

Primary reconstruction of neck defect after excision of metastatic melanoma of unknown primary site with regional pectoral myocutaneous flap

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SUMMARY

Introduction Metastatic melanoma of unknown primary (MMUP) is already a well described oncologic phenomenon in the literature, whereas tissue defects' reconstructions on the neck region always present a challenge for the reconstructive surgeon. Two cases of giant metastatic, skin infiltrative neck tumor masses are presented. In both cases MMUP was diagnosed. Both intraoperative tissue defects were reconstructed using pectoralis major (PM) regional flap.

Outline of cases The first patient was admitted with giant tumor mass on the right side of the neck. The fast growing mass appeared two months prior to the admission. Thorough examination showed no signs of primary tumor. Removal surgery was performed and the defect was reconstructed using the PM musculocutaneous flap. The second patient was admitted with large tumor mass on the left side of the neck. Thorough examination displayed no signs of any primary tumor. After the excision, the tumor mass and subsequent neck dissection, reconstruction followed, using the pedicled PM muscle flap and partial thickness skin transplants. There were no major complications in either case. The histopathological examinations presented metastatic melanoma diagnoses.

Conclusion Clinical outcome of MMUP described in literature is rather variable. Different studies have shown that prognosis in patients with MMUP is better than that in patients with diagnosed primary melanoma with metastatic disease. Therefore, the best initial course of action in those cases would be surgery, according to oncological principles, if possible. Neck defects' reconstructions should fulfill both functional and esthetic demands. Due to the reliability and low cost of the procedure, PM regional flap presents a very good and trustworthy reconstruction modality.

Keywords: metastatic melanoma of unknown primary; pectoralis major flap; surgery; reconstruction; neck tumor

INTRODUCTION

Primary reconstruction of massive neck defects presents a continuously challenging question in the field of reconstructive surgery. The reconstruction's goals primarily include acceptable coverage for the underlying tissue, with protection of important anatomical structures, and, secondly, acceptable and furthermore desirable aesthetic appearance if possible.

Metastatic melanoma of unknown primary (MMUP) presents a specific entity with many characteristics that underlies the need for adequate therapeutic approach. It is broadly described in literature. The capricious presentations of the disease itself can be found in different reports, for example: 1.7 kg lymph node axillary metastasis [1], lung metastasis [2], right atrial metastasis with pericardial effusion [3], midbrain und inguinal metastases [4], skin – colored skin-fixed noduli with inguinal mass, rectal wall metastasis, lung metastasis and liver metastases [5], adrenal metastasis with subcutaneous metastatic focus [6], or simply in form of inguinal swelling that presents itself via enlarged lymph node. All of these are advocates of either the melanoma regression theory, or

transformation theory, which includes the appearance of aberrant melanocyte within the lymph node [7]. As all of the reports described, despite the meticulous diagnostic procedures, primary melanoma was not diagnosed.

We present two cases of large neck tumor mass that were surgically treated in the Clinic for Plastic and Reconstructive Surgery, Clinical Center Niš, Serbia, which were diagnosed with MMUP.

CASE REPORTS

Case 1

A 47-year-old male was admitted to the clinic with a large tumor mass on the right side of the neck. The patient reported that tumor mass appeared two months before and grew until it reached the preoperative size (Figure 1). At the time of admission, general health condition was inconspicuous, without concomitant diseases. A thorough examination was performed, including physical examination of the skin, anus, genitalia, and adnexae; ophthalmoscopy, otorhinolaryngology examination, rectoscopy,

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Figure 1. Large tumor mass on the right side of the neck; notable infiltration of the skin dermis is present, with peritumoral congestion



Figure 2. Postoperative appearance during the dressing change on the sixth postoperative day; the pectoralis major flap remains vital

thoracic X-rays, abdominal ultrasound, computed tomography (CT) scans of the thorax and abdomen. Anamnestically, no surgical procedures had been performed prior to the admission. The CT-scans showed that no major blood vessels were affected by the tumor mass. Primary melanoma or other cutaneous lesions, as well as other pathological findings were not diagnosed.

The surgery was performed under general anesthesia. Surgery planning was thorough, because of the relations with the vital structures in the neck. The excision was methodically performed, continued by a neck dissection. The dimensions of the excised tumor mass were $12 \times 9 \times 8$ cm. Afterwards, ipsilateral pectoralis major (PM) myocutaneous pedicled flap was harvested, raised and placed into the defect. The suturing was performed in two layers, over a suction drainage. The secondary defect was covered with split-thickness skin grafts harvested from the right thigh. Subsequent histopathological examination showed an enlarged lymph node with metastatic melanoma including the dermis infiltration of the skin. The postoperative care of the patient was performed in elevated head position, with the head rotated ipsilaterally. Marginal epidermolysis of the flap was the only complication noted during the initial postoperative period (Figure 2). The drainage was removed on the third postoperative day; the sutures were removed on the 13th postoperative day. On one-month follow-up examination the patient described the aesthetic outcome as very-good. Additional radiotherapy was recommended, which the patient rejected. Three months af-

ter the surgery he developed local neck relapse, including the carotic artery wall infiltration. Seven months after the surgery the patient died of multiple visceral metastases.

Case 2

A 54-year-old male was admitted with a large tumor mass on the left supraclavicular region. The patient reported the appearance of a small tumor mass two and a half months prior to the admission, which successively grew until it reached the preoperative size. Venous skin congestion surrounding the tumor mass was also noted by the admission check-up (Figure 3). At the time of admission patient was not suffering from any concomitant diseases. The step-by-step diagnostic procedures as in the first case were performed. Primary melanoma or other cutaneous lesions, as well as other pathological findings, were not diagnosed. The surgery was performed under general anesthesia. The tumor mass resection was performed, followed by ipsilateral lower neck dissection. The dimension of the excised tumor mass was $15 \times 15 \times 10$ cm. Using the mid-clavicular incision line, lateral margin of the left PM muscle was approached; the flap was dissected and raised (Figure 4), and subsequently turned into the defect. The flap was sutured and covered with split-thickness skin grafts harvested from the right thigh. The chest wound was sutured over the suction drain. Initial postoperative period was uneventful. Following histopathological examination of the excised tumor mass showed enlarged lymph node with melanoma metastasis. The drainage was removed on the fourth postoperative day; approximately 95% of the skin grafts healed and small areas healed by secondary epithelization (Figure 5). The sutures were removed on the 13th postoperative day.

On examination three months post-surgery, the patient described the aesthetic outcome as good. Minor problems with arm movements were nonetheless reported by the patient.



Figure 3. Large tumor mass on the left supraclavicular region; peritumoral blood stasis with skin exfoliation is noted



Figure 4. Tissue defect medial of the left shoulder; after the excision and neck dissection, the pedicled pectoralis major muscle flap is dissected from distal and raised. The clavicle is notable in the middle of the tissue defect; proximal to the clavicle, altered anatomical tissue organization is demonstrable. Major blood vessels are not recognizable in this photograph

Despite the applied radiotherapy, twelve months after the surgery the patient developed generalized disease with multiple cerebral metastases. The patient died fourteen months after the primary surgical treatment.

DISCUSSION

MMUP presents a clinically completely different entity compared to melanoma of known primary (MKP); nevertheless, genetic researches show rise in BRAF and NRAS mutations, which resemble the genotype of cutaneous melanoma [8–10] and not of the mucosa [9]. Both mutations have no significant prognostic impact on the clinical outcome [9, 10]. The number of metastatic lymph nodes remains the most significant prognostic factor for overall survival [10]. One study has suggested that AJCC stage and time to disease progression, and not the initial metastatic load, nor the mutational status, displays the important prognostic factors [11].

MMUP presents a clinical entity that has a different prognosis to that of the MKP. As mentioned before, the number of involved lymph nodes involved presents a negative prognostic factor, but the prognosis itself is also influenced by the clinical form of the disease. In comparison to patients with MKP, the patients with MMUP showed better prognosis [12]; however, in-transit or satellite me-



Figure 5. Postoperative appearance during the dressing change, skin grafts are healed, the venous congestion has declined; the wound shows no signs of irritation or infection

tastases present an additional unfavorable effect [13]. To date, surgical treatment remains the initial therapeutic modality, unless absolute contraindications for surgical treatment are present.

The role of appropriate reconstruction presents an open question in the field of reconstructive surgery. The role of regional flaps remains, to date, unquestioned. A number of papers on this topic only underline the significance of the regional PM flap. Many advantages using this flap are mentioned in the literature, e.g. vitality of the flap, reasonably short time of recovery, favorable aesthetic outcome at the donor site [14], versatility and excellent reach in the neck region [15], cost of surgery of the regional vs. free flaps. Also, minor but notable or even no postoperative complications using PM flap were mentioned in the latest literature [16, 17].

Providing that regional PM muscle flap dates from the second third of the 20th century, as described in the literature, and that it has until now been used as a reliable modality for treatment of diverse head and neck defects, it presents a good modality for the treatment of the defects following the surgery of MUP. The significance of free flaps stays undisputed, but the economical aspect of the surgery costs and the recovery time could be also be considered, especially when it comes to use of the PM muscle flap in the developing societies. A thorough patient examination remains of foremost significance, because small or unrecognized skin or adnexae lesions could present the primary site of the later diagnosed metastatic disease [18].

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Примарна реконструкција дефекта на врату после ексцизије метастатског меланома коже непознате примарне локализације пекторалним мишићнокожним режњем

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КРАТАК САДРЖАЈ

Увод Метастаски меланом непознате примарне локализације (ММНПЛ) у литератури је већ добро описан онколошки феномен; реконструкције ткивних дефеката на врату представљају увек изазов за реконструктивног хирурга. Представљена су два случаја великих метастаских туморских маса са инфилтрацијом коже. У оба случаја је дијагностикован ММНПЛ. Оба интраоперативна ткивна дефекта су реконструисана помоћу *pectoralis major* (PM) регионалног режња. **Приказ болесника** Први пацијент је регистровао брзо растућу масу на десној страни врата два месеца пре болничког пријема. Обављени детаљни физикални преглед и допунске дијагностичке методе нису показали постојање примарног тумора. Уследило је хируршко лечење ексцизијом и реконструкција дефекта PM мишићнокожним режњем. Други пацијент је примљен на стационарно лечење са великом туморском масом на левој страни врата. Детаљни преглед и дијагностика нису потврдили постојање примарног тумора. Након ексцизије туморске масе и дисекције врата усле-

дила је реконструкција ткивног дефекта петљакастим PM мишићним режњем. Оба случаја су протекла без значајних хируршких компликација. Хистопатолошка дијагностика је у оба случаја показала метастаски меланом.

Закључак Клинички исход код пацијената са ММНПЛ описан у литератури је различит. Различите студије су показале да је прогноза пацијената са ММНПЛ боља него пацијената са дијагностикованим примарним меланомом са метастатском болешћу. Последице, најбољи правац деловања би било хируршко лечење, уколико је могуће по онколошким принципима. Реконструкција дефеката на врату би требало да испуни функционалне и естетске захтеве. Због поузданости и релативно ниских трошкова хируршког лечења, PM регионални режањ представља веома добру опцију за хируршку реконструкцију.

Кључне речи: метастаски меланом непознате примарне локализације; *pectoralis major* режањ; хирургија; реконструкција; тумор на врату