

# Comparison between examination with naked eye, curettage and dermoscopy in determining tumor extension before Mohs micrographic surgery

Ali Asilian, Iman Momeni

Department of Dermatology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

## Abstract

Mohs micrographic surgery (MMS) is a technique for the treatment of cutaneous malignancies. Subtle determination of tumor margin would end to fewer stages of surgery. Our aim was to compare these three ways for determining tumor extension before initiation of MMS, examination with the naked eye, dermoscopy and curettage. Sixty patients who had basal cell carcinoma (BCC) in head and neck area were randomized in three groups (curettage, dermoscopy and examination with the naked eye). Each group encompassed twenty patients. The total number of resection stages in MMS was recorded for each patient. Demographic data of the patients and the total number of resection stages in MMS were statistically analyzed. Based on analysis of variance (ANOVA) test results, there was no significant difference for total number of stages in statistical point of view between three groups ( $P$  value = 0.1). In this research, the Pearson correlation coefficient showed that there is a direct relation between the age and resection stages ( $r = 0.19$ ,  $P$  value = 0.04). The Chi-square test showed no differences between three groups in age, residence and radiotherapy history.

**Key Words:** Curettage, basal cell carcinoma, dermoscopy, Mohs micrographic surgery

## Address for correspondence:

Dr. Iman Momeni, Department of Dermatology, Isfahan, Sofe Blvd. Alzahra Hospital, Iran E-mail: [momeni\\_i@yahoo.com](mailto:momeni_i@yahoo.com)

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## INTRODUCTION

Mohs surgery is one of the skin cancer therapeutic methods which are performed in high risk cases. In this procedure, between 1 and 10 mm of tumor margin is resected regarding the tumor pathology type and estimating the tumor subclinical spread extent.<sup>[1]</sup>

Then the resected sample is provided in the form of frozen section and is histopathologically examined in respect to tumoral involvement of margins. In the case of tumoral involvement, re-resection is performed and this process continues until margins and depth become tumor free. There is no standard method for determining tumor margin before the MMS.<sup>[2]</sup>

Curettes permit the surgeon to describe the tumor margin better, before the operation.<sup>[3]</sup> Currently this is controversial that if curettage is necessary before Mohs surgery or not. Some believe that curettage determine the tumor limitations better and some other believe that curette falsely estimates the tumor margin larger and thus makes the defect resulted from the operation more.<sup>[4]</sup>

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Dermoscopy (Epiluminescence Microscopy) is an *in vivo* method for early diagnosis of melanoma and differential diagnosis of skin-pigmented lesions.<sup>[5]</sup> Dermoscopy is a non-aggressive method for skin examination, which makes the examiner able to see the lesion with a magnification up to ten times and view the details that are not seen with the naked eye. In this method, a tool named hand-held dermoscope is placed between the eye and lesion and is regulated. With the progress of technology, a type of dermoscope has been invented, which is known as video dermoscope and depending on its lenses, creates a magnification between 10 and 1000 times and its image is shown on the monitor.<sup>[4]</sup>

Some surgeons describe the tumor margin by visual inspection. They examine the tumor by naked eye and denote the line between normal and abnormal appearing skin.

This study objective is to compare the examination precision of naked eye, dermoscopy and curettage in determining tumor margin before starting the Mohs surgery. It is obvious if one of these methods significantly reduces the total number of tumor resection stages from the statistical point of view; this will be a method which is more acceptable for the patient, reduces the surgery time and will impose fewer costs both on patient and insurance organizations.

## MATERIALS AND METHODS

This study was conducted in the form of unicentral and 60 patients were entered into the study.

Study was performed in the Dermatology Clinic of Alzahra Hospital, Isfahan, Iran in 2011-12.

Patients had basal cell carcinoma (BCC) in head and neck area and all of them had Mohs surgery indication. All of the patients' tumor histopathology was nodular BCC. Other histopathology types and recurrent BCCs did not enter the study. In addition, tumors larger than 1 cm in diameter did not enter the study so. These patients were divided into three groups, randomly. Convenient sampling method was used. Margin was determined in the first group by naked eye, in the second group with curettage and in the third group by dermoscopy. All patients' data including name, surname, study group, the place of living (town or village) and the history of radiation therapy on head and neck area were recorded.

In group examined by naked eye, the researcher examined the lesion margin with eye and marked the margin with skin marker. Then in 3 mm of this line, another line was drawn and the surgery area

was disinfected with povidone iodine 10% solution and anesthetized locally with lidocaine 2% containing epinephrine (1/100000).

In curettage group, the researcher first anesthetized the tumor site and its surrounding area, locally with lidocaine 2% containing epinephrine (1/100000) after disinfecting with povidone iodine 10% solution and then removed the tumoral tissue with a mild curettage using a 4 mm FOX curette and as soon as it reached the normal tissue consistency, stopped the curettage and marked the 3 mm margin of the created defect with skin marker.

In dermoscopy group, the researcher examined the tumor with hand-held dermoscope before the surgery and marked the tumor margin with skin marker. Then another line was drawn in the 3 mm margin of the first line and the area was disinfected with povidone iodine 10% solution and the surgery field was anesthetized locally with lidocaine 2% containing epinephrine (1/100000).

