Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol. 14, Issue 32s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

Prognostic Factor Of Local Recurrence, Metastasis, And Survival Rate In Squamous Cell Carcinoma Of The Lip, Ear, Skin And Comparison Of Retreatment Rotary Files And Ultrasonics For Removing Gutta Percha

Dr. Alkananda Sahoo[1], Dr. Sabahat Hafiz Khan[2], Dr. Shahzaib Nasti[3], Dr. Sagar Haridas Mohkar[4], Dr. Rajan Dhawan[5], Dr. Antarmayee Panigrahi[6]

[1]Reader, Department of Oral and Maxillofacial Pathology, Kalinga Institute of Dental Sciences, KIIT Deemed to be University, Patia, Bhubaneswar - 751024

[2]M.D.S, Dental Surgeon, Maharashtra Public Health Services,Mumbai, Maharashtra, India.

[3]Fellow cleft and craniofacial surgery,INGA health foundation, Srinagar

[4]Reader, Department of conservative dentistry and endodontics, VYWS dental college and hospital Amravati 444602, Maharashtra

[5]Professor & Head, Department of Conservative Dentistry and Endodontics. Maharishi Markandeshwar College of Dental Sciences and Research Mullana (Ambala)

[6]Professor, Department of Pedodontics and Preventive Dentistry, Kalinga institute of dental sciences, KIIT (Deemed to be University)Bhubaneswar Odisha

[*]**Corresponding author:**

Dr. Alkananda Sahoo,

Reader,Department of Oral and Maxillofacial Pathology, Kalinga Institute of Dental Sciences, KIIT Deemed to be University, Patia, Bhubaneswar - 751024

Cite this paper as: Dr. Alkananda Sahoo, Dr. Sabahat Hafiz Khan, Dr. Shahzaib Nasti, Dr. Sagar Haridas Mohkar, Dr. Rajan Dhawan, Dr. Antarmayee Panigrahi, (2025) Prognostic Factor Of Local Recurrence, Metastasis, And Survival Rate In Squamous Cell Carcinoma Of The Lip, Ear, Skin And Comparison Of Retreatment Rotary Files And Ultrasonics For Removing Gutta Percha. *Journal of Neonatal Surgery*, 14 (32s), 2689-2692.

ABSTRACT

Background: This study was conducted to assess the prognostic factors of local recurrence, metastasis, and survival rate in squamous cell carcinoma of the lip, ear, skin and comparison of retreatment rotary files and ultrasonics for removing gutta percha.

Material and methods: In this study, there were 50 cases of squamous cell carcinoma and 50 mandibular premolars with single canal for removing gutta percha had been gathered. The purpose of this study was to assess the prognostic factors for recurrence, metastasis and survival rate of squamous cell carcinoma of ear, skin and lips. The other goal of this study was to assess the comparison of retreatment rotary files and ultrasonics for removing gutta percha. The findings of the carcinoma cases had been studied and tabulated. For retreatment, two groups were made based on the technique of removing gutta percha. The first group comprised of 25 teeth in which ultrasonics were used and the 2nd group comprised of 25 cases in which Neo Endo retreatment rotary files were used. After cleaning all the teeth with 5.25% NaOCl and 17% EDTA, the canals were dried and obturation was done using AH Plus sealer. Neo endo retreatment files and ultrasonics were used to remove the gutta percha. To assess the remaining restoration material in the canals, stereomicroscopic evaluation was done under 100x magnification. The findings had been tabulated. Statistical analysis was conducted using SPSS software.

Results: Tumor size of over 2 cm was seen in 21 cases. This was the most common prognostic factor for recurrence of squamous cell carcinoma. Depth of invasion of over 14 mm was seen in 14 cases. Undifferentiated tumors were also one of the reasons in 11 cases. Perineural invasion and lymphovascular invasion were seen in 5 and 1 case, respectively. It was observed that no modality removed the entire gutta percha from the canal. However, ultrasonics removed more amount of material form the canal in comparison to Neo Endo retreatment rotary files.

