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Case Report

One Step Melanoma Surgery (OSMS) Without Using Ultrasonography for Preoperative Tumour Thickness Measurement? - "A Question that Sometimes Drives Me Hazy: Am I or Are the Others Crazy! "

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Abstract

BACKGROUND: One step melanoma surgery is a new surgical approach by which specific groups of patients with cutaneous melanoma may be operated only by or within a single surgical session. Until now, the Bulgarian Society for Dermatologic Surgery (BULSDS) has presented models of clinical behaviour, in which preoperative measurement of tumour thickness in combination with echographic measurement of the locoregional lymph nodes could lead to the conduct of the so-called one-step melanoma surgery. Although this one step surgery currently does not fit in the recommended guidelines, it ensures compliance of the recommended boundaries of operational security while saving patients a repeated excision and relieves the healthcare institutions or the patients themselves financially.

CASE REPORT: We at this moment present another case from the Bulgarian Society for Dermatologic Surgery (BULSDS) of one step melanoma surgery with a perfect end result, where the tumour thickness was not preoperatively determined by high-frequency echography. Preoperative assessment of tumour thickness was performed based on the clinical picture and dermatoscopy. The histologically established tumour thickness was identical to the preoperative assessment, i.e. <1 mm. Removal of the melanocytic lesion was performed with operational security field of 1cm in all directions, where, as a rule, no further removal of the draining lymph nodes is required.

CONCLUSION: One step melanoma surgery has two significant advantages: 1) it saves a re-excision in certain groups of patients, which in turn is 2) significantly more favourable from a financial point of view. Its applicability in the appropriate groups of patients and the postoperative (although in a limited number of patients) results achieved indicate the need to optimise the current algorithms and direct them individually to each patient. Guidelines may not and should not be unified or set strict limits given the fact that they show a significant level of variability themselves regarding some key moments in the initial surgical treatment of melanoma. More than 10% of the primary melanoma cases refer to thin melanomas, and dermatoscopy and clinics are a sufficient method of optimising the planned surgical excision.

Introduction

Worldwide, melanoma surgery goes through the so-called guidelines [1]. One step melanoma surgery is a new, innovative approach that is still very little discussed in medical circles [2]. It applies to specific groups of patients with cutaneous melanomas and very clearly demonstrates the need for individual preoperative assessment of each clinical case [2]. Through it (based on the experience and individual assessment of clinical, dermatoscopic and ultrasonographic images of lesions and locoregional lymph nodes), an optimal diagnostic evaluation is achieved, as well as a subsequent adequate treatment of cutaneous melanoma [3]. As a major advantage of this method, we may point out the basic fact that the appropriate patient groups are “spared” from the unnecessary, in some cases, repeated surgical intervention [4].

We at this moment present another case from the Bulgarian Society of Dermatological Surgery (BULSDS) of a patient with psoriasis with cutaneous

melanoma localised in the area of regio abdominalis dextra. He underwent one step melanoma surgery technique (without initial echographic measurement of the tumour thickness), other than the established guidelines for treatment of malignant melanoma, with a perfect end result. The applicability of this type of surgery according to the individual characteristics of each patient, as well as the need to optimise the current guidelines, is currently under discussion.

Case Report

A 45-years-old man is presented in good general status and concomitant hypertension controlled with Aspirin 100 mg (0-0-1) and Irbesartan/Hydrochlorothiazide 150 mg/12.5 mg (1-0-0). No family history data is available. The patient was first hospitalised in the clinic for a few months worsening of the clinically diagnosed psoriasis vulgaris. The disease was diagnosed 20 years ago and has not been histologically verified.

During the dermatological examination, it was found that the pathological changes involved the skin of the capillitium, back and gluteal area, represented by erythemosquamous papules, which in some places merged into plaques. Also, there was evidence of maceration and mycotic infection in the inguinal area. In the regio abdominalis dextra, a hyperpigmented macula with uneven pigmentation and uneven edges, which existed for many years, was observed (Figure 1a, 1b). Clinically and dermatoscopically, this finding met the requirements for a malignant melanocytic lesion.