After determining the tumor margin, a 3 mm border was resected and sent for frozen section. If more than one resection was needed, a 2 mm border of the resulted defect from the last-stage resection was removed again and tested. The number of resection stages in each patient was registered and the resulted defect was repaired in appropriate way and at the end the data was analyzed statistically.

Chi-square, ANOVA, independent *t*-test, Pearson correlation and SPSS software (version 18) were used in this study for the statistical analysis and *P* value under 0.05 considered significant.

## RESULTS

In our study, groups had no significant difference regarding age, the place of living, location of the tumor and the history of radiotherapy from statistical point of view. Chi-square test showed that there is no significant difference between three groups regarding place of living [Table 1], the history of radiotherapy [Table 1] and location of the tumor [Table 3]. Analysis of variance (ANOVA) test determined that there is no significant difference between the three studied groups regarding age [Table 1]. This test also showed that the averages of resection numbers in three groups have no significant difference [Table 2]. Independent *t*-test showed that although the average of resection numbers is a little bit higher in patients with previous radiotherapy, this difference is not statistically significant. Pearson correlation coefficient revealed a

**Table 1: Baseline characteristics of the patient participated in the study**

		Group			P value
		Curettage (%)	Visual inspection (%)	dermoscopy (%)	
Age (year)	Mean (SD)	62.6 (13.5)	57.5 (14.9)	63.6 (11.6)	0.317
	(min, max)	(28, 83)	(23, 83)	(41, 82)	
Residence	Residence in town Count (% in group)	13 (65)	16 (80)	12 (60)	0.367
	Residence in village Count (% in group)	7 (35)	4 (20)	8 (40)	
Radiotherapy history	Positive radiotherapy history Count (% in group)	8 (40)	7 (35)	2 (10)	0.08
	Negative radiotherapy history Count (% in group)	12 (60)	13 (65)	18 (90)	

**Table 2: The mean of resection stages in 3 groups. The analysis of variance (ANOVA) between groups showed that the mean of resection stages did not have significant difference between groups. (P value = 0.1)**

Group	Resection stages	
	Mean (SD)	min, max
Curettage	1.9 (0.55)	1, 3
Visual inspection	1.55 (0.51)	1, 2
Dermoscopy	1.65 (0.49)	1, 2

**Table 3: Frequency distribution of tumor site in 3 groups. The Chi-square test showed that frequency distribution of tumor site in the patients did not have significant difference between three groups. (P value = 0.743)**

Location		Group		
		Curettage	Visual inspection	Dermoscopy
Nose	Count (% in group)	10 (50)	8 (40)	9 (45)
Other parts of the face except nose	Count (% in group)	5 (25)	6 (30)	8 (40)
Scalp	Count (% in group)	5 (25)	6 (30)	3 (15)
Total	Count (% in group)	20 (100)	20 (100)	20 (100)

direct relation between age and the mean of resection numbers ( $r = 0.19$  and  $P$  value = 0.04).

## DISCUSSION

This study compared the effect of examination with the naked eye, curettage and dermoscopy on the resection stage numbers in MMS of BCCs of head and neck and revealed that the mean of tumor resection stage numbers in MMS showed no significant difference in three groups, and it indicates that none of these methods have no preference for determining BCC margin before MMS.

Mohs surgery is one of the therapeutic methods of skin cancers including BCCs.<sup>[6]</sup> At the present time there is no standard way for determining lesion border before MMS.<sup>[2]</sup> Obviously if the lesion margin is determined more precisely before surgery, total resection stage numbers will be reduced and if among the methods of determining tumor margin, a method could determine the margin better, it should be used for patient.

In this study, we applied handheld dermoscope for the patients who encompassed dermoscopy group.

In a study on 112 patients with head and neck by Caresana and Giardini, compared to the naked eye, digital (video) dermoscopy showed the lesion margin correctly in a higher percentage of the patients (93% for 78%).<sup>[6]</sup> Also in another study, the margin of BCCs of head and neck in 200 patients were determined with dermoscopy and confirmed with histopathology that dermoscopy had determined the lesion margin in 197 patient exactly.<sup>[7]</sup>

In a study in 2010 by Guardiano and Grande, the effect of visual inspection, curettage and dermoscopy on MMS resection stage numbers have been investigated. In this study, 54 patients had been divided into three groups that the resection numbers averages in groups had no significant difference.<sup>[2]</sup>

According to the definition, curettes let the surgeon to determine the tumor margin better before the surgery.<sup>[1]</sup> Some authors prefer this method for determining the lesion limitations before MMS.<sup>[2]</sup> In a study which was conducted on 166 patients with BCC on head or neck in 2004, conducted by Huang *et al.*, patients were divided to curettage and non-curettage groups randomly and it was revealed that less resection stages are needed in curettage group.<sup>[9]</sup>

Being unicentral study was one of constraints in this study. Also if we could access to a larger sample size, the study precision increased and more exact results were obtained. In the view of this article, authors and broader researches are needed to nominate a standard method for determining tumor borders before MMS. More novel methods such as optical coherence tomography (OCT), should be studied too. OCT is an *in vivo* method for recognition of non-melanoma skin cancer and can be helpful for complete tumor resection and reducing resection stages in MMS. This method was used routinely in ophthalmology for imaging the retina but now the range of its usage has been spread to other cases including skin imaging.<sup>[10]</sup>

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