypersensitivity and poor esthetics, especially in the anterior zone<sup>2</sup>. The etiology of gingival recession is multifactorial and may include plaque-induced inflammation, calculus and restorative iatrogenic factors, trauma from improper oral hygiene practices, tooth malpositions, high frenum attachment, improper periodontal treatment procedures, and uncontrolled orthodontic movements<sup>3</sup>

Esthetics, progression of recession, hypersensitivity, or difficulties associated with oral hygiene maintenance, may warrant the need for root coverage. Periodontal plastic surgical procedures prevent or treat defects in the gingiva, alveolar mucosa, and bone caused by

plaque-induced disease, trauma, developmental, or anatomical factors.<sup>4</sup>

Various techniques have been established in this regard, with methods like connective tissue graft (CTG) being considered the gold standard. While it produces improved results, it has some drawbacks, including the need for a second surgical site, reduced donor tissue availability, and increased surgical complications and pain. Hence, newer techniques have been developed to improve predictability, reduce surgical sites, and enhance patient comfort. Periosteal pedicle graft (PPG) is one such alternative which could reduce postoperative patient morbidity with improved patient acceptance<sup>5</sup>.

Periosteum is a highly vascular source of pluripotent cells and it retains the ability to differentiate into fibroblasts, osteoblasts, chondrocytes, adipocytes, and skeletal myocytes throughout life. Periosteum promotes neovascularization due to the release of vascular endothelial growth factors<sup>6</sup> making it an excellent graft for improved predictability in root coverage procedures.

## Case Report

A 34-year-old female patient reported to the Department of Periodontology with a chief complaint of sensitivity in her lower right back tooth since 1 year. No relevant medical history was reported. A gingival recession of measurement 3x4mm was noted on the buccal aspect of her lower right second premolar and was classified as Cairo's RT1<sup>7</sup>(Fig 1A). She gave a history of extraction of the adjacent molars due to caries 4 years back. Her oral hygiene and periodontal status were found to be satisfactory. No bone loss was appreciated on the radiograph (Fig 1D).

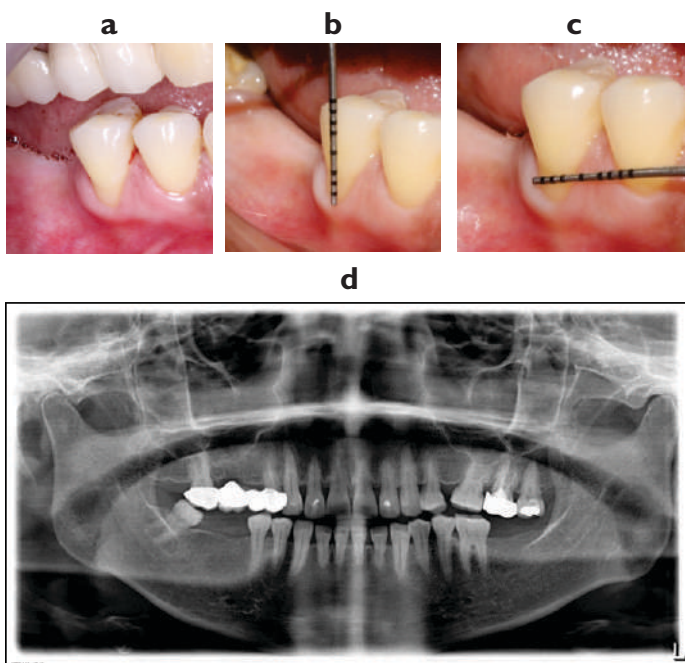


Fig 1 a : Pre operative view 1b & 1c : Pre operative measurements D : Preoperative radiograph

## Pre-surgical Management

Provisional mechanical plaque removal was done on both arches and oral hygiene instructions were given. Informed consent was obtained from the patient before the surgery.

