International Journal Dental and Medical Sciences Research
Volume 3, Issue 5, Sep-Oct 2021 pp 1232-1236 www.ijdmsrjournal.com ISSN: 2582-6018

# Interdental papilla regeneration- Case report

Ashish Singh , Gaurav Tiwari, Manisha Sharma
*ASHISH SINGH – MN DENTOMAX, GauravtiwariMndentomax*
*ManishasharmaReader Pathology department Kd dental college and hospital*

Submitted: 25-10-2021 Revised: 31-10-2021 Accepted: 03-11-2021

**ABSTRACT**
Open Interdental spaces caused by papillary gingival recession are one of the most common problems faced in dentistry. Surgical and nonsurgical periodontal treatments for regeneration of lost papillary height have been reported with limited success. The purpose of this clinical study is to evaluate the soft tissue augmentation efficacy of a commercially available Hyaluronic acid gel with minimally invasive technique for papillary reconstruction. Hyaluronic acid filler for papillary deficiencies in aesthetic zone using minimally invasive technique has shown promising results. A new technique for reducing or eliminating small papillary deficiencies was evaluated and the results were convincing.
**key words**- Interdental papilla , Hyaluronic acid

## I. INTRODUCTION

Interdental papilla can be defined as the portion of gingiva that is present in between two adjacent teeth. Modern esthetic dentistry involves not only the restoration of lost teeth and their associated hard tissues, but also the management and reconstruction of the encasing gingiva including Interdental papillae. Papillary deficiencies can occur as a result of trauma, inflammatory periodontal diseases and traumatic extractions .The loss of Interdental papilla may cause functional, phonetics and compromising esthetic problems.[1]

Complete and predictable restoration of lost Interdental papillae remains one of the biggest challenges in periodontal reconstructive surgery. The poor aesthetic appearance in the maxillary anterior region as a result of the lost papilla has been a dilemma for both the patient and the therapist.

A non -invasive technique with the use of hyaluronic acid gel has been recently proposed ,this treatment can replace the before - mentioned invasive surgical procedures & may be successfully used for reconstruction of dental papilla at the esthetic zone .[1,2]

**-Hyaluronic acid -**

Hyaluronic acid was discovered in 1934 by Karl Meyer & John Palmer .It was isolated from cow's eye & was named Hyalos ,Hyaluronic acid is a natural substance that is found in soft connective tissue in the fluid surrounding the eye .Used to replace the volume loss of soft tissues

Hyaluronic acid is an extracellular matrix component with main function of replace, tissue healing & repair , this material stimulates cell proliferation ,migration , & angiogenesis ,re-epithelialization & proliferation of basal keratinocytes & reduces collagen & scar tissue formation [3]

**-CASE REPORT**

In this experiment before & after study , 6 samples were collected for clinical examination ,patients presenting to the department of periodontics **K.D Dental college Mathura** with Interdental papilla loss or defects at one or several areas in the anterior maxillary region with some criteria which are-

-Age range 20 -50 year
-Maxillary anterior teeth
-The respective teeth had to be free from caries with no fixed prosthesis or orthodontic appliance
- No consumption of drugs causing gingival hyperplasia
- No history of systemic disease affecting the periodontal status

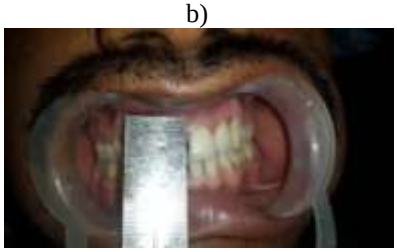
**- CLINICAL EVALUATION-**

On examination Tarnow's class I & II papillary recession[4] was noted between 11,12,13, 21,22,23

International Journal Dental and Medical Sciences Research
Volume 3, Issue 5, Sep-Oct 2021 pp 1232-1236 www.ijdmsrjournal.com ISSN: 2582-6018

fig 1- a)

b)



c)

fig 1- a,b,c showing the Interdental space in anterior region in different patients

Patients were thoroughly informed about the method of conduction of study .A radiograph was obtained from the respective teeth using parallel technique ,& bone crest -contact point distance. was calculated & recorded. , In the next step ,the first phase of periodontal treatment was performed for patients & before the application of gel ,the area was photographed using digital camera, Distance between the tip of papilla to the contact point of two teeth was measured to be less than 5mm


**fig 2- Hyaluronic acid filler**

After the administration of local anesthetic agent, hyaluronic acid gel was injected at the respective sites 2-3 mm apical to the coronal tip of papilla , the patients were discharged &requested not to brush their teethat the day of injection & resume oral hygiene the day after using a soft toothbrush at the anterior teeth & place it coronal to gingival margin ,patients were asked not to use dental floss at the treatment sites , Three weeks later the treatment area was photographed again.

