

A JOURNEY FROM PALMISTRY TO PERIODONTITIS

¹Dr. Deepti Gattani, ²Dr. Nupur Kar, ^{*3}Dr. Jigyasa Sahu and ^{*4}Dr. Apoorva Salve

¹Professor, PG and Phd Guide, Department of Periodontology, Swargiya Dadasaheb Kalmegh Smruti Dental College and Hospital, Hingna, Nagpur.

²nd Year Post Graduate Student, Department of Periodontology, Swargiya Dadasaheb Kalmegh Smruti Dental College and Hospital, Hingna, Nagpur.

³rd Year Post Graduate Student, Department of Periodontology, Swargiya Dadasaheb Kalmegh Smruti Dental College and Hospital, Hingna, Nagpur.

⁴st Year Post Graduate Student, Department of Periodontology, Swargiya Dadasaheb Kalmegh Smruti Dental College and Hospital, Hingna, Nagpur.

***Corresponding Author: Dr. Jigyasa Sahu**

³rd Year Post Graduate Student, Department of Periodontology, Swargiya Dadasaheb Kalmegh Smruti Dental College and Hospital, Hingna, Nagpur.

Article Received on 03/09/2021

Article Revised on 22/09/2021

Article Accepted on 13/10/2021

ABSTRACT

Background: The outer surface of lip has many ridges and depressions forming a pattern called lip prints, the study of which is called as Cheiloscopy. Study of epidermal ridge patterns found on thumbs is called Dermatoglyphics. Patients of chronic periodontitis exhibit a strong familial predisposition of periodontal breakdown. **Aim:** The present study was conducted to determine the correlation between Cheiloscopy and Chronic periodontitis, and Dermatoglyphics and Chronic periodontitis. **Material and Method:** The present cross-sectional study, comprised of 60 subjects in the age group 30- 55 years irrespective of gender were categorized as Study group (n= 30) comprising of patients diagnosed clinically, with chronic periodontitis having Probing Pocket depth PPD>4mm in more than 30 % sites and control groups (n=30). In both the groups, thumb prints and lip prints were evaluated. **Results:** The statistical analysis of the data revealed, significant association between the left thumbprint pattern (left loop pattern) and branched lip print type in subjects having chronic periodontitis. **Conclusion:** Dermatoglyphics and Cheiloscopy may serve as an early predictor/diagnostic tool in identifying high risk group individuals of chronic periodontitis.

KEYWORDS: Cheiloscopy, Chronic Periodontitis, Dermatoglyphics.

INTRODUCTION

For centuries, people have been fascinated with features of hands and lips. Recent scientific studies have shown that these can be the potential indicators for several diseases such as cleft lip, cleft palate^[1], Type 2 Diabetes mellitus^[2], sex determination^[3], hypertension^[4], blood group prevalence^[5] etc. As a Periodontist, the most useful prediction is the diagnosis of periodontal disease.

Diagnosis of chronic periodontitis can be done clinically by the presence of Bleeding on probing, Probing pocket depth, Clinical attachment level, by the presence or absence of mobility and radiographically by the presence of bone loss (horizontal /vertical). Also, genetic susceptibility predisposes the individual to periodontal disease. Various diagnostic methods have been developed to ascertain the genetic association of periodontal disease but are expensive, technique sensitive and availability is an issue. Therefore search for

the newer, screening tools that can aid in the early diagnosis of the periodontal disease and thus intervention are in the forefront.

Dermatoglyphics and Cheiloscopy is one such evolving science that has shown possible link with the periodontal disease.^[15]

Cheiloscopy is the science of studying various patterns on the surface of lips.^[6] In 1967, Suzuki made a scientific investigation of the measurement of the lips and the used rouge in his study to extract useful data from the lips, the first use of lip prints was found in forensics. In 1971, Suzuki and Tsuchihashi devised their own classification, which was used in this current study.^[8]

Suzuki and Tsuchihashi classification (1971)

Type I: This typically shows a clear-cut groove running vertically across the lip.