## Surgical Procedure

After local anaesthesia with 2% lignocaine and 1:80000 adrenaline, a 15c Bard Parker surgical blade was used to de-epithelialize the buccal gingiva in relation to 45. A mid-crestal incision was given on the distal aspect of 45 followed by the elevation of a split-thickness flap upto the mucogingival junction by sharp dissection to expose the periosteum and a layer of connective tissue. By blunt dissection using the Glickman P24

elevator, the periosteum was elevated. Care was taken not to remove the periosteal strip completely and to leave it pedicled to the bone (Fig 2A). The elevated periosteal strip was then rotated over, placed to cover the recession area on 45, and stabilized using cyanoacrylate (Fig 2B). Surgicoll membrane and tin foil were placed to secure the surgical area (Fig 2C). The split thickness flap was then positioned back and interrupted sutures were given using 3-0 Mersilk (Fig 2D).

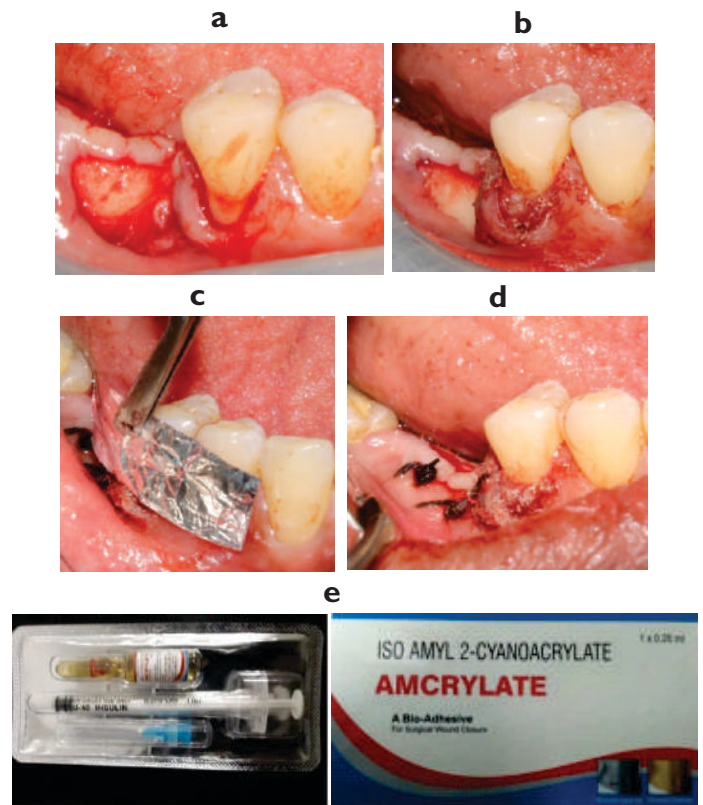


Fig 2 a : Periosteum rotated and placed over recession area, 2b : Periosteum stabilized using cyanoacrylate, 2c : Foil placed 2d : Sutures placed, e : Amcrylate

The operated site was covered with non eugenol periodontal dressing (Coe-Pak) for protection. Postoperative antibiotics and analgesics were given to the patient. The patient was instructed not to brush the operated tooth for two weeks. After one week, the periodontal dressing and sutures were removed and the surgical area was flushed with an antimicrobial solution.

The patient was then reviewed at 1 week post operatively (Fig 3). Healing was uneventful. Adaptation of the edges of the graft to the surrounding tissues

with morphologic and chromatic resemblance was observed. Adequate root coverage and sufficiently thick gingiva were observed.



## DISCUSSION

Various surgical techniques have been developed to correct gingival recession defects, but subepithelial connective tissue grafts still remain the gold standard. The purpose of developing new techniques is to increase predictability and reduce patient discomfort, the number of surgeries and the number of surgical sites, and the need to satisfy the patient's esthetic demands. The goals for surgical treatment of gingival recession include reducing root sensitivity, minimizing cervical root caries, increasing the zone of attached gingiva, and improving esthetics.