**1-If the black triangle was not observed at the Interdental space patient would be followed up at 3 & 6 months**

**2- If the black triangle was observed at the Interdental space another gel injection would be performed & in case of no improvement**

International Journal Dental and Medical Sciences Research
Volume 3, Issue 5, Sep-Oct 2021 pp 1232-1236 www.ijdmsrjournal.com ISSN: 2582-6018

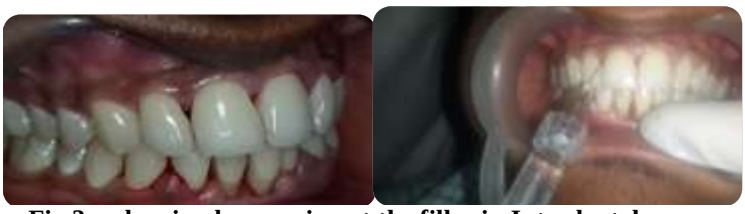


**Fig 3- showing how we insert the filler in Interdental space**

## II. RESULTS -

Subsequent clinical measurements were recorded on the 15th day , 1 months & 2 months after first set of injection .At the base line the mean distance between the tip of the papilla to the contact point was upto 5mm in 5 patients & in one patient distance this distance is more than 7mm to check the results .On the 15day of the first set of injection the mean distance reduced to 4.5mm .&after 1 month reduced upto 4 mm .In one patient (7mm) at 1months there is further placement of injection for better results

At the end of 8week/ 2 months mean2-3mm gain in the papillary gingival height was achieved through HA injection , This gain completely filled the black triangle

**Patient - A** **Patient - B**


**Fig 4-** Initial image before adding filler distance from tip to contact point -5mm

**Fig 5-** Image after adding filler at 15 days & after 2 months

after 15 days

International Journal Dental and Medical Sciences Research
Volume 3, Issue 5, Sep-Oct 2021 pp 1232-1236 www.ijdmsrjournal.com ISSN: 2582-6018

After 2 months total generation of papilla occur

| No of patient | Initial gap in mm | AT 15 days Gain in mm | AT 1 month gain in mm | AT 2 month gain in mm |
|---|---|---|---|---|
| Patient 1 | 5mm | 0.5 | 1.5 | 2 |
| Patient 2 | 5.5mm | 1 | 1.5 | 2.5 |
| Patient 3 | 4mm | 0.5 | 1.5 | 1.5 |
| Patient 4 | 5mm | 0.5 | 2 | 2 |
| Patient 5 | 5mm | 0.5 | 1.5 | 1.5 |
| Patient 6 | 7mm | 1 | .5 | 1.5 |

Patient [6]- having Gap of 7mm is chosen to see the effect of filler in case of defect more than 5mm . after 2 months recall of this patient there is some promising result in generation of papilla

## III. DISCUSSION-

The study results demonstrated that application of hyaluronic acid gel was successful for interdental
papilla reconstruction at 2 months follow up. Rate of interdental papilla reconstruction at the maxillary anterior region was significant compared to baseline

Esthetic problemafter the loss of Interdental papilla especially following periodontal surgeries have
been extensively reported in the literature .In order to resolve this issue, several methods have been proposed to fill upthis space including periodic curettage ,Beagle's technique a combination of Roll technique and papilla preservation and pedicle flap (comprising of a semilunar incision and a coronally advanced flap)

However, these techniques are all invasive and mostly unpredictable.Application of non-invasive techniques such as the use of commercially available hyaluronic acid gel can replace the conventional invasive methods.[5,6,7]

