

Frozen Section Biopsy Reliability for Immediate Reconstruction after Tumors Excision from the Face

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ABSTRACT

The tumor margin is an important surgical concept significantly affecting patient morbidity and mortality. Frozen section could provide reliable guide to avoid unnecessary extensive surgical excision and minimize the need for the second operation for reconstruction [2].

We aimed in this prospective study to apply the frozen section on tissue margins from patients undergoing surgery in the form of excision followed by immediate reconstruction according to reconstructive ladder procedures for face tumors, and to compare it to the gold standard "paraffin wax" as regard both sensitivity and specificity of diagnosis.

In our study we found that Frozen Section Biopsy is reliable for immediate reconstruction after tumors excision from the face, as regard tumor sensitivity and specificity, although there is misinterpretation.

INTRODUCTION

Skin cancers are common due to the high levels of sun exposure, and the particularly high levels of UV radiations [12]. Although there is no statistical studies in Egypt about actual incidence of skin cancer in face or anywhere of the body. Fair skinned people are mostly affected by the sun's radiation and often skin cancers appear later in life, particularly if the individual has had a lot of sun exposure over their lifetime either qualitative or quantitative. They tend to appear in areas that are most exposed to the sun; such as the face, arms, and legs.

The three common types of skin cancer are melanoma, basal cell carcinoma, and squamous cell carcinoma [12]. If patient has a mole that seems atypical in any way-one that changes in size and appearance, bleeds, is asymmetrical, not uniform in color, has ragged edges, or seems unusual in any other way, it is important to have it examined by a doctor, and if diagnosed early, skin cancer can often be completely removed.

Considerable care and skill is required to ensure that scarring is kept to a minimum when moles are removed from the face and neck, and special methods of wound closure, according to reconstructive ladder, are used to ensure that problem are maximally overcome.

Biopsies are used most often to determine whether cancer cells are present, although certain infections and other diseases can be diagnosed as well. A specific type of biopsy procedure called the frozen section was developed in order to make a rapid diagnosis of a mass during surgery [1]. The procedure usually takes only minutes [4].

Intra-operative frozen section is a valuable procedure to confirm the cytological diagnosis and identify malignancy in patients with indeterminate or unsatisfactory cytological diagnosis. With reliance on frozen sections as an intraoperative guide, the possibility of unnecessary extensive surgery and the need for the second operation are considerably lower [2].

So, in this study we assessed frozen section biopsy reliability for immediate reconstruction after tumors excision from the face.

PATIENTS AND METHODS

Forty patients undergoing resection of face tumors were recruited in Al-Azhar University Hospitals, and Al-Haram Hospital (Egypt). Sites of tumors distributed as the following: 6 case in the scalp region, 4 cases in the lower lips, 7 in the upper lips, 14 in the cheek below and lateral to medial canthus, other 5 cases below and medial to lateral canthus, 3 tumors at the distal third of the nose, and one case at the angle of the mandible.

Selective & patients criteria:

- 1- Patient ages ranged from 35-65 years old.
- 2- All patients were complaining of solitary skin lesion only, and any multiple face lesions were excluded.
- 3- Lesion size: Not more than 2cm diameter as regard to BCC and SCC, and no any melanoma lesions were included in this study.
- 4- No palpable draining or sentinel lymph nodes in any case.
- 5- Most cases (30 cases) showed scaly erythematous plaque, ulceration, and color changes.
- 6- Patients complaining of chronic diseases such as DM, autoimmune, hepatic, renal or cardiac diseases were excluded.
- 7- Routine investigations for patient preparation for surgery in the form of CBC, fasting and post-prandial blood sugar, Liver, kidney and prothrombin functions were done.
- 8- Selective investigation of lymphoscintigraphy was performed for suspicious secondary lymph node cases and positive cases were excluded.
- 9- Different Surgical Safety margin excision was decided for each case according to the history, clinical examination, the suspicious of the pathology nature and the frozen section confirmation, with 3-10mm safety margin in BCC and SCC, respectively in less than 2cm tumor size.
- 10- Follow-up for 15 months were done for all cases, unfortunately 5 Cases didn't continue their follow-up after one year.



Fig. (1): 50-years-old female patient presented with upper lateral cheek BCC-Excision and direct closure.