The importance of possessing an adequate width and thickness of keratinized tissue seems to be crucial both for natural teeth and dental implants<sup>8</sup>. The periosteum is a highly vascular connective tissue sheath covering the external surface of all the bones except sites of articulation and muscle attachment<sup>9</sup>. The periosteum comprises of two layers, an inner cellular or cambium layer and an outer fibrous layer<sup>10</sup>. The inner layer contains numerous osteoblasts and osteoprogenitor cells and the outer layer is composed of dense collagen fibre, fibroblasts and their progenitor cells; hence the regenerative potential of the periosteum is immense. Wound healing after mucogingival surgery relies on clotting, revascularization and maintenance of blood supply<sup>11</sup>. Also, a vascular graft is more likely to survive on an avascular root surface. The advantage of periosteal graft technique is the presence of the periosteum adjacent to the defect and in sufficient quantity, avoiding two surgical sites, resulting in less surgical trauma, postoperative complications and better patient satisfaction. Graft stabilization with cyanoacrylate may decrease not only the shrinkage of the graft but also pain discomfort compared with conventional stabilization by suturing<sup>12</sup>.

## CONCLUSION

The management of gingival recession and its sequelae is based on a thorough assessment of the etiological factors and the degree of involvement of the tissues. The selection of the surgical techniques should be dictated by several factors, including the anatomy of the defect site, such as the size of the recession defect, the presence or absence of keratinized tissue adjacent to the defect, the width and height of the interdental soft tissue, and the depth of the vestibule or the presence of frenula. Although periosteum displacement techniques are much preferred, they may be associated with some technical difficulties such as: complexity of surgery; the increased time required and; improved operator skill level to protect the membrane from laceration.

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## DENTAL MANAGEMENT OF A CHILD WITH ECTODERMAL DYSPLASIA

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### ABSTRACT

Ectodermal dysplasia refers to a hereditary disease that affects the structures derived from the ectoderm. A key feature of this syndrome is multiple missing teeth and teeth with conical shape, affecting the primary and permanent dentition. The pathognomonic facial features make patients very similar to each other. Clinically, dry skin, absence of second toe nail and frizzy hair was noted. The intra-oral characteristics include conical shape of anterior teeth. This article aims to report a case in which a 12 year old patient was diagnosed with ectodermal dysplasia during a dental visit at 2 years of age.

**Keywords:** Ectodermal dysplasia, G-aenial universal flo, Exaclear

### INTRODUCTION

Hereditary ectodermal dysplasia represents a large group of conditions in which two or more ectodermally-derived anatomic structures fail to develop. Patients with ectodermal dysplasia are characterized by hypoplasia or aplasia of structures such as skin, hair, nails, teeth, nerve cells, sweat glands, parts of the eye and ear and other organs. Ectodermal dysplasia might be inherited in any form of several genetic patterns including autosomal-dominant, autosomal-recessive, and X-linked modes. Although more than 170 different subtypes of ectodermal dysplasia have been identified, these disorders are considered to be relatively rare with an estimated incidence of 1 case per 100,000.<sup>1</sup>

According to the state of sweat glands involvement, two major groups are distinguished: (1) Hypohidrotic or anhidrotic (Christ-Siemens-Touriane syndrome) in which sweat glands are either absent or significantly reduced in number; (2) Hydrotic (Clouston syndrome) in which sweat glands are normal. Dentition and hair are involved similarly in both types but hereditary patterns of nails and sweat glands involvement are different. Hypohidrotic ectodermal

dysplasia as the most common type seems to show an X-linked inheritance pattern. Other manifestations include fine sparse hair, reduced density of eyebrow and eyelash hair<sup>2</sup>. When hair is present, it may be fragile, dry, and generally with unruly appearance as a result of poorly developed or absent sebaceous glands. Fingernails and toenails may also show faulty development and be small, thick or thin, brittle, discolored, cracked, and/or ridged.

The teeth are markedly reduced in number (oligodontia or hypodontia) and often manifest abnormal development in shape which may appear tapered, conical or pointed incisors.<sup>3</sup> Molars might be observed in reduced size. The lack of tooth bud formation causes hypoplastic alveolar bone, leading to a reduced vertical dimension of occlusion. Therefore, an old-age appearance is common in affected individuals.

