

Comparison of Soft Tissue Diode Laser Versus Scalpel For Biopsy Of Oral Soft Tissue Lesions

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ABSTRACT: AIM- To compare soft tissue diode laser incision with scalpel incision after oral soft tissue biopsy in terms of duration of incision, hemostasis, duration of excision and post operative pain.

MATERIAL AND METHODS- This study was conducted in 20 patient (10 in each group) fulfilling the inclusion criteria were included in laser and scalpel group. The patient were evaluated for patient comfort, bleeding, time taken for excision, postoperative pain and discomfort. The excised sample was sent for histopathology analysis.

RESULTS -The mean time taken was statistically similar in both the groups. Distribution of patient comfort was statistically not significant. Healing was uneventful in both the groups. In the histological parameters, there was loss of architecture in epithelium in 70% of cases in the laser group. In the same group, there was loss of architecture in 75% of the samples.

Conclusion: Both techniques seen to be equally effective in performing excisional biopsies of oral benign lesions. Laser has the advantage of maintaining a bloodless field and avoidance of suturing. However, due to the associated thermal effect, there may be minor loss of histological architecture.

I. INTRODUCTION

Biopsy is one of the important procedure for diagnosis and treatment planning of any surgical speciality. It consists of histopathological examination to obtain certain diagnosis.¹

Most of the oral exophytic lesions are more reactive than neoplasia. Different type of treatment for oral soft tissue lesions include scalpel excision, electrosurgery and laser surgery.³ Scalpel is routinely advised because of economy, ease of use and minimal damage to adjacent tissue however it does not provide good hemostasis which creates complications during treatment of highly vascular tissue. There are other complications associated such as difficulty in wound healing, deep anaesthesia, swelling scarring and post surgical pain.

Diode lasers have advantages such as less bleeding, scarring, reduction in post operative pain and infection swelling and reduction in operating time.

Diode lasers are absorbed by pigmented tissue and haemoglobin and it transmits energy to the cells by warming coagulating welding drying vapourization and protein denaturation.⁴

Diode Lasers can also be considered as good modality even for very large lesions which are difficult to assess by conventional surgery³.

However due to thermal effect of diode laser the incisional margin of tissue sample can be altered affecting the histopathology.³

The aim of this study is to compare efficacy of soft tissue diode laser and scalpel to perform oral biopsies

II. MATERIAL AND METHODS

AIMS AND OBJECTIVES

AIM-To Compare soft tissue diode laser incision with scalpel incision after oral soft tissue biopsy in terms of duration of incision, hemostasis, duration of excision and post operative pain

OBJECTIVES- 1. To compare efficacy of soft tissue diode laser and scalpel in performing biopsy of oral lesions.

2. To evaluate healing process after scalpel and laser biopsy.

3. To evaluate patient comfort in laser and scalpel surgery.

4. To analyse the histology parameters of the specimens obtained.

INCLUSION CRITERIA- Patient with benign intraoral lesions requiring biopsy.

Appropriate clearance for carrying out the study was obtained prior from the intistunal ethics committee.

Each participant were counseled by primary investigator and written consent were obtained.

A total of 20 patients satisfying the inclusion criteria were included in the study.

GROUP 1 Included biopsy taken from oral lesions with scalpel.

GROUP 2 Included biopsy taken from oral lesions with soft tissue diode laser.

Excisional biopsy following standard protocols were performed under local anaesthesia

10 cases patient underwent biopsy using scalpel and suture were placed.

10 cases patient underwent excision with diode laser

For all the lesion which underwent biopsy 0.5 mm of safety margin was considered .

Efficacy of the technique was evaluated by visual assessment of intraoperative bleeding in both the groups and recording of time taken.

Post operative patient comfort was also recorded.

Pain assement was done after 24 hour using a visual analogue scale (VAS).

iHealing was assessed after 1 week.

The excised sample were sent for histopathological reports.

The data collected were tabulated and statistically analysed.