Fig. (2): 65-years-old male patient presented with pigmented BCC-Excision with Rhomboid flap reconstruction.



Fig. (3): 60-years-old male patient presented with SCC at mid upper lip-Excision and direct closure.

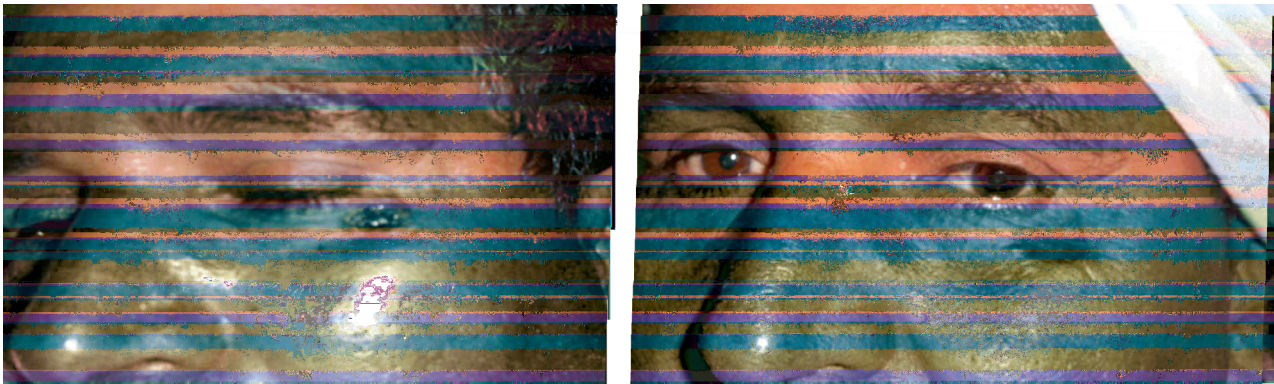


Fig. (4): 60-years-old male patient presented with BCC below left lateral canthus-Closure by skin grafting after BCC excision.

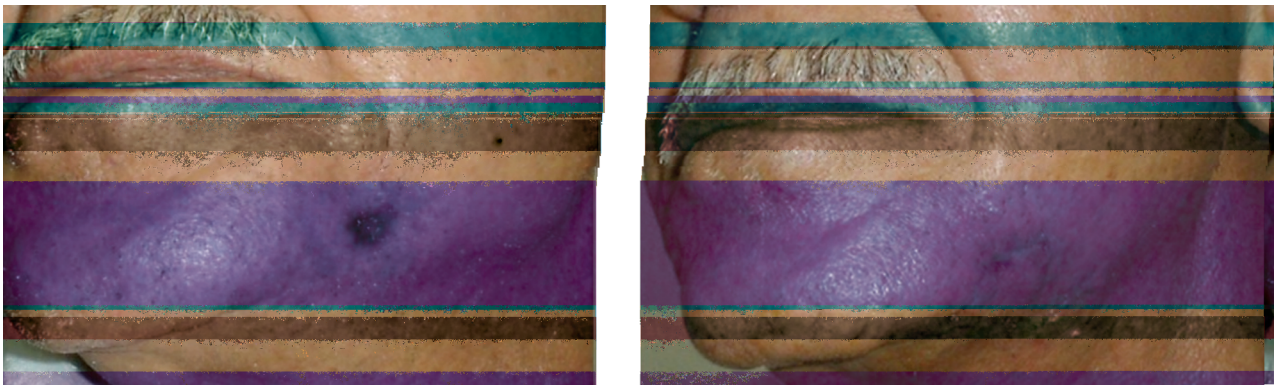


Fig. (5): 60-years-old male patient presented with BCC at left side of the chin-Reconstruction by local rotational flap after excision.



Fig. (6): 65 years old female patient presented by BCC on the right ala of the nose-Reconstruction by nasolabial flap after excision.



Fig. (7): 65 years old male patient presented by SCC in left cheek-Reconstruction by temporetal fasciocutaneous island flap after excision.

Intra-operative diagnosis and decision were as the following: 27 cases were diagnosed as BCC, and 13 as SCC, after intra-operative frozen section biopsy. The surgical margin was first marked by the operator and then followed by surgical excision and an intra-operative frozen section.

An immediate surgical reconstruction was performed in the form of direct closure in 10 cases, skin grafting coverage in 12 cases, and local flap reconstruction in 18 cases.