This case report presents a twelve year old male child with ectodermal dysplasia reported to the department of pediatric and preventive dentistry and its management.

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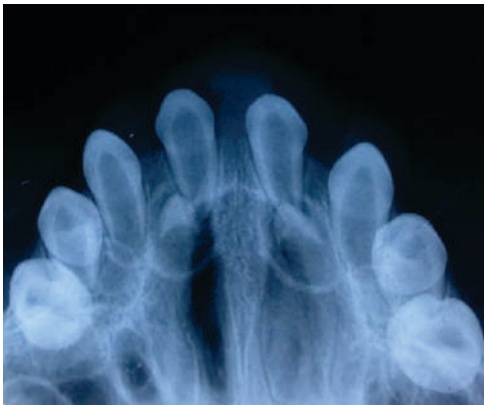
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## CASE REPORT

A 12 year old male child reported to the department with a chief complaint of irregularly shaped upper and lower front teeth. There was no relevant family history. Past dental history was taken and parents reported the conical appearance of primary teeth also, visited a nearby hospital and occlusal radiograph was taken. (Figure 1)

Figure 1: Maxillary occlusal topographic radiograph taken at 2 ½ years



Intraoral examination revealed conical shape of maxillary and mandibular anterior teeth. (Figure 2)

Figure 2: Intraoral images



Figure 3: Panoramic view



Panoramic radiograph reveals congenital absence of 15, 25, 17, 27, 37, 47. (Figure 3)

The major concern of the patient was the abnormal or conical shape of the teeth and midline spacing. A comprehensive treatment planning and management was planned. Treatment plan included composite restoration of maxillary anteriors followed by fixed anterior bite plane to allow supraeruption of molars, followed by composite restoration of lower anteriors and finally fixed orthodontic treatment.

Figure 4: Wax up done in the cast, template made with Exaclear



Figure 5: G-aenial Universal Flo



Figure 6: Excess composite flowing from the template



Figure 7: Composite restoration done – 11, 12, 21, 22



Figure 8: Fixed anterior bite plane



Figure 9: Frontal view



## DISCUSSION

Ectodermal dysplasia associated with oligodontia is a complex dental condition that significantly effects on aesthetics and function. In order to provide aesthetically and functionally pleasing outcomes, a multidisciplinary management approach may be required. The aims of that approach should include improving aesthetics, maintaining the existing dentition, improving speech, enhancing the masticatory efficacy, improving acceptance by family and peers, and promoting psychological wellbeing. Most of these requirements can be achieved by addressing the hypodontia by replacing missing teeth with recommended options such as removable prosthesis, conventional or resin adhesive bridgework, implant-supported prosthesis, or autotransplantation. All the options have a common prerequisite in which they need space management before replacing the missing teeth.<sup>4</sup>

Therefore, managing the child especially in mixed dentition with ED and interceptive orthodontics plays a major role. The patient is awaiting the orthodontic treatments which mean he/she became a candidate for the preventive care like plaque control, fissure sealant, dietary counselling, and fluoride therapy.

ED-associated hypodontia can be affected by both deciduous and permanent dentition. Most often, the permanent maxillary central incisors, maxillary first molars, mandibular first molars, and maxillary canines are affected.<sup>5</sup> The most common concern of the children with ED is about the dental anomalies and facial appearance, and it was common for the present case study also. The main demand of these patients is recontouring of the malformed teeth to improve their aesthetics and functions.

In the present case the child is having conical shape of maxillary and mandibular anteriors. For a psychological benefit we decided to restore the maxillary anteriors with composite initially. A novel method was used for restoration i.e, with Exaclear (GC company), we made a template, a vent was made for the tip of the composite to enter and excess material to wash out. This method was less time consuming and polishing is not required. Major disadvantage of this material is that it is available in one

shade only. We have used A2 shade. G-ænial Universal Injectable has the ideal consistency and mechanical properties and thus it is widely used for this technique.<sup>6</sup> G-ænial Universal Flo benefits from high polishability, resulting in excellent aesthetics and reduced chairside time. Combined with the highly transparent Exaclear silicone, the technique has become approachable and easy to conduct.<sup>7</sup> In order to extrude the permanent molars for banding at a later stage, a fixed anterior bite plane was given with bands on primary second molar.