Conclusion: The chief prognostic factor for recurrence of squamous cell carcinoma of, ear and akin was found to be the larger tumor size. Other factors were perineural invasion, lymphovascular invasion, depth of invasion and undifferentiated tumor. For removing the gutta percha, ultrasonics proved to be better than retreatment rotary files as the remaining amount of material was more when it was removed using retreatment rotary files.

Keywords: *OSSC, Lip, Ear, Skin, Rotary, Ultrasonics and Gutta Percha.*

1. INTRODUCTION

Oral Cavity Squamous Cell Carcinoma (OCSCC) represents the most prevalent form of cancer within the category of Head and Neck Cancer (HNC), holding the 16th position globally. Consequently, it is classified as one of the most aggressive malignant tumors due to its propensity for metastasis and its elevated recurrence rate.[1]

The incidence of OCSCC ranges from 1% to 4% in Western nations, with a notably higher prevalence observed in underdeveloped Asian countries, where it correlates with a significant mortality rate.[2] The worldwide incidence of OCSCC is approximately 3.90 per 100,000 individuals, while the mortality rate for oral cavity tumors is estimated at around 1.94 per 100,000 people.[4,5]

In light of its substantial global impact, it is clear that addressing OCSCC should be regarded as a critical global health priority. Recent epidemiological data released by the National Cancer Institute (NCI) indicates that the overall survival rate for OCSCC over a five-year period is 63%, with a variation from 83% in the early stages to 38% in advanced stages.[5]

Malignant neoplasms of the external auditory canal (EAC), the middle and inner ear are rare. Squamous cell carcinoma (SCC) is the most common neoplasm of these sites, followed by basal cell carcinoma (BCC), adenoid cystic carcinoma (ACC), ceruminous adenocarcinoma and middle ear adenocarcinoma.[6] While primary neoplasms of the EAC and the temporal bone are uncommon, these structures are more frequently involved by cutaneous squamous cell carcinomas (cSCC) of the pinna, or metastatic cSCC involving the parotid or post auricular lymph nodes, particularly in countries with a fair skinned population and high ultraviolet index.

For the proper three-dimensional (3D) obturation, a coalition of gutta-percha and root canal sealers is the most widely accepted to provide an adequate hermetic seal.[7] Therefore, a successful nonsurgical retreatment will depend on complete removal of both the materials in its entirety from the primary root canal and its accessories to allow proper contact of the chemical irrigants and intracanal medicaments to dentin of root canal walls.[8] Conventional methods of removing gutta-percha are reported to be less efficacious, time consuming with more apical extrusion and more chances of instrument breakage.[9] To overpower these errors, certain new modalities have been advocated for removing root canal filling material such as retreatment rotary files, ultrasonics, and diode lasers.[10]

This study was conducted to assess the prognostic factors of local recurrence, metastasis, and survival rate in squamous cell carcinoma of the lip, ear, skin and comparison of retreatment rotary files and ultrasonics for removing gutta percha.

2. MATERIAL AND METHODS

In this study, there were 50 cases of squamous cell carcinoma and 50 mandibular premolars with single canal for removing gutta percha had been gathered. The purpose of this study was to assess the prognostic factors for recurrence, metastasis and survival rate of squamous cell carcinoma of ear, skin and lips. The other goal of this study was to assess the comparison of retreatment rotary files and ultrasonics for removing gutta percha. The findings of the carcinoma cases had been studied and tabulated. For retreatment, two groups were made based on the technique of removing gutta percha. The first group comprised of 25 teeth in which ultrasonics were used and the 2nd group comprised of 25 cases in which Neo Endo retreatment rotary files were used. After cleaning all the teeth with 5.25% NaOCl and 17% EDTA, the canals were dried and obturation was done using AH Plus sealer. Neo endo retreatment files and ultrasonics were used to remove the gutta percha. To assess the remaining restoration material in the canals, stereomicroscopic evaluation was done under 100x magnification. The findings had been tabulated. Statistical analysis was conducted using SPSS software.