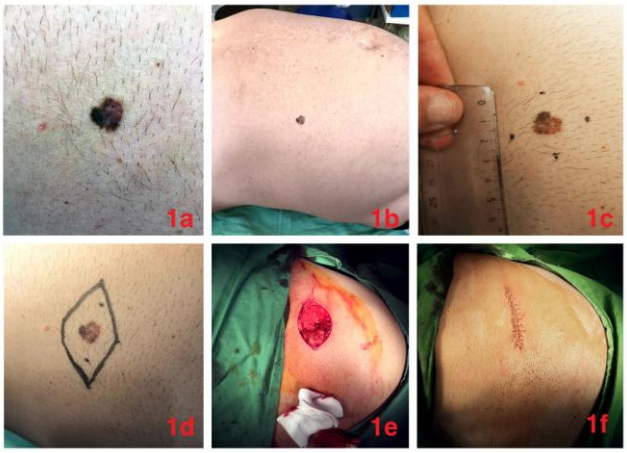

Figure 1: 1a, 1b) Clinical picture of primary cutaneous melanoma located in regio abdominalis dextra. Lesion with uneven pigmentation; 1c, 1d) Outlining the 1 cm operational security boundaries in all directions, preoperative finding; 1e) Intraoperative picture of the lesion removed by elliptical excision; 1d) Postoperative clinical picture of surgical defect closed by single interrupted sutures

During the hospitalisation some examinations were performed, where the paraclinical results were within the normal range, and the panoramic image of the teeth showed evidence of periodontitis chronic granulomatosa 4/5. The rest of the instrumental examinations showed no evidence of abnormal values.

Selective ultraviolet therapy with gradual dose escalation was initiated. Topical therapy included 10% salicylic oil, 10% salicylic ointment and cooling cream. Histology confirmed that it was psoriasis vulgaris. It was recommended to treat the dental focal infection in outpatient conditions and discontinue Aspirin and Hydrochlorothiazide therapy (as possible triggers of psoriasis). After consultation with a cardiologist, Valsartan 160 mg x 1/day therapy was given. For the mycotic infection in the inguinal area, Fluconazole 200 mg x 1/day was administered i.v. Systemically for 3 days, and Clotrimazole cream x 2/day was topically administered.

During the hospitalisation, the pigment lesion, localised in regio abdominalis dextra, suspected for malignant melanoma, was surgically removed. Radical removal was performed under local anaesthesia. Based on the clinical and dermatoscopic evidence of the lesion, the surgery was performed with an operational security field of 1cm in all directions (Figure 1c, 1d, 1e). This was followed by a closure of the resulting defect with stretch plaster (Figure 1f). The histological examination confirmed the diagnosis: Superficial spreading malignant melanoma. Clark level II, Breslow thickness below 1 mm, no ulceration, low mitotic activity, well-expressed lymphocyte stromal reaction, no evidence of spontaneous regression, clear resection lines (p T1aR0). The staging was performed, according to which it was found to be Stage I (T1aN0M0).

Discussion

Malignant melanoma is a diagnosis, which diagnostics and treatment make clinicians think of the progress of medicine and whether we tend to be flexible and innovative [1]. Currently, the American Joint Committee of Cancer recommendations for surgical treatment of primary melanoma is based on Breslow thickness and include resection of 0.5 to 1 cm for melanoma in situ; however, 1.0 cm is also the recommended resection area for melanomas between 1.0 mm to 2 mm?

And according to the recommendation table, this area varies or may vary between 1-2 cm for melanomas with a thickness between 1.01-2.00 mm?

Two cm is also the recommended area for treatment of melanomas with a thickness of 2.01-4

mm [1] [5]. For melanomas with thickness over 4 mm, resection areas of more than 2 cm in all directions are not recommended [5].

If we are guided by the current guidelines, treatment of melanocytic lesions should start with resection with surgical security margins of 0.4-0.5 cm in all directions, followed by postoperative measurement of the tumour thickness and mandatory re-excision planning within short-term deadlines [4]. Depending on the already established tumour thickness, an assessment should be made at a subsequent or later stage as to the need of re-excision with or without removal of draining lymph nodes [4]. The question arises inevitably whether it would be appropriate to place the various patients under a common denominator or to individualise the therapy, to be innovative and flexible in our decisions? Whether in the modern world of technology, guided to a great extent by the so-called “artificial intellect”, it is better not to act mechanically, or in other words, according to preset algorithms and guidelines, but to think and treat each patient separately and individually? Due to this circumstance, after having observed dozens of patients with melanomas in various phases, we have concluded that the guidelines (in their current version) are not the optimal solution for treatment of melanomas.