The histological samples were later scrutinized formally in formalin/tape water ratio 9/1 [3]. The resection margins were re-examined by "paraffin wax", recording both sensitivity and specificity of intra-operative diagnosis.

RESULTS

Using the FSB, we reported the determination of surgical margins at operation and later comparison with paraffin section margins "gold standard" [4]. We were able to obtain a sensitivity of 95% reporting actual determination of malignant from benign lesions and specificity over 95%. Because one case (represents 2.5% of the study) was diagnosed by frozen section biopsy as BCC, it actually diagnosed as SCC by paraffin section.

In our study, follow-up for 12 months was done for all cases, and 37 cases (92.5%) of cases without recurrence, but recurrence occurred in 3 cases (7.5%) of the study: "2 cases (5%) within 6 months and 1 cases (2.5%) within 1 year follow-up". 8 cases were presented with recurrent BCC and 2 cases presented with recurrent SCC. All recurrent cases were operated again.

DISCUSSION

Although Frozen section is a good tool enabling the surgeon to be sure when excising face tumor, but still facing the problem of diagnosis inaccuracy, this agree with Tae et al., early study [5] at 1987 about the subject, and pathologist should be senior with competent experience using every art and pitfalls of embedding tissue for frozen section [6] to avoid intra-operative false negative results, as regard sensitivity or an accurate diagnosis as regard specificity. Inaccurate specificity happened in our study with highly percentage, when one case (represent 2.5% of the series) which was diagnosed by frozen section biopsy as BCC, it actually diagnosed as SCC on top of BCC by paraffin section, this misinterpretation was happened with the Korean Tae [5] study when 18 cases from 4434 case (rep-

resent 0.4% of the study) were diagnosed wrongly by frozen section biopsy but his study was including areas other than the face. BCC surgical treatment usually relies on surgical margins ranging from 3mm to 10mm, depending on the diameter of the tumor. Re-excision may be required if the surgical margin is found to be inadequate on permanent sectioning. For example, in one trial, 35 of 199 (18%) primary BCCs were incompletely excised by the initial surgery and underwent a re-excision [8], fortunately this happened in 10% of our study. In addition many laboratories examine only a small fraction of the total tumor margin pathologically. Therefore, the declaration of tumor-free margins can be subject to sampling error [9], but in our study pathologist had examined carefully peripheral and deep resection margins. In fact no recently another data about these misinterpretations when using frozen section biopsy for face tumors excision and reconstruction.

In our study, follow-up for 12 months was done for all cases, although we were planning for follow-up for 15 months but, unfortunately 5 cases didn't continue their follow-up after one year, so we depended on proper one year follow-up, and 37 cases (92.5%) of the study were followed without recurrence, but recurrence occurred in 3 cases (7.5%) of the study: "2 cases (5%) within 6 months and 1 cases (2.5%) within 1 year follow-up". One case was presented with recurrent BCC and another two cases were presented with recurrent SCC.

Although Rawe et al., [7,11] concluded in their study, that most recurrences of BCC occur within 5 years, and 18% of recurrences are diagnosed beyond that point, while in our study 1 case with recurrent BCC resemble 3.5% incidence of recurrence from the total number of cases diagnosed as BCC had been occurred in the 1st year. In our study 2 cases of SCC from 13 studied case representing (about 16%) developed SCC recurrence and this correlated to Rawe's [7,11] study when he concluded Overall, local recurrence rates after treatment of primary SCCs ranged from about 3% to 23%, depending upon anatomic site and were submitted for recurrence protocol management. No any case of our study was more than 2cm in diameter as skin tumors that are 2cm or larger in diameter, 4mm or greater in depth, or poorly differentiated have a relatively bad prognosis.

The advantage of this technique is making surgeon work in safe and can do any reconstructive procedure as he plan for any ordinary defect visualized in real time allowing the operator to make important informed decisions with regards the

intra-operative resection margin at the time of the surgery. Pathologist should make an effort to avoid errors by careful handling of the specimen, intimate cooperation with the surgeons.

Conclusion:

Frozen Section Biopsy is Reliable for Immediate Reconstruction after tumors Excision from the Face, as regard tumor sensitivity and specificity, although there is 5% sensitivity and 2.5% specificity misinterpretation.

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