



Analysis of 24 Patients Who Were Amputated Due to a Malignant Tumor in the Skeleton

Ekstremitte Yerleşimli Malign Tümör Nedeniyle Amputasyon Uygulanan 24 Hastanın Değerlendirilmesi

Amputated Due To Tumor

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Özet

Amaç: Kliniğimizde primer malign ve metastatik kemik ve yumuşak doku tümörü nedeniyle amputasyon uygulanan olguların değerlendirilmesi amaçlandı. **Gereç ve Yöntem:** Ocak 1987-Ocak 2012 yılları arasında, ekstremitte primer malign ve metastatik kemik ve yumuşak doku tümörü nedeniyle amputasyon uygulanan 24 olgu retrospektif olarak incelendi. Olgular yaş, cinsiyet, patolojik tanı, lokalizasyon, amputasyon tipi, sağkalım ve özellikleri açısından değerlendirildi. Elde edilen veriler SPSS 15.0 sistemine aktararak analiz edildi. Verilerin normal dağılıma uyup uymadığı Shapiro-Wilk testi ile değerlendirildi. **Bulgular:** 24 olgunun 17'si (%70) erkek, 7'si (%30) kadın ve yaş ortalaması 42 (12-68) yıl idi. En sık cilt kanseri (%25), Ewing sarkomu (%20.8), Osteosarkom (%16.6) ve diğerleri (Malign mezenkimal tümör, kodrosarkom, sinovial sarkom, metastatik tümör) nedeniyle amputasyon yapıldığı görüldü. 24 hastanın 16'sı en az bir defa farklı merkezde daha önce müdahale edildiği görüldü. En sık diz üstü amputasyon (%58.3), diz altı amputasyon (%25), ve diğerleri (kalça dezartikülasyonu, dirsek altı amputasyon) uygulandı. 8 hastada cilt problemleri görüldü ve 6'sına debridman yapıldı. Postoperatif ilk bir yıl içinde 14 olgunun kaybedildiği gözlemlendi. **Tartışma:** Hastanın diğer sağlık sorunlarının tedavisi ve ileri evre malign ekstremitte tümörlerinin hızlı ve lokal kontrolü için amputasyon yapılabilir.

Anahtar Kelimeler

Malign Tümör; Primer; Metastatik; Cerrahi; Amputasyon

Abstract

Aim: The purpose of the study was to assess the cases that were amputated in our clinic due to primary malignant and metastatic bone and soft tissue tumor. **Material and Method:** 24 cases that were amputated due to primary malignant and metastatic bone and soft tissue tumor between January 1987 and January 2012 were examined retrospectively. The cases were assessed in terms of age, gender, pathological diagnosis, localization, type of amputation, survival and characteristics. The data obtained were transferred to SPSS 15.0 program and analyzed. Normality distributions of the data were analyzed with Shapiro-Wilk test. **Results:** Of the 24 cases, 17 (70%) were men, while 7 (30%) were women and the average age was 42 (between 12 and 68). The most common reasons for amputation were skin cancer (25%), Ewing sarcoma (20.8%), Osteosarcoma (16.6%) and others (Malignant mesenchymal tumor, chondrosarcoma, synovial sarcoma, metastatic tumor). 16 of these patients had previously received an intervention in a different centre at least once. The most common type of amputation was above-knee amputation (58.3%), below-knee amputation (25%) and others (hip disarticulation, below-elbow amputation). 8 patients were found to have skin problems and debridement was performed on 6. 14 cases died within the postoperative first year. **Discussion:** Amputation can be performed for the treatment of the patient's other health problems and fast and local controls of advanced malignant extremity tumors.

Keywords

Malignant Tumor; Primary; Metastatic; Surgery; Amputation

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Introduction

Primary malignant and metastatic bone and soft tissue tumors are among the leading causes of death, along with other tumors in the body [1]. In extremity tumors, the first priority is survival; then, survival with the extremity; and lastly, survival by keeping the biological limb. In malignant extremity tumors, amputation has become less prevalent than limb salvage surgery. Because of technological advances and increasing experience in oncological treatment, there have been significant developments in the treatment of these patients and survival rates have become higher [2]. When the literature is reviewed, it can be seen that surgical treatment by amputation has become less prevalent than limb salvage surgery since the 1990s as a result of good results reported following reconstruction [3]. The purpose of limb salvage surgery is to maintain the functions of the extremity and to remove the local disease completely. In extremity tumors, if the patient is assessed correctly and teams experienced on this subject make the diagnosis and treatment, it is possible to save the extremity and the patient.