Between 1977 and 1980, the idea of excision was adopted for treatment of malignant melanomas, depending on the anatomical features of the area, i.e. such that allows for primary closure of the surgical defect [6]. It varied between 1 and 5 cm even for thin melanomas [7]. From the remoteness of the tumour tissue from the histologically established resection margins (histologically), this method should be more accurate and reliable. In their current version, the guidelines for treatment of melanoma require only an operational security field, which should only be observed clinically and not histologically. It is this very fact that contains a great contradiction and illogicalness.

Over time, the change in the clinician’s thinking has led to optimisation of the recommendations, as well as their gradual change and update. However, they do not give a specific answer to the question why there are again variations in the centimetres of the operational security field (0.5-1 cm for melanoma in situ, 1-2 cm for the thickness of 1 to 2 mm) and often the free interpretation of the guidelines could be reached [1]. What is it that requires these variations in tumours with thickness up to 2 mm? Why is there no exact categorisation of patients’ subgroups according to certain resection boundaries!? It is unclear what is it that requires the variability of these boundaries in thin to medium-thick tumours (find a reference).

It is precisely this that requires guidelines to be redefined and modernised so that they become as personalised as possible. One step melanoma surgery is a new approach that allows us to go beyond the traditional and help the patient as adequately as possible, not to take into consideration the set boundaries. To support early personalisation, which is extremely promising, simple, reliable and easy to apply?

The main diagnostic steps that may be used preoperatively for suspected pigmented or pigment lesions are 1) clinical examination, 2) dermatoscopy, 3) biopsy and histological examination, 4) measurement of tumour thickness by high-frequency ultrasonography, 5) echography and biopsy of lymph nodes [3] [8].

Tumour thickness in malignant melanomas is, in fact, the main indicator determining the action plan, the choice of surgical boundaries, the re-excision, the additional determination of a draining lymph node and the possible lymph dissection [9]. For the patient presented by us, the decision for an initial excision with an operational security field of 1cm in all directions was taken entirely based on 1) the clinical experience accumulated over the years, and 2) the dermatoscopic finding, which undoubtedly indicated melanoma with tumour thickness < 1 mm. The subsequent histological examination of the removed lesion confirmed the initial diagnosis of malignant melanoma with a thickness of less than 1mm, without ulcerations, without increased mitotic activity or angiolymphatic invasion. This clinical case is an example of how both diagnostic determination and subsequent treatment are achieved in a single step. Although it does not meet the recommendations based on European and American guidelines, one step melanoma surgery ensures complete removal of melanoma, meanwhile taking into account the operational security for the respective tumour thickness required or recommended by the guidelines [3]. The difference is that the intervention is only one. Thus, the desired result is achieved within one instead of two operational sessions. This leads to another important difference, i.e. optimisation of the financial coverage of patients or healthcare institutions. The method is only applicable to a limited number of patients (the method without preoperative echographic measurement of the tumour thickness). The question remains, as the guideline authors would say: “Is it worth changing the guidelines, given that these changes will not benefit a large number of patients?” The logical answer would be: “Regardless of the postulates of these guidelines, an increasingly small number of colleagues are guided by them while achieving optimal outcomes for their patients. That is, the guidelines are disregarded and become unnecessary, at least regarding the primary treatment of melanomas!”

Preoperative high-frequency ultrasound diagnostics in cases of thin and medium-thick, as well as thick primary melanocytic lesions, would be extremely useful for determining the operational security boundaries, the indications for lymph node

biopsy, and most importantly, the need for re-excision [9]. However, based on the case presented by us, it should be concluded that ultrasonographic measurement of tumour thickness is not mandatory (in certain groups of patients) (given that it is not even mentioned in the commonly accepted guidelines for treatment of melanoma). Various studies suggest that the tumour thickness measured by ultrasonography corresponds to a very high degree to the histologically established postoperative Breslow thickness [2] [3] [8] [9]. This means that its application (tumour thickness measured by echography) may lead again to avoidance of re-excision and performance of one stage melanoma surgery for patients with melanomas of various tumour thickness [10]. That is, it is a possible addition to the diagnosis of melanomas but is not obligatory. Choosing an optimal approach is clearly in the hands of the clinician.