III. RESULTS

The data recorded were subjected to groups for understanding of the results. Results on categorical measurements are presented as number (%) and results continuous measurements are presented as mean \pm standard deviation (minimum-maximum). Significance was evaluated at 5% level of significance. Student's t-test was used to find the significance of study parameters on continuous scale between two groups (intergroup analysis) on metric parameters. Chi-square/Fisher exact test was used to find the significance of study parameters on categorical scale. The comparative results for effectiveness of scalpel versus soft tissue diode laser for excisional biopsies of benign intraoral lesions are as followinferential statistical analysis and descriptive analysis as below.

Intraoperative parameters

1. Patient comfort - In Group I, 35% of patients had a VAS score of 2, 40% of patients with VAS score of 3, 20% of patients with VAS score of 4, and 5% with VAS score of 1. In Group II, 60% of patients had a VAS score of 2, 25% of patients had VAS score of 3, 15% of patients with VAS score of 3, and none had score 1 ($P = 0.759$)

2. Incidence of bleeding - 100% of patients in Group I had bleeding during the procedure, whereas bleeding was absent in Group 2($P < 0.001$)

3. Time taken - In Group I, time taken for the procedure in 25% of patients ranged from 6 to 10 min, in 75% of patients time taken ranged from 11 to 15 min, . The mean time taken in Group I was 10 min. In Group II, time taken for the procedure in 70% of patients ranged from 6 to 10 min, in 30% of patients ranged from 11 to 15 min. The mean time taken in Group II was 7.30 min ($P = 0.900$).

Post-operative parameters

1. Healing - Healing was uneventful in both the groups. In the histological parameters, there was loss of architecture in epithelium in 70% of cases in the laser group. In the same group, there was loss of architecture in 75% of the samples.

Histopathological parameters

1. Epithelium - In Group I, there was no distortion of epithelium in any of the specimen.

In Group II, there was loss of architecture in the epithelium in 75% of the specimens ($P < 0.001$).

IV. DISCUSSION

A comparative study of carrying out excisional biopsy of oral lesions using soft tissue diode laser versus scalpel was done on 20 patients. Group I consisted of 10 patients in which scalpel was used and 10 patients in Group II that is in laser group. Patients aged 20–60 years were included in both the groups. The mean age of patient in Group I was 37.55 and that in Group II was 44.10. The mean age in both the groups was statistically similar. There were 7 males and 3 females in Group I and 4 males and 6 females in Group II. The lesions treated included 8 fibromas (5 in Group I and 3 in Group II), 4 mucoceles (3 in Group I and 1 in Group II), pyogenic granuloma (none in Group I and two in Group II), papilloma (one in Group I and none in Group II), and lipoma (2 in Group I and 3 in Group II). Distribution of diagnosis was statistically similar in both groups with $P = 0.49$. Patient comfort was evaluated using visual analog scale. There was no statistical difference seen in intraoperative discomfort in both groups. Patients in the scalpel group complained a sense of pricking during

suturing. Post-operative discomfort was lesser in laser as compared to conventional surgical procedures[3] which similar to findings reported in a study by Dhabekar et al., in 2010.[4] Bleeding was present only in scalpel group. Diode laser has an coagulation ability with a tolerable damage zone therefore there is no post-operative bleeding.[5] Diode laser has also been reported to be more effective than conventional surgery in the reduction of post-operative pain and intraoperative bleeding.[6] Vessels up to 500 µm in diameter that supplies capillary and small venous vascular lesions are coagulated, which allows in bloc excision of vascular lesions and also laser is highly desirable in patients who have coagulation diseases as there is decreased potential blood loss compared with scalpel surgery.[7] Histological analysis of the epithelium, connective tissue, and presence of artifacts was considered. It is crucial that the right type of laser setting be thought to be employed considered to the fact that distinctive thermal effects are seen in biological tissue. This is the only way to ensure ensuring that there is no destruction to the irradiated tissue.

