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Malignant soft tissue tumor, wide excision, and sural flap

Rahadyan Magetsari, Yudha Mathan Sakti, Arie Nugroho

ABSTRACT

Introduction: Soft tissue malignancy always appear in orthopaedic practice. The example of soft tissue malignancy is malignant melanoma. The treatment for soft tissue malignancy is wide excision. Soft tissue malignancy which done wide excision, can cause skin defect. Orthopedic surgeon need skin flap technique to coverage the skin defect after performed wide excision tumor. Case Report: This case report explains about wide excision of melanoma maligna in calcaneal region in patient male, 72-year-old and the defect in calcaneal region with sural flap. Melanoma maligna is a one type of skin cancer from melanocyte. Melanocyte is pigment-containing cells in the skin. The incidence of melanoma is increasing by every year (6% per year). The main treatment in melanoma is wide surgical excision of the tumor. Wide excision of the tumor in the calcaneal region can made defect of skin. Because of it, we can closure the defect which caused by wide excision with sural flap. Sural flap is fasciocutaneous flap, made up of skin, subcutaneous fat, superficial and deep fascia of the posterior part of the lower leg, sural nerve, sural vein, and superficial sural artery. Conclusion: We want to recommend sural flap as a good choice to closure defect it from wide excision of soft tissue malignancy (melanoma maligna) in the calcaneal region.

Keywords: Case report, Melanoma maligna, Soft tissue tumor malignancy, Split thickness skin graft, Sural flap, Wide excision

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INTRODUCTION

Malignant melanoma is a malignancy pigment producing cells (melanocytes), which are located primarily in the skin, but also found in the ears, gastrointestinal tract, eyes, oral, and genital mucosa. In this case report melanoma is affecting the skin cutaneous melanoma. Despite the fact that melanoma is the least common form of skin cancer (accounting for approximately 4% of all new cancer cases in UK), it has highest mortality rate with more than 2000 deaths UK wide in 2011 [1]. In Northern Ireland (NI) numbers of melanoma have increased from 103 cases per year in 1984–1992, to 258 per year in 2004–2009 [2]. In addition the risk of second cancer has shown to be increased in patient in NI following diagnosis melanoma [3]. The incidence will continue to rise worldwide and whilst some of increase may be due to increased surveillance and earlier detection, most are considered to be linked to changes in sun related behavior e.g. increase in frequency of holidays abroad over time and use of sunbeds [4–7].

Soft tissue defect in foot and lower leg is difficult area to cover, in this area we need skin graft or free flap. Skin

graft are not suitable to cover of exposed bone, tendon, and heel. Free flap provides excellent result especially for large tissue defect. An alternative and simple method of soft tissue reconstruction we need sural flap that's will be great value.

CASE REPORT

A 72-year-old with chief complaints of pain and lump in the left calcaneal region. General condition of the patient was good. From locally status of the left calcaneal region, there was swelling, redness, and lump with size 10x5x2 cm. I did'nt found any deformity in the calcaneal region. On per cussion, we found tenderness, and didn't found any crepitation or false movement. From movement examination we found limited movement of the left ankle when dorsiflex and plantarflex of the ankle joint due to pain. We performed further investigation for this patient. The melanocytes with marked cellular atypia, polymorphic and abnormal mitotic figure. Invasion cell into dermis, and hyperchromatin nuclei with prominent nucleoli. We diagnosed the patient with primary malignant soft tissue tumor of the left calcaneal region due to malignant melanoma. Patient were treated with wide excision tumor and then we performed sural flap to make closure defect which from wide excision. The donor site defect was covered with split thickness skin grafts from ipsilateral thigh. The limb was immobilized with anterior slab with the ankle in equinus position. Daily monitoring of the flap was done. Patient was evaluated for flap acceptability, healing of flap, sensation on the flap. Flap