

Comparative Analysis of the "Scholastic" Recommendations of the AJCC From 2011 for the Surgical Treatment of Cutaneous Melanoma with the Newly Suggested Guidelines for OSMS From the Bulgarian Society For Dermatologic Surgery!

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Abstract

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BACKGROUND: The American Joint Committee on Cancer (AJCC) offers a two-stage, often insufficient or so-called variable model of cutaneous melanoma treatment. This model starts with primary excision and an initial operational safety margin of 0.5 cm in all directions, followed by a re-excision with an additional field of operational security, determined by histologically established tumor thickness (with or without removal of SLN). We present a brand new method of melanoma surgery, the so-called One Step melanoma surgery (OSMS), in which cutaneous melanomas (regardless of their thickness) could be removed by single surgical intervention.

CASE REPORT: We describe a case of a patient with cutaneous melanoma, with postoperatively established Breslow's tumor thickness of 6 mm, operated on the AJCC model within two surgical sessions. The usual primary excision was performed with a surgical safety margin of 0.5 cm in all directions, followed by a secondary excision with an additional surgical security field of 1.2 cm in all directions (due to the patient's wish for the optimal cosmetic result, agreed and approved by the dermatosurgeon performing the manipulation).

CONCLUSION: The two-stage method for the treatment of melanomas is often insufficient due to: 1) the inability (in this case) secondary excision in the face area to be conducted with an additional recommended operational security field of 1.5 cm in all directions; and 2) the patient's wish for a better cosmetic result, which should be achieved with less surgical security field, resulting in a compromise solution for re-excision with an additional surgical field of 1.2 cm in all directions.

Introduction

At this stage, melanoma surgery is based on the recommendations of the American Joint Committee of Cancer (AJCC) [1], [2]. One step melanoma surgery (OSMS) is a new and innovative method that offers a completely different model for the treatment of patients with malignant melanoma [3]. Its advantage is that on the one hand we have clear and precisely defined therapeutic steps that do not lead to hesitation and ambiguity, and on the other are performed in a single surgical session [3], [4], [5].

We present a case of treatment of a patient with malignant melanoma based on the recommendations of AJCC. It has been attempted to fully comply with these recommendations despite the anatomical features of the surgical field.

The advantages and disadvantages of the AJCC's melanoma surgery models are discussed, as well as the advantages of the one-step melanoma surgery-OSMS, first described in the world according to recommendations of the Bulgarian Society for Dermatologic Surgery - BULSDS.

Case Report

We present a 69-year-old man in good general condition. The patient was hospitalized for surgical removal of a pigment lesion located in the forehead area. The lesion has a 2-year duration within which it gradually increases in size (Figures 1a, 1b).



Figure 1: a and b) Clinical view of the melanocytic lesion in the forehead area

During the dermatological examination in the forehead area, the presence of a dark brown to the black melanocytic lesion, a nodular component, and an eroded surface was found (Figure 2a).



Figure 2: a) Outlining the 0,5 cm operational security boundaries in all directions, preoperative finding; b) Intraoperative finding of the lesion removed by elliptical excision; c) Postoperative clinical picture of surgical defect closed by single interrupted sutures

Clinically and dermatoscopically, these findings met the requirements for a malignant melanocytic lesion. The lesion was removed according to the recommendations of the current guidelines, with a primary excision with a surgical security field of 0.5 cm in all directions (Figure 2b). The resulting surgical defect was recovered by a single interrupted sutures (Figure 2c).

Histological verification has shown that it is a malignant melanoma nodular type with ulceration and size of 12/8 mm, Clark's IV level, Breslow's thickness 6mm, no perivasal and perineural invasion, no satellite deposits. Resection lines standing at 5 mm, 12 mm and 5 mm respectively. Staging showed that it is a stage IIC malignant melanoma (T4bN0M0). At the time of primary excision, pathologically enlarged cervical, pre- and retro-auricular, axillary and inguinal lymph nodes were not detected.