## CONCLUSION

Management of clinical manifestations associated with ectodermal dysplasia presents a unique challenge for prosthodontists and pediatric dentists. Treatment of young edentulous patients with removable partial or complete denture is an acceptable, available and cost effective modality, which improves function, speech, esthetics and psychosocial condition. However, its long-term success depends on regular recall appointments and meticulous maintenance of oral and prosthetic hygiene.

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## MUCOCELE AFTER THIRD MOLAR SURGERY - A CASE REPORT

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### **ABSTRACT:**

Oral Mucocele is a common minor salivary gland pathology causing mucous retention cysts which may or may not be symptomatic. Conventional method of treatment would be surgical excision of the lesion although newer methods of using lasers have also been introduced. But sometimes mucoceles can occur after third molar impaction surgeries in the posterior lingual aspect, which is rare though.

Case report : Here we are presenting a case report of a 22 year old male patient who had undergone third molar impaction surgery following which a mucocele was formed in the lingual aspect of the same side of impaction surgery.

Conclusion : Mucocele after third molar removal is a very rare documented as well as encountered condition .Surgical excision was performed in this case and the patient is being monitored for any recurrences.

**Keywords:** Mucocele, Third molar impaction Extravasation cyst, Mucous retention cyst.

### **INTRODUCTION**

Oral mucocele (OM) is a common exophytic lesion caused by salivary accumulation resulting from pathological changes in oral minor salivary glands (MSGs) .Clinical presentations are single or multiple, soft, smooth, spherical, painless nodules, ranging in color from translucent blue to pink .<sup>1</sup> The one developed by salivary gland is called the retention mucocele while extravasation mucocele is used to indicate the kind of mucocele created by the spread of the secreted mucus towards surrounding tissues due to rupture in the excretory ducts of the salivary glands. Extravasation, the most common etiologic factor, usually goes with local trauma and irritation. Because there are no true epithelia of these cysts, they are not included in the cyst family. Generally observed in the lower lip, in the lateral to the midline, they are also rarely seen in the sublingual or buccal regions, or

in the mucosa of the hard palate<sup>2</sup>The incidence is in the order of 2.5 lesions per 1000 individuals. It is the second most frequent benign soft tissue tumour following traumatic fibromas. The most common site of occurrence of mucocele is the lower lip, having no sex predilection .<sup>3</sup> The extravasation mucocele, or extraductal mucus cyst, was described for the first time by Hamperl in 1932, with the name 'mucus granuloma' (Schleimgranulom).<sup>4</sup> It represents the most frequent swelling of the lower lip in the first two decades of life and has a peak occurrence between the second and third decade.<sup>5</sup> According to Jones and Franklin, mucous extravasation phenomenon is the most frequently diagnosed salivary gland pathology in children, occurring mainly in the lower lip (77.9%), tongue (9.9%), and mouth floor (5.7%).<sup>6</sup>

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## CASE PRESENTATION:

A 22 year old male patient was brought to the department of oral and maxillofacial surgery with a complaint of swelling in the ventral surface of tongue since 2 weeks. History of present illness revealed that the swelling was initially small and then increased in size upto 10x5 mm , but decreased after 1 week followed by discharge of mucous like substance from the swelling .Then again the swelling began to increase in size in the following week. He reported of undergoing an impaction surgery on the same side 1 month back . There was no other significant medical history and no relevant dental history other than the impaction surgery. On examination , a translucent ,dome shaped swelling was seen in the lingual mucosa of ventral surface of tongue corresponding to the 35,36,37 region of size 10x5mm (Fig1) .On palpation, it was non-tender, soft, fluctuant and did not blanch on pressure. The clinical characteristics observed lead to provisional diagnosis mucus retention phenomenon (mucocele). After the medical evaluation, the informed consent was taken from the parents and an excisional biopsy was planned under local anaesthesia. The patient was prepared for procedure. After sufficient local anaesthesia was given, an elliptical incision was made with the Bard-Parker blade number 15 attached to a number 3 handle. The tissue was stabilised using tissue-holding forceps and the lesion was removed (Fig2). Postoperative instructions were then given followed by postoperative antibiotics.