In thin melanomas with clear clinical and dermatoscopic evidence, dermatoscopic and clinical data on melanoma may be crucial. The clinician should have an individual conversation with the patient within which he/she should provide detailed information on the one-step model of melanoma surgery, its advantages and possible disadvantages. After a signed informed preoperative consent, the procedure should be performed as quickly as possible.

Melanomas referred to in panel 2 (Figure 2a, 2b, 2c, 2d) show a tendency to infiltrative growth and may not be subject to the innovative method of one step melanoma treatment, i.e. without measurement of the tumour thickness by echograph. In such cases, the decision for one step surgery based on clinical and dermatoscopic findings should be defined as high-risk, unreasonable, or rather, a wrong step. In these cases, if we consider the possibility of treatment according to the one stage melanoma surgery method, an initial measurement of tumour thickness should be made by ultrasonography and additionally, by echography of the lymph nodes. Depending on the evidence obtained and the available findings, the approach to the patients should also be varied: 1) for melanomas from 1 mm to 4 mm, resection should be done with an operational security field of 2 cm [11] and dissection of draining lymph node (regardless of whether the node is echographically enlarged) [1] [12] for an established tumour thickness above 4 mm- again a resection with an operational security field of 2 cm in all directions, and it should be remembered that in the event of thickness above 4 mm, there are other two treatment suboptions and at the same time staging of melanoma, namely: 2.1) if there are no enlarged lymph nodes, 2 cm resection is sufficient, together with control/instrumental examinations every two months, 2.2) in the presence of enlarged lymph nodes, it is recommended that they will be removed and examined for the *BRAF V600* mutation [13], followed by computer tomography scan (CT) with contrast or PET scan, the latter at least two months postoperatively. In fact, *BRAF* typing and identification of mutations in the *BRAF* gene helps determine the direction of treatment for patients with malignant melanoma [14]. Depending on the number and localisation of the existing (or additional metastasis), treatment should be individualised. Some units recommend metastasectomy and monitoring for recurrences, which should be tested in turn for *BRAF V600*, but at a later stage. Other units recommend starting an adjuvant Interferon treatment or vaccination, although patients are surgically “cleared” of metastasis/metastases.

Figure 2: 2a, 2b) Clinical view of melanoma showing uneven pigmentation and uneven edges located in the epigastrium; 2c, 2d) Clinical picture of intense black-coloured cutaneous melanoma located in the forehead area

And MEK inhibitors therapy has been shown to significantly improve survival in patients with mutations in these genes [14]. In turn, CT/PET scan images help to better stage melanomas and detect metastases [15]. CT has a sensitivity of about 60% in the detection of systemic metastases [15]. The right approach to the patients should be optimised, and perhaps the solution is to find a balance between the guidelines and one step melanoma surgery. In other words, it is a matter of a point of view or mutual compromise.

In patient number 4 (Figure 3a, 3b) there is clinical and dermatoscopic evidence of melanoma indicating that it is a tumour with a thickness of more than 2 mm. From what has been said so far, if the thickness is above 1mm and less than 4mm, the draining lymph nodes must be removed and examined. Monitoring of the locoregional finding after an initial excision should not be advisable. Determining a draining lymph node in such cases is highly recommended, and if possible, it should be

done within one surgical session, along with removing the primary melanoma, which would be a more sparing solution for the patient (for tumour thickness up to 4 mm).

Lymph nodes dissection depends on the echographic evidence of lymph nodes enlargement, on the one hand, and whether the tumour thickness is more than 4mm, on the other. It is believed that if the evidence is indicative of primaries with a measured tumour thickness above 4 mm, lymph dissection is not so important since then the metastatic spread of a tumour (in the event of intact echographic lymph nodes) is most likely to have occurred. It is possible, however, that the lymph nodes are “bridged”, i.e.: 1) there are accessory parallel lymphatic pathways other than the flow leading to the draining lymph node; or 2) the tumour cells have not been stopped in the draining lymph node and have passed through it, or 3) the tumour cells have already spread haematologically before the involvement of the lymph node.