Twenty days later, the patient was hospitalized again to conduct a re-excision in the forehead area. Due to the specificities of the anatomical area and the impossibility to close the surgical defect with the necessary tight adaptation of the wound edges, the re-excision was performed with an operational security field of about 1.2 cm (Figure 3a, 3b, 3c, 3d and 3e) in all directions instead of the recommended, according to AJCC, field of 1.5 cm. Therefore, the final field of surgical safety after the two excisions was 1.7 cm instead of 2 cm. The surgical defect was again closed with single interrupted sutures (Figure 3f). The subsequent histological verification found the presence of skin with a foreign body type granuloma and fibrotic changes in the deep dermis.



Figure 3: a) Outlining the 1,2 cm operational security boundaries in all directions, preoperative finding before the re-excision; b), c), d) and e) Intraoperative finding during re-excision; f) Postoperative clinical picture of surgical defects closed by single interrupted sutures after re-excision

Immediately before re-excision was conducted a consultation with oncology and within the secondary excision, removal of the sentinel lymph node (SLN) was not recommended. The conduct of

Pet scan on the whole body and presentation at local specialized oncology center was planned.

Discussion

Globally, the application of melanoma surgery is guided by the recommendations of the American Joint Committee of Cancer (AJCC) [1], [2]. What these guidelines postulates, is for a two-stage surgical approach where cutaneous melanoma treatment always starts with a primary excision with a fixed operational security margin of 0.5 cm in all directions [1], [2]. The subsequent postoperative histological measurement of tumor thickness passes to the second stage, namely re-excision [1], [2]. For a more detailed presentation of the differences in AJCC and OSMS recommendations, we have systematized data in tabular form (Table 1 and 2). What unites the two treatment models is that excisions and, respectively, in the two-stage model- the re-excisions, are dependent on the Breslow tumor thickness [1], [2], [3], [4], [5], [6], [7].

Table 1: AJCC recommendation [2]

Breslow thickness	Recommended surgical margins
Melanoma in situ	0.5 cm (primary excision with 0.5 cm in all directions, followed by secondary excision)
< 1 mm	0.5 cm primary excision (followed by secondary excision with 0.5 cm in all directions)
1.01 - 2.0 mm	0.5 cm primary excision (followed by secondary excision with 0.5 cm- 1.5 cm/with SLND)
2 mm - 4 mm	0.5 cm primary excision (followed by secondary excision with 1.5 cm in all directions/with SLND)
> 4 mm	0.5 cm primary excision (followed by secondary excision with 1.5 cm in all directions/ without SLND if nodes not enlarged)

It is unclear why, in the AJCC recommendations, the field of operational safety for melanomas with a thickness between 1 and 2 mm varies between 1 and 2 cm [1], [3]. Compared to them, European guidelines for the treatment of malignant melanoma have a clearly defined field of operational safety of 2 cm for melanomas with a thickness up to 2 mm [8].

After an initial excision of 0.5 cm for all cutaneous melanomas, according to the AJCC, the subsequent re-excision of histological data for melanoma in situ (MIS) and MM < 1 mm (for example) should be with an additional operational security field of 0.5 in all directions (Table 1) [1]. Instead of them, OSMS offers in cases of clinical and dermatoscopic data for thin melanomas-MIS and MM < 1 mm, to be performed a single excision directly with a safety margin of 1 cm in all directions (Table 2) [3]. In cases where clinical and dermatoscopic data are indicative of melanomas less than 1 mm thick, conducting a two-step operation is not optimal, and that is precisely the advantage of OSMS-diagnosis and treatment within one surgical session [3].

Table 2: One step melanoma surgery (OSMS): Tchernev G et al. recommendations [3]

Breslow thickness	Recommended surgical margins
Melanoma in situ	1.0 cm (clinical/dermatoscopic evaluation obligate/if possibility for echographical examination-from benefit)
< 1 mm	1.0 cm (clinical/dermatoscopic evaluation obligate/if possibility for echographical examination-from benefit)
1.01 - 2.0 mm	1.0 cm (with SLND), (echographical tumour thickness measurement preoperatively recommended)
2 mm- 4 mm	2.0 cm (with SLND) echographical tumor thickness measurement preoperatively recommended
> 4 mm	2.0 cm a) no enlarged lymph nodes- 2 cm resection is sufficient, b) in the presence of enlarged lymph nodes - to be removed together with the reexcision of the primary tumorous tissue!