3. RESULTS

Table 1: Prognostic factors of OSSC

Prognostic factors	Number of cases
Tumor size> 2 cm	21
Depth of invasion> 4mm	14
Undifferentiated tumor	11
Perineural Invasion	05
Lymphovascular invasion	01

Tumor size of over 2 cm was seen in 21 cases. This was the most common prognostic factor for recurrence of squamous cell carcinoma. Depth of invasion of over 14 mm was seen in 14 cases. Undifferentiated tumors were also one of the reasons in 11 cases. Perineural invasion and lymphovascular invasion were seen in 5 and 1 case, respectively.

Table 2: Comparison of residual restoration material after removing gutta percha using retreatment rotary files and ultrasonics

Groups	N	Mean	SD
Group 1 (Ultrasonics)	25	1.745	0.59
Group 2 (Neo endo retreatment rotary files)	25	0.605	0.41

It was observed that no modality removed the entire gutta percha from the canal. However, ultrasonics removed more amount of material form the canal in comparison to Neo Endo retreatment rotary files.

4. DISCUSSION

Oral cancer, including lip cancer, is one of the most common cancers around the world, falling within the top ten cancers in several countries, with an estimated 377,713 new cases in 2020. When analysed together with the oropharynx, these two locations comprise approximately 476,125 new cases, accounting for 2.5% of all cancer cases and 225,900 deaths (177,757 deaths for oral cancer and 48,143 deaths for oropharyngeal cancer).[11,12]

Ultrasonic devices working at a frequency between 20 and 45 KHz in a linear, back-and-forth motion produces frictional heat that thermo-softens the gutta-percha, disintegrates the sealer, and breaks the bond between the sealer and the gutta-percha.[13] During the oscillation of the tip, energy is transmitted from the tip to the solvent by means of ultrasonic waves which leads to the rapid movement of fluid around the tip and the creation of bubbles which expand and contract, leading to activation of solvent.

This study was conducted to assess the prognostic factors of local recurrence, metastasis, and survival rate in squamous cell carcinoma of the lip, ear, skin and comparison of retreatment rotary files and ultrasonics for removing gutta percha.

Louredo BV et al[14] conducted a study in which the epidemiological and clinical profile and survival outcomes of lip, oral cavity, and oropharyngeal SCC was studied in São Paulo State, Brazil. The clinicopathological data of 12,099 patients with lip, oral cavity, and oropharyngeal SCC were obtained from hospital cancer registries of the Fundação Oncocentro de São Paulo, Brazil (2010-2015). Survival rates and other analyses were performed using SPSS software. A clear male predominance was observed, particularly for patients with oropharyngeal SCC (88.3%). The average age of patients was higher for lip cases (65 ± 13.5 years) compared to other sites. The schooling level was low for most patients, especially in lip cases (87.9%). Most of the patients with oral cavity (71.8%) and oropharyngeal (86.3%) SCC had advanced-stage (III-IV) disease. However, the majority of lip cases (83.3%) were at an early stage (I-II). Surgical excision was the main treatment for lip (72%) and oral cavity SCC (23.5%), and chemoradiotherapy was the main treatment for oropharyngeal SCC (40.2%). The 5-year overall survival (OS) for patients with lip, oral cavity, and oropharyngeal SCC were 66.3, 30.9, and 22.6%, respectively. Multivariate analysis revealed that the determinants of OS were different for lip, oral cavity, and oropharyngeal SCC, except for those at the clinical stage, which was an independent predictor for all sites. OS-independent determinants varied according to the affected site. Oral cavity and oropharyngeal SCC presented worse survival rates than those for lip SCC.

Hammad et al[15] reported that the Neoendo group (Orikam) displayed a significantly lesser amount of residual root canal filling material compared to ProTaper Universal retreatment rotary files (Dentsply Maillefer), R-Endo (Micro-Mega), and the H-Files (Dentsply Maillefer). (Parallelogram cross section increases cutting efficiency.)