Type II: This type of lip prints show a branched groove across the lip.

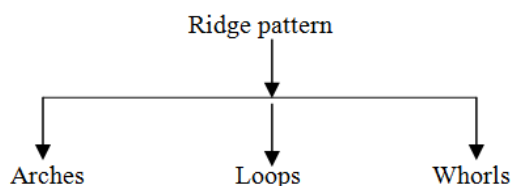
Type III: This type of lip print shows a intersected groove across the lip.

Type IV: This type of lip print shows a reticular pattern

Type V: This type of lip print shows other patterns

Dermatoglyphics was first coined by Cummins in 1926, which refers to the study of dermatoglyphics – the patterns on the surface of the hands and feet. Dermal ridge patterns are fully formed 16 weeks after conception and do not usually change during the rest of life. Since epidermal ridge patterns form early in fetal development and remain unchanged throughout life unusual dermatoglyphics may indicate genetic or chromosomal abnormalities present in the patient.^[9]

The very first attempt to study the groove pattern on the fingers was made by Sir Francis Galton in the year 1880 and his classification was later refined by Dr. Edward Henry about 10 years later, who introduced the concept of 'delta' and 'core' points.^[11]



Several studies done earlier support the hypothesis that Dermatoglyphics and Chieloscopy can serve as a predictor for periodontitis. The present study is an attempt to find any specific thumb dermatoglyphics and lip prints in chronic periodontal disease and compare it with periodontally healthy individuals.

METHOD AND MATERIAL

Study design-Crosssectional study

Study setting- The present cross-sectional study was conducted in the regular outpatient department of Periodontology, Swargiya Dadasaheb Kalmegh Smruti Dental College And Hospital, Hingna, Nagpur. Institutional ethical clearance was obtained for the study. The participants were explained about the procedure and an informed consent was signed by them.

Patients were selected based on the criteria laid down for the study.

Inclusion criteria

- Age group of 30-65 years
- Patients diagnosed with with chronic periodontitis
- Patients with Probing pocket depth PPD >4mm in more than 30 % sites

Exclusion criteria

- Patients with systemic diseases like Diabetes Mellitus, Hypertension, etc

- Pregnant and lactating females.
- Geriatric patients were excluded.