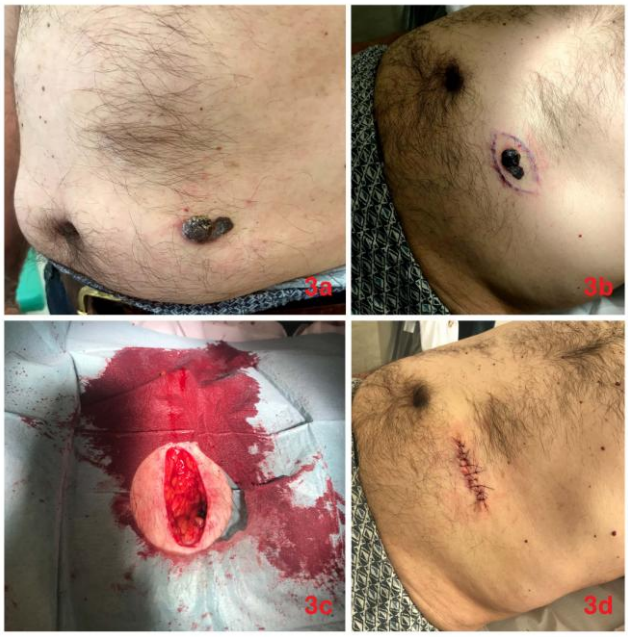

Figure 3: 3a, 3b) Clinical finding of melanoma located in regio abdominalis sinister showing an ulcerated surface; 3c) Intraoperative status after oval excision; 3d) Postoperative clinical finding

As for our patient number 4 in particular, if the echographic tumour thickness is above 4 mm, surgery should be performed with a 2 cm operative security field in all directions, followed by regular control of the locoregional and distant lymph nodes (if these lymph nodes are not increased/clinically and echographically negative). In other words, we are talking again about single surgical intervention. If, however, we do not use an individual approach and follow the accepted guidelines, this patient should have a primary excision with a 0.5 cm field and a second surgical intervention with another 1.5 cm field in all directions (as it was done). However, in this case, the decision, like in the previous cases in Panel 2, should not be only based on clinical and dermatoscopic data. Such a decision should be defined as a poor assessment, lack of experience, a poorly based approach. If a one-step model of surgery, deviating from the guidelines, is chosen, an echographic measurement of tumour thickness and locoregional lymph nodes here is recommended. The evidence established in these cases should determine the model of clinical behaviour, and the applicability of the new methodology presented.

At this stage, malignant melanoma surgery should not be considered as completely dependent on the accepted guidelines. Any deviation from them must still be logically justified and supported by appropriate documentation. One step melanoma surgery is a bold decision taken by both our colleagues and patients and ultimately, the results achieved may be defined as more than optimal.

This good receptivity, accompanied by maximum adequacy and precision of echographists, dermatoscopists and dermatosurgeons actions approaches innovative and deserving particular attention. The several different cases of melanoma patients described showing that each of them is unique and should be interpreted individually, even if it means getting out of the comfort and security zone provided by the guidelines. One step melanoma surgery should be one solution for each of the above cases.

In conclusion, when clinical and dermatoscopic data indicate the presence of melanoma with a possible predicted tumour thickness of less than 1 mm, one step melanoma surgery is a very good or optimal solution.

Whenever we have doubts about our assessment of the tumour thickness, based on our experience alone (clinical, dermatoscopic), high-frequency ultrasonography is the option that could provide maximum security about the right approach and assurance of the clinician’s actions.

With this clinical case, we present a new algorithm or an option to treat cutaneous melanomas through one surgical intervention. The guidelines for the diagnosis and treatment of melanomas that we use should be individually adapted to the various groups of patients rather than being used universally and often or almost always remain ambiguous. One step melanoma surgery relieves the psychological, physical and financial burden for the patients and this makes it an approach that deserves the attention of the medical college.

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