V. CONCLUSION

It appears that both technique seems to be equally effective in carrying out biopsies of benign oral lesions under the study parameters. Further studies with larger sample size may be carried out in future to elaborate these results. Lasers have the advantage in maintaining the bloodless field and avoidance of suture as well as better post-operative results. However, due to the dangers of associated thermal damage, there may be loss of histological architecture which can be minimized by utilizing the minimum power settings.

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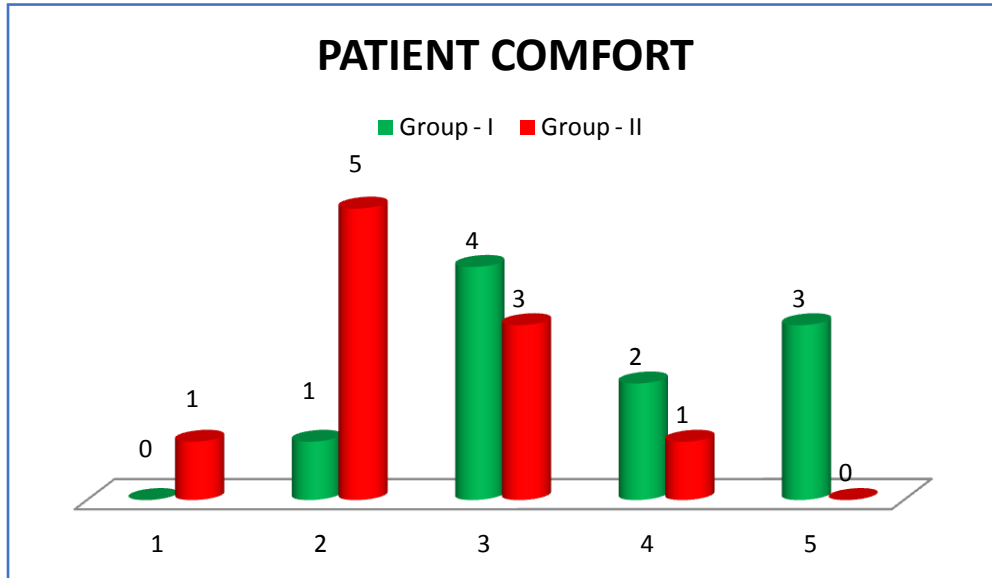


Figure no 1 Showing Comparison between both the group in patent comfort.

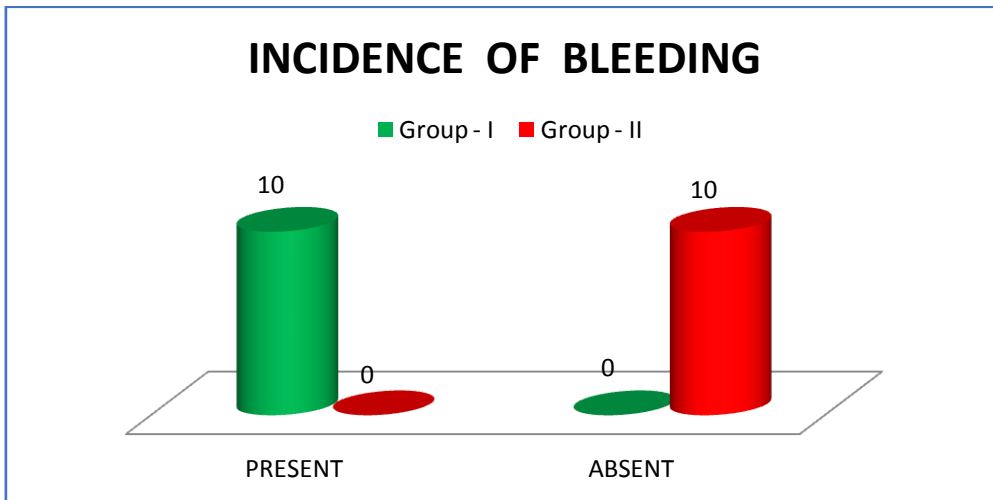


Figure no 2 incidence of bleeding in both the Groups.