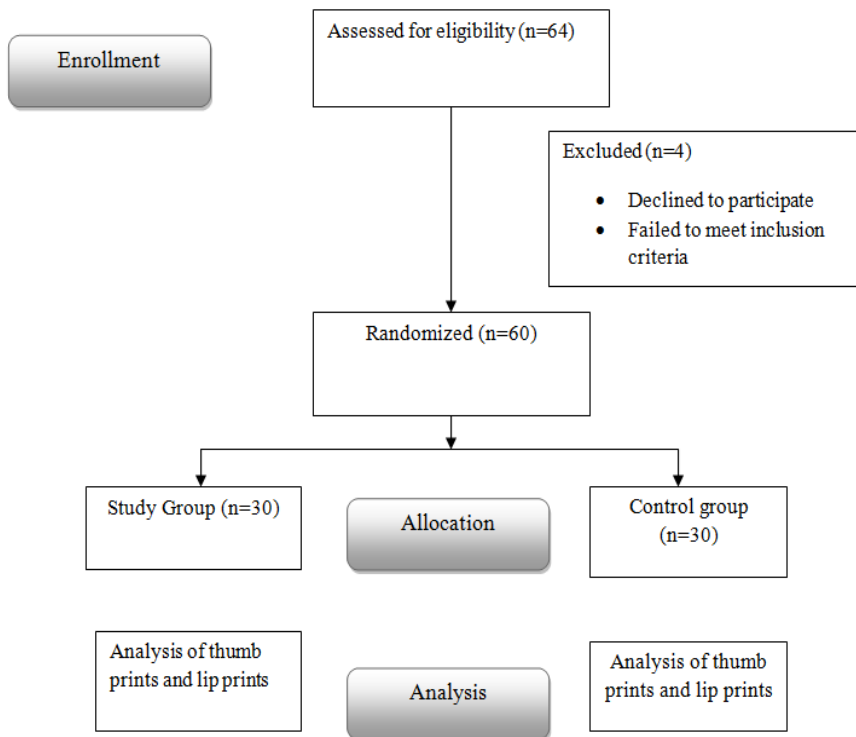
Procedure for recording lip prints

Patients were seated comfortably on the dental chair, after which lips were cleaned and a dark colored lip color was applied on the lips with the help of a swab. A cellophane tape was precut and was used to record the lip prints, which was then subsequently transferred to the case proforma and studied according to the classification mentioned and categorized into various types. Then the lips were cleaned using a wet cotton swabs.

Procedure for recording thumbprints

For recording the thumbprint, patients were instructed to wash their hands. Their thumbs were then lightly pressed upon the ink pad with uniform pressure and these thumb prints were transferred to the case record form which already had lip prints of the same patients. The thumbs of the patient were cleaned using wet cotton.

After collection of the prints and recording the data, it was analyzed by two trained observers with the help of magnifying lens who were blinded of the group allocation to minimize the observer bias.



Consort Flowchart- Figure 1.

RESULTS

Table 1: Distribution of patients in two groups according to lip print type.

Lip Print Type	Study Group	Control Group	χ^2 -value
Type I	10(33.3%)	7(23.33%)	8.94 p=0.06,NS
Type II	13(43.3%)	7(23.33%)	
Type III	0(0%)	6(20%)	
Type IV	3(10%)	5(16.67%)	
Type V	4(13.3%)	5(16.67%)	
Total	30(100%)	30(100%)	

Table 1 shows the distribution of patients in two groups according to lip print type 33.33% of patients in study group and 23.33% in control group had type I lip print pattern, 43.3% in study group and 23.33% in control group had type II, 10% in study group and 16.67% in

control group had type IV and 13.3% of the patients in study group and 16.67% in control group had type V lip print type. By using chi square test statistically no significant difference was found in lip print pattern among patients of two groups (χ^2 -value=8.94,p=0.06).

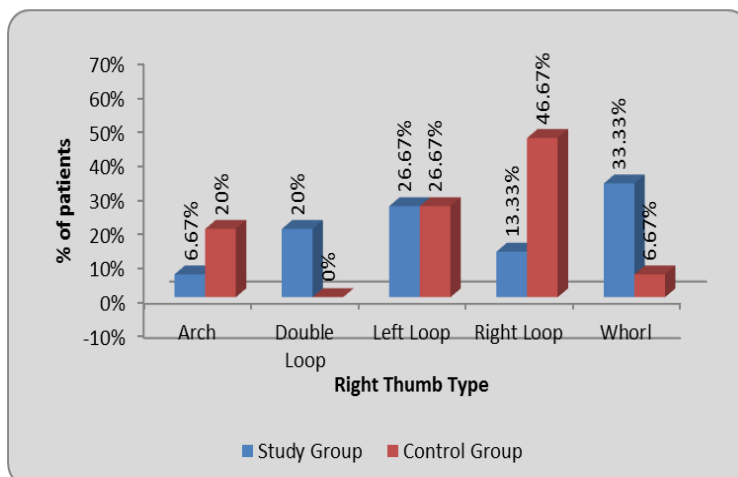


Figure 2: Distribution of patients in two groups according to Right Thumb Type.

Figure 2 shows the distribution of patients in study and control group according to their right thumb type, 6.67% of patients in study group and 20% in control group had arch type, 20% in study group had double loop, each 26.67% in study group and in control group had left loop

and 13.3% of the patients in study group and 46.67% in control group had right loop patterns. By using chisquare test statistically significant difference was found in right thumb type pattern among patients of two groups (χ^2 -value=18.89, $p=0.0008$).