Studies suggest that traditional surgical techniques for papilla regeneration requiremultiple repetitions to obtain optimal results, which tend to cause patient incompliance and inconvenience Also these techniques report to be technique sensitive and cost the patient with respect to time and money. Hyaluronic acid fillers are used to replace the volume loss of soft tissues. Hyaluronic acid have been manufactured in the form of gel and is

commercially supplied as Hyalaform,Restylane,Juvederm,IAL-ACP,Perlene etc. They are present in linear and cross linked form. The cross linked form may be present in particulate or non-particulate form. They have a low potential for allergic reaction, are easy to perform and cause less discomfort to the patients. When this gel is injected, it acts like an inflated cushion to support soft tissues that may have lost volume. It also helps to bind water to the surface of skin. The use of dermal fillers in interdental papillary augmentation is very scarcely reported in the literature.[8]

Hyaluronic acid filler for papillary deficiencies in aesthetic zone using minimally invasive technique has shown promising results. A new technique for reducing or eliminating small papillary deficiencies was evaluated and the results were convincing than other.[9,10]

At 2months follow up, they demonstrated significant improvement. They reported this result in patients with type I/II Tarnow classification. Thus, considering the traumatic and invasive nature of the mentioned method, use of a safer and less invasive technique such as the application of hyaluronicacid gel can be considered as a suitable alternative. It should be noted that hyaluronic acid isan efficient material for cell proliferation, migration and angiogenesis and plays an important role in tissue repair and reduction of scar formation[11,12]

## IV. CONCLUSION

Hyaluronic acid has been used for more than 20 years in many products throughout the world. Because of its biocompatibility, biodegradability, and readily modified chemical structure, HA has been extensively investigated in drug-delivery applications. . As a consequence of the many functions attributed to Hyaluronan during wound healing, advances have been made in the development and application of Hyaluronan-based biomaterials in the treatment of various inflammatory conditions. Hence, further long-term studies with better standards such as application time, quantity of application, different forms and concentration needs to be carried out for better understanding of therapeutic effect of HA. Some people apply hyaluronic acid to the skin for healing wounds, burns, skinulcers, and as a moisturizer. There is also a lot of interest in using hyaluronic acid to prevent the effects of aging. In fact, hyaluronic acid has been promoted as a "fountain of youth."

## REFERENCES:

1) Kim JE, Jonathan MS: Hyaluronic acid fillers: History and overview. Facial plastsurg.FPS 2011 ;( 27)6:523-8.
2) Bray D, Hopkins C and Roberts D: A review of dermal fillers in facial plasticsurgery.Curr open otolaryngology 2010; 18:295-302.
3) Beasley KL, Weiss MA, Weiss RA: Hyaluronic acid fillers; a comprehensive review. Facial PlastSurg 2009; 25:86-94.
4) Nordland WP, Tarnow DP: A classification system for loss of papillary height.J periodontal 1998; 69:1124-1126.
5) Chang LC: The Association between embrasure morphology and central papilla recession: A Non Invasive Assessment method. Chang Gung Med J 2007; 30:445-52.
6) Brandt FS, Cazzaniga A: Hyaluronic acid Fillers. Facial Plast surgery clin North Am 2007; 15:63-76.
7) Rohlich RJ, Ghavami A, Crosby MA: The role of hyaluronic acid fillers in facial cosmetic surgery: review and technical considerations. PlastReconstrSurg 2007; 120:41-54.
8) Baumann LS et al: Comparison of smooth gel Hyaluronic Acid with cross linked bovine collagen: A multicenter, double masked, randomised, within subject study. American society for Dermatologic Surgery 2007; 33:128-135.
9) Zetu L, Wang HL: Management of interdental/interimplant papilla. J Clin Periodontal 2005;332:831-839
10) Biesman B. Soft tissue augmentation using Restylane. Facial Plast surgery 2004; 20:171-177.
11) Han TJ, Takei H: Progress in gingival papilla reconstruction. JPeriodontal 2000, 1996; 11:65-68.
12) Blatz MB, Hurzler MB, Strub JR: Reconstruction of lost interdental papilla-surgical and non surgical technique. Int J Periodontics restorative Dent 1999; 19:395-406.