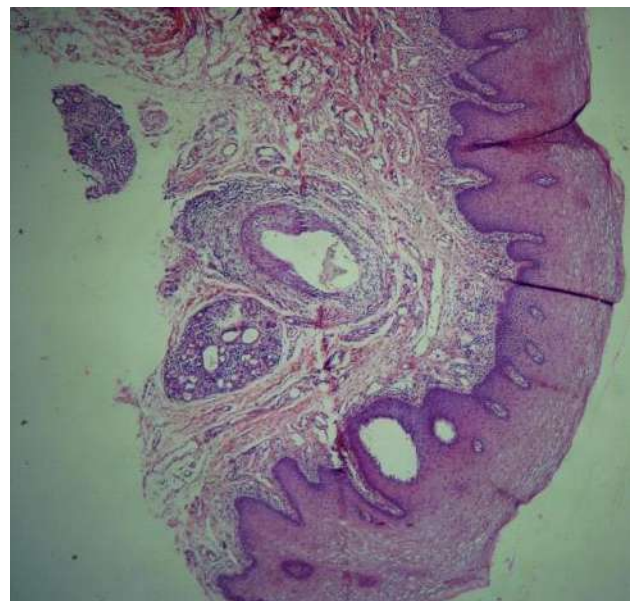


## DIFFERENTIAL DIAGNOSIS

Oral hemangioma, soft tissue abscess and lipoma were considered

## INVESTIGATIONS

Histopathological evaluation revealed parakeratinised stratified squamous epithelium and underlying connective tissue (Fig 3). The connective tissue was delicately collagenous and contained mucin-spilled areas surrounded by granulation tissue. Endothelium lined vascular spaces engorged with RBC's and areas of haemorrhage was noted within connective tissue. Minor salivary gland acini and ductal proliferation also noted.



## OUTCOME AND FOLLOW UP

Patient was reviewed on the seventh day which did not show any signs of local haemorrhage or secondary infection. The patient will be kept on 6 month follow ups for monitoring any recurrences.

## DISCUSSION

Mucocele is an oral pathology commonly seen in young patients. It is generally determined by a traumatic event that can cause the rupture of an excretory duct of salivary gland and it usually appears as a solitary painless swelling, fluctuant to palpation, in canine-bicuspid areas, with a normal pink or bluish colour, the latter depending from tissue cyanosis and vascular congestion associated with the stretched overlying tissue and the translucent character of the accumulated fluid beneath<sup>[7]</sup>. After an appropriate differential diagnosis with other pathological forms (e.g., fibroma, lipoma, angioma, salivary neoplasms), surgical excision represents the only treatment for this disease. If in the case of extravasation type surgical removal is not done, then a cyclical increase and decrease in the size of the lesion is observed as a result of the breakage of the cyst and new production of mucin<sup>[8]</sup>. Although clinically the sizes vary from a few millimetres to several centimetres in diameter, larger lesions have also been rarely reported. Kahveci et al. has reported the case of a 42 year old female patient with a buccal mucous retention cyst of 7 cm in diameter<sup>[9]</sup>. In our case, lesion was a few millimeters in size. Santos et al. reported a large extravasation mucocele case holding the ventral surface of the tongue after lingual frenectomy<sup>[10]</sup>. There are no reported mucocele cases after the extraction of wisdom teeth in the literature but, to draw attention to the possibility of mucocele formation after dental surgery, we think that this was a noteworthy case.

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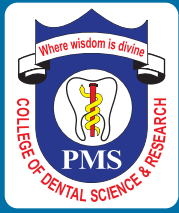
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