In the surgical treatment of primary malignant and metastatic bone and soft tissue tumor, reconstruction after resection gives more promising results than amputation. Unfortunately, however, amputation, which is the final surgical treatment choice, must be used when the progress of the disease cannot be stopped and when recurrence occurs.

In our study, the cases that were amputated in our clinic due to primary malignant and metastatic bone and soft tissue tumor were assessed with regard to the literature.

Material and Method

The records of 24 cases that were amputated due to upper and lower extremity primary malignant and metastatic bone and soft tissue tumor between January 1987 and January 2012 and that had sufficient data were examined retrospectively after permission was received from the local ethics board. The cases were assessed in terms of age, gender, pathological diagnosis, localization, type of amputation, survival, and characteristics. The cases were assessed in detail in terms of anamnesis, physical examination, laboratory results, and radiological examinations conducted by the musculoskeletal system bone and soft tissue tumors council. The council consisted of orthopedic oncology, medical oncology, pediatric hematology-oncology, radiation oncology, radiology, pathology, and nuclear medicine specialists who plan suitable treatment.

The data obtained were transferred to SPSS 15.0 (SPSS Inc., Chicago, IL, USA) program and analyzed. Normality distributions of the data were analyzed with Shapiro-Wilk test. The data that were normal were expressed as average±standard deviation, while the data that were not normal were expressed as mean (min-max).

Results

Of the 24 cases, 17 (70%) were men, while 7 (30%) were women. The average age was 42 (between 12 and 68). 22 (91%) of the lesions were located in the lower extremity, while 2 (9%) were located in the upper extremity. Distribution of tumor type is seen in Table 1. 16 (66.6%) of these patients had previously received an intervention in a different center at least once. 14

Table 1. Distribution of tumor type

Tumor type	Case number (n)	Rate (%)
Skin tumor	6	25
Squamous cell carcinoma	3	
Epidermoid carcinoma	2	
Malignant melanoma	1	
Ewing sarcoma	5	20.8
Osteosarcoma	4	16.6
Malignant mesenchymal tumor	4	16.6
Chondrosarcoma	3	12.5
Synovial sarcoma	1	4.1
Metastatic tumor	1	4.1

(58.3%) of the patients underwent above-knee amputation, 6 (25%) underwent below-knee amputation, 2 (8.3%) underwent hip disarticulation, and 2 (8.3%) underwent below-elbow amputation (Figure 1, 2). 8 patients were found to have wound complications such as abscess, cellulite, and tissue necrosis, and debridement was performed on 6. 14 cases died within the postoperative first year (average 7 months). 10 cases are still being followed up by the related departments.

Discussion

Amputation surgery, which can be performed in cases of trauma, irreversible ischemia of varying causes, infection, and some tumors, is the final point in surgical treatment [4]. Over the course of the 1950s, while the five-year survival rates initially were around 20% and amputation was the first choice in extremity malignant tumors, the rates increased to 60-70% through use of adjuvant chemotherapy and radiotherapy, and amputation was replaced with limb salvage surgery (LSS) [5-7]. While LSS has advantages such as reconstruction stability and functionality, it also has disadvantages such as fractures and fixation loss [8]. Moreover, in order to be able to perform LSS, the tumor must be under control, it must be surgically removable, and the patient's general condition should be good.



Figure 1. Below-knee amputation due to Ewing sarcoma. A. X-Ray B,C. MRI D. X-Ray (postoperative)
MRI: Magnetic resonance imaging