Table 2: Distribution of patients in two groups according to Left Thumb Type.

Left Thumb Type	Study Group	Control Group	χ^2 -value
Arch	1(3.33%)	6(20%)	6.50 $p=0.16, NS$
Double Loop	4(13.33%)	2(6.67%)	
Left Loop	11(36.67%)	10(33.33%)	
Right Loop	8(26.67%)	10(33.33%)	
Whorl	6(20%)	2(6.67%)	
Total	30(100%)	30(100%)	

Table 2 has distribution of patients in study and control group according to left thumb type. 3.33% of patients in study group and 20% in control group had arch type, 13.33% in study group and 6.67% in control group had double loop, 36.67% in study group and 33.33% in control group had left loop and 26.67% of the patients in study group and 33.33% in control group had left loop patterns. By using chisquare test statistically no significant difference was found in right thumb type pattern among patients of two groups (χ^2 -value=6.50, $p=0.16$).

STATISTICAL ANALYSIS

Statistical analysis was done by using descriptive and inferential statistics using chi square test and student's unpaired t test and software used in the analysis were SPSS 24.0 version and Graph Pad Prism 7.0 version and $p < 0.05$ is considered as level of significance.

DISCUSSION

Periodontitis is one of the most widespread dental diseases and is associated with several factors such as environmental, systemic, and genetic factors. The current study was conducted with an aim to determine a thumb pattern type and lip print type associated with chronic periodontitis. Periodontitis is a multifactorial disease but might have specific genetic background.^[10] This study will help in giving us that connection of genetic factor and periodontitis.

This study's results shows us that both left thumb and right thumb has increased number of patients with loop in study group as compared with their control group which are in accord with the results from the study of Sugumari Elavarasu, et al. However S. elavarasu et al has only compared results with right thumb prints. The added disadvantage is that it has only classified thumb prints as arch, whorl and loop.^[9]

In a study by Chatterjee G et al (2017) 37.53% of patients with chronic periodontitis had ulnar loop pattern, which was in accordance with our study where 36.67% of left loop patterns were found in left thumb (which is

the definition of ulnar loop pattern). Also, the right and left arch type pattern was found in the least percentage.^[11]

In a study by Mukherjee E (2018) et al, they found that Reticular lip print pattern (40.4%) was most commonly found in the study subjects. Moreover, left loop pattern (48%) was most common for the left thumbprint and right loop pattern (53%) for the right thumbprint. In contrast we found in our study that branched pattern or type II was the most common type of lip print found in the study group. Also the study by Mukherjee E et al has its main outcome on carious patients rather than chronic periodontitis.^[12]

Vaidya P et al has shown in his study that more whorls and less arches in both right and left hands in patients with chronic periodontitis was found which is in accordance with our study which shows less number of arches.

Vaidya et al, Sowmya et al and Atasu M.^[13,14] all concluded in their study, that individuals with periodontitis had increased incidence of whorl pattern on both the right and left thumbs which is not in accordance with our study.^[13]

The differences in the results, compared to those of previous studies are possibly due to the difference in classification systems and analysis methods used.

CONCLUSION

Thus, the present study proves that Dermatoglyphics and Cheiloscopy both are very powerful tools for early diagnosis, treatment, and better prevention of Chronic.

Periodontitis. From the present study, it was found that there is a strong association between Type II lip print pattern and chronic periodontitis. It was also revealed that there is a strong association of left loop pattern in left thumb and whorl pattern in right thumb and Chronic Periodontitis. However, it warrants studies with a larger number of sample size are required to prove the relation

between Dermatoglyphics patterns, Cheiloscopia and Chronic Periodontitis.