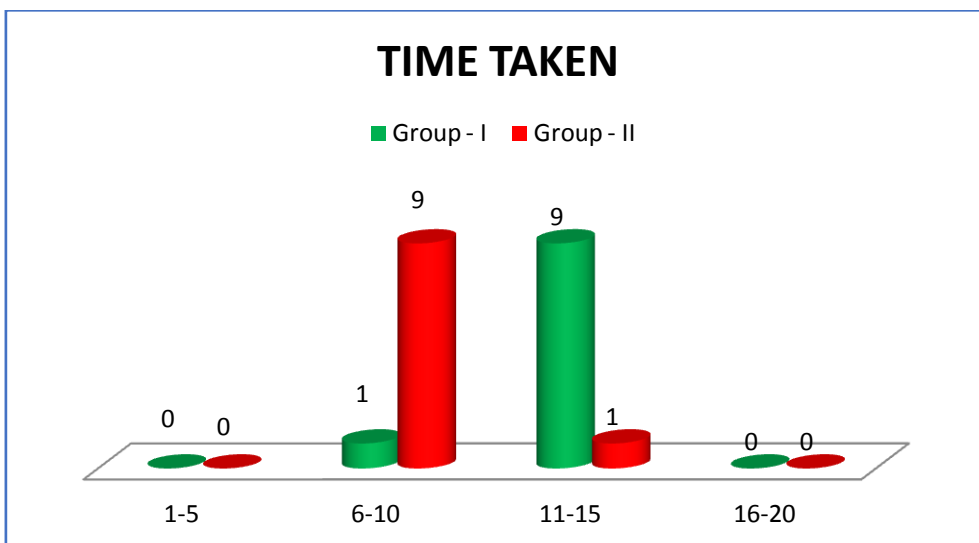


Figure no 3 showing total operative time taken between both the Groups.



Figure no 4 showing Healing pattern of both the Groups

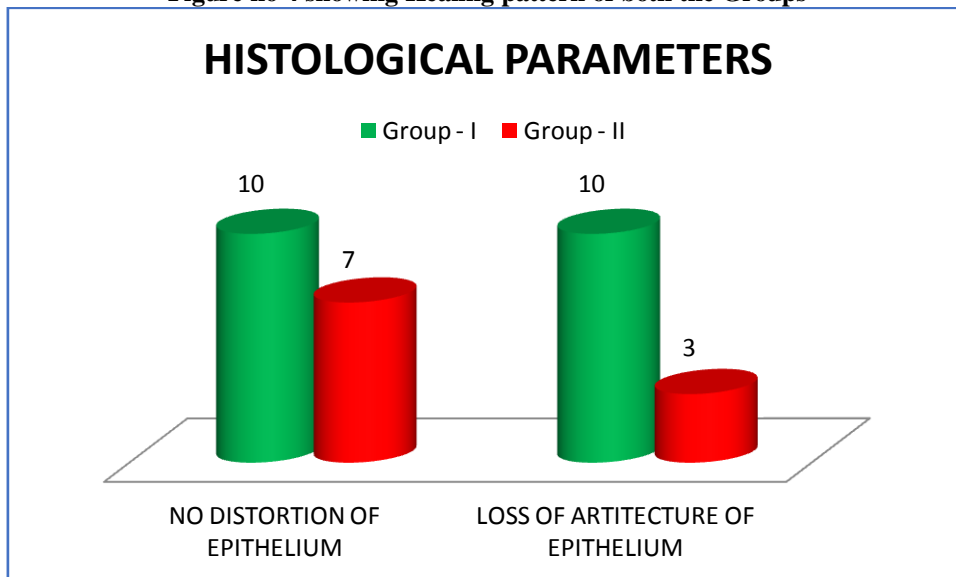


Figure no 5 showing the Histological parameters of both the Groups



Figure 6 Showing Pre And And Post Radiograph Of Idiopathic Leukoplakia After Laser Treatment



Figure 7 Showing Pre And Post Photograph Of Perpheral Ossifying Fibroma After Surigical Tratment

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