This study was conducted to assess the prognostic factors of local recurrence, metastasis, and survival rate in squamous cell carcinoma of the lip, ear, skin and comparison of retreatment rotary files and ultrasonics for removing gutta percha.

5. CONCLUSION

The chief prognostic factor for recurrence of squamous cell carcinoma of, ear and akin was found to be the larger tumor size. Other factors were perineural invasion, lymphovascular invasion, depth of invasion and undifferentiated tumor. For removing the gutta percha, ultrasonics proved to be better than retreatment rotary files as the remaining amount of material was more when it was removed using retreatment rotary files.

REFERENCES

[1] Chamoli A., Gosavi A.S., Shirwadkar U.P., Wangdale K.V., Behera S.K., Kurrey N.K., Kalia K., Mandoli A. Overview of oral cavity squamous cell carcinoma: Risk factors, mechanisms, and diagnostics. Oral Oncol. 2021;121:105451.

[2] Bugshan A., Farooq I. Oral squamous cell carcinoma: Metastasis, potentially associated malignant disorders, etiology and recent advancements in diagnosis. F1000Research. 2020;9:229.

[3] Liu K., Lin C., Zhang L. Novel Prediction Models for Patients With Oral Squamous Cell Carcinoma at Different Anatomical Sites. J. Oral Maxillofac Surg. 2021;79:2358–2369.

[4] Peres M.A., Macpherson L.M.D., Weyant R.J., Daly B., Venturelli R., Mathur M.R., Listl S., Celeste R.K., Guarnizo-Herreño C.C., Kearns C., et al. Oral diseases: A global public health challenge. Lancet. 2019;394:249–260.

[5] Al Feghali K.A., Ghanem A.I., Burmeister C., Chang S.S., Ghanem T., Keller C., Siddiqui F. Impact of smoking on pathological features in oral cavity squamous cell carcinoma. J. Cancer Res. Ther. 2019;15:582–588.

[6] Allanson BM, Low TH, Clark JR, Gupta R. Squamous Cell Carcinoma of the External Auditory Canal and Temporal Bone: An Update. Head Neck Pathol. 2018 Sep;12(3):407-418.

[7] Nair PN. On the causes of persistent apical periodontitis: A review. Int Endod J 2006;39:249-81.

[8] Kasam S, Mariswamy AB. Efficacy of different methods for removing root canal filling material in retreatment – An in-vitro study. J Clin Diagn Res 2016;10:C06-10. 6.

[9] Das S, De Ida A, Das S, Nair V, Saha N, Chattopadhyay S. Comparative evaluation of three different rotary instrumentation systems for removal of gutta-percha from root canal during endodontic retreatment: An in vitro study. J Conserv Dent 2017;20:311-6.

[10] Tay FR, Pashley DH. Monoblocks in root canals: A hypothetical or a tangible goal. J Endod 2007;33:391-8.

[11] Kasam S, Mariswamy AB. Efficacy of different methods for removing root canal filling material in retreatment – An in-vitro study. J Clin Diagn Res 2016;10:C06-10.

[12] Koçak MM, Koçak S, Türker SA, Sağlam BC. Cleaning efficacy of reciprocal and rotary systems in the removal of root canal filling material. J Conserv Dent 2016;19:184-8.

[13] Wu MK, Fan B, Wesselink PR. Leakage along apical root fillings in curved root canals. Part I: effects of apical transportation on seal of root fillings. J Endod 2000;26:210-6.

[14] Louredo BV, Vargas PA, Pérez-de-Oliveira ME, Lopes MA, Kowalski LP, Curado MP. Epidemiology and survival outcomes of lip, oral cavity, and oropharyngeal squamous cell carcinoma in a southeast Brazilian population. Med Oral Patol Oral Cir Bucal. 2022 May 1;27(3):e274-e284.

[15] Hammad M, Qualtrough A, Silikas N. Three-dimensional evaluation of effectiveness of hand and rotary instrumentation for retreatment of canals filled with different materials. J Endod 2008;34:1370-3.