REFERENCES

1. Saujanya K, Prasad MG, Sushma B, Kumar JR, Reddy YS, Niranjani K. Cheiloscopia and dermatoglyphics as genetic markers in the transmission of cleft lip and palate: A case-control study. *J Indian Soc Pedod Prev Dent*, Jan-Mar, 2016; 34(1): 48-54. doi: 10.4103/0970-4388.175512. PMID: 26838148
2. Manjusha P, Sudha S, Shameena PM, Chandni R, Varma S, Pandiar D. Analysis of lip print and fingerprint patterns in patients with type II diabetes mellitus. *J Oral Maxillofac Pathol*, May-Aug, 2017; 21(2): 309-315. doi: 10.4103/jomfp.JOMFP_17_16. PMID: 28932046; PMCID: PMC5596687.
3. Ramakrishnan P, Bahirwani S, Valambath S. Assessment of cheiloscopia in sex determination using lysochrome - A preliminary study. *J Forensic Dent Sci.*, Sep-Dec, 2015; 7(3): 195-200. doi: 10.4103/0975-1475.172434. PMID: 26816459; PMCID: PMC4714407.
4. Umana UE, Netete BV, Timbuk JA, Ibegbu AO, Musa SA, Hamman WO. Dermatoglyphics and cheiloscopia pattern in hypertensive patients; a study in Ahmadu Bello University Teaching Hospital, Zaria, Nigeria and Environs. *Int J Sci Res Publ*, 2014; 4: 1-5.
5. Karim B, Gupta D. Cheiloscopia and blood groups: Aid in forensic identification. *The Saudi dental journal*, Oct 1, 2014; 26(4): 176-80.
6. Gowhar O, Ain TS, Sultan S. Cheiloscopia-tool for gender determination. *Forensic Odontol*, 2016; 15: 98-100.
7. Reddy L. An overview in forensic dentistry. *J Adv Dent Res.*, 2011.
8. Devishree G, Gujjari SK. Dermatoglyphic patterns and aggressive periodontal diseases—A possible link. *J Dent Med Sci.*, 2015; 14: 69-70.
9. Elavarasu S, Suthanthiran T, Thangavelu A, Soman P, Muruganathan PK, Santhakumar P. Evaluation of dermatoglyphic patterns in chronic periodontitis patients. *Journal of Indian Academy of Dental Specialist Researchers*, Jul, 2017; 4(2).
10. Swedish Council on Health Technology Assessment. Chronic Periodontitis – Prevention, Diagnosis and Treatment: A Systematic Review (Summary and conclusions) [Internet]. Stockholm: Swedish Council on Health Technology Assessment (SBU); 2004 Oct. SBU Yellow Report No., 169.
11. Chatterjee G, Manohar B, Shetty N, Mathur A, Makhijani B. Dermatoglyphic Patterns and Periodontal Diseases. *Journal of Nepalese Society of Periodontology and Oral Implantology*, Dec 4, 2017; 1(2): 55-9.
12. M Esha, K Freny, D Aumiyo, S. Kaustubh Lips and Fingertips tell it all -Cheiloscopia and Dermatoglyphics as Predictive Factors for Dental Caries and Periodontitis *International Journal Dental and Medical Sciences Research*, May2, 2018; 5: 47-55.
13. Vaidya P, Mahale S, Badade P, Warang A, Kale S, Kalekar L. Dermatoglyphics in periodontics: An assessment of the relationship between fingerprints and periodontal status - A cross-sectional observation study. *Indian J Dent Res.*, Nov-Dec, 2017; 28(6): 637-641. doi: 10.4103/ijdr.IJDR_621_16. PMID: 29256461
14. Atasu M, Kuru B, Firatli E, Meriç H. Dermatoglyphic findings in periodontal diseases. *International journal of anthropology*, Jan 1, 2005; 20(1-2): 63-75.
15. Deotale S, Dubey S, Gattani D. Role of dermatoglyphics as a potential diagnostic marker for periodontitis: A clinical study. *IOSR J Dent Med Sci.*, 2016; 15: 99-103.
- 16.