For MM with a thickness above 1 mm (or for which dermatoscopy and clinics are not categorical/indicative in favor of thin melanoma), the AJCC recommendations are again to be started in all cases with a primary excision of 0.5 cm in all directions [2]. Compared to the AJCC guidelines from 2011 [2], when the postoperative histologically measured thickness indicates a malignant melanoma between 1.01 and 2.0 mm, the limits of the subsequent re-excision should be between 1 and 2 cm, with recommendations to be accompanied by SLND (Table 1) [2]. Oddly, why in the AJCC publication of 2011 [2] this resection field has been described that could have varied between 1 and 2 cm? [3]. Compared to AJCC, European recommendations have a fixed final field of operational security which, in their view, for melanomas, up to 2 mm thick should be 1 cm [8].

Within the newly introduced OSMS, all cutaneous melanomas (regardless of their thickness) can be operated within one surgical session [3], [4], [5], [6], [7]. When this thickness is between 1.01 - 2.0 mm, the operation can again be performed within one surgical intervention, with a safety margin of 1 cm in all directions combined with SLND (Table 2) [3], [4], [5], [6], [7]. Thus, the AJCC's recommendations on the final security field and SLND are respected and clearly defined but within one intervention [3], [4], [5], [6], [7].

For MM between 2-4 mm tumor thickness, the AJCC recommends that the final operational safety field is 2 cm in all directions, necessarily combined with SLND, which overlaps with the OSMS recommendations (Table 1 and 2). The difference, in this case, comes from the application of the innovative solution of the Bulgarian Society for Dermatologic Surgery (BULSDS) for one step melanoma surgery (OSMS), where preoperative ultrasound measurement of tumor thickness allows to save the need for secondary excision [4]. Thus, the surgical treatment of melanomas is performed with a surgical security field of 2 cm in all directions, combined with SLND during one surgical session [5].

For melanomas with thickness above 4 mm, the recommendations of AJCC and OSMS are similar, and according to the two models, after the removal of the melanocytic lesion, the final safety field should be 2 cm in all directions and in case of pathologically

enlarged lymph nodes to be combined with their removal (Table 1 and 2) [1], [2], [3], [4].

According to both models (for tumors with a thickness above 4 mm), if there is no evidence of pathologically enlarged lymph nodes, the excision of 2 cm is sufficient and SLND is not of paramount importance, as draining lymph nodes may not be affected due to several different reasons [1], [3]. The reason for the lack of involving of the locoregional lymph nodes for thicker melanomas could be due to: 1) the tumor cells have passed the draining lymph node but without stopping in it, 2) primary hematogenous dissemination has already occurred without lymph nodes and pathways being involved, or to have 3) accessory parallel lymphatic pathways surrounding the guard lymph node [3]. The resulting difference between the two types of recommendations-OSMS/AJCC-is that the OSMS model clearly defines 1) the boundaries of surgical security, 2) much stricter with regard to the radical combined approach, also involving the conducting of SLND and 3) leads to a categorically more complex treatment performed within one operational session [3], [4].

In conclusion, preoperative ultrasound measurement of tumor thickness at our patient would allow being performed a single surgical intervention with a direct field of operational safety of 2 cm in all directions without SLND due to a lack of pathological enlargement data.

The presented analysis shows that current AJCC guidelines are not always the most optimal and acceptable solution in therapeutic and cosmetic terms. One step melanoma surgery solves a great deal of the problems and fluctuations that exist in the AJCC's recommendations. The greatest difference and advantage of OSMS versus AJCC is that the treatment of cutaneous melanomas is performed with one surgical intervention.

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