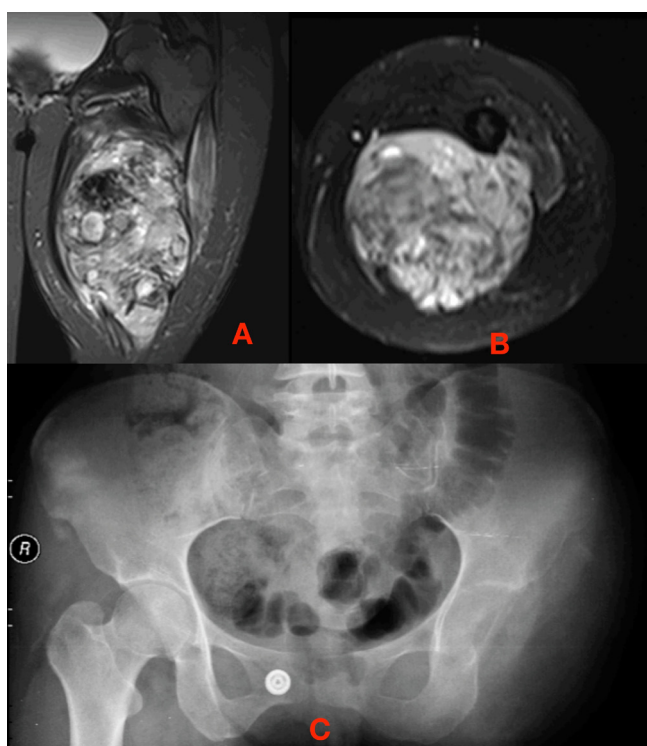


Figure 2. Hip disarticulation due to malignant mesenchymal tumor. A,B. MRI C. X-Ray (postoperative)
MRI: Magnetic resonance imaging

The literature does not report a significant difference between reconstruction and amputation in primary cases [9]. Surgical treatment has moved in the direction of reconstructive interventions [3]. However, it has been suggested that in cases of recurrence or pathological fractures, or when the tumor cannot be removed surgically, amputation is more effective in the local control of the tumor. Still, reconstruction is more promising than reconstruction surgery in suitable cases in terms of the patient. We applied amputation on patients whose primary tumor could not be removed within negative surgical limits, those who developed local recurrence or metastasis, and those who could not have additional reconstruction. The patients that were amputated and the parameters of these diseases were assessed and it was found that amputation was performed in the lower extremity in 22 patients and in the upper extremity in 2 patients.

Experienced teams should conduct location, diagnosis, and treatment of tumors. In centers which are not experienced, local recurrence is more frequent after unplanned and insufficient resection and later LSS becomes almost impossible. It was found that 16 of our 24 patients had undergone surgical interventions in centers that do not deal with orthopedic oncology. In centers that are not suitable for surgery, even biopsy can cause the extremity to become irrecoverable or can lead to more complex reconstructions [10]. The fact that most of the patients who were amputated had a previous intervention in a different center supports this view.

Since the study did not include the type and stage of tumor or the patient's general health, and there was no control group, it is quite difficult to compare the results of patients amputated for malignant extremity tumors. Wound problems, re-amputation and debridement, and metastasis are common in the scare

area [11]. With respect to amputation, Daigeler et al. [12] reported that although the rate of complication was high (44%) and survival for 1 year was worse (43%), the quality of life was significantly higher. While 8 (33%) of our patients were found to have wound complications, debridement was performed on 6 (25%). Still, for advanced spread malignant tumors, these are problems that can be easily treated by the surgeon.

Since systemic disease was advanced in most of our cases, these cases died within 7 months, on average. The reason for a high rate of 1-year-long mortality can be the fact that most of the patients who were amputated had local recurrence or systemic involvement or they were in advanced stages of the disease.

Li et al. [13] performed amputation on 3 patients who had squamous cell carcinoma that developed from an osteomyelitis ground and reported that at follow-ups, no complication had developed. We also performed amputation on 8 patients who had squamous cell carcinoma; however, 2 died within the first year of follow-ups. Rafea et al. [14] performed amputation on 66 of 342 patients. They reported no significant differences in mobility, independence, employment, anxiety, drug-dependence, psychological stress and disorders, or sexual performance [14]. In malignant extremity tumors, in patients who have poor general condition and who previously received unsuccessful treatments and experienced recurrence, amputation can be a treatment option in order to control the local tumor and to save the patient from recurrent operations.

The limitations of our study are the insufficient number of patients and the absence of a control group.

In conclusion, in malignant extremity tumors that no longer have a safe surgical treatment option, amputation—despite high complication and mortality rates—can be performed to locally control the tumor and to save the patient from recurrent surgeries.

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Competing interests

The authors declare that they have no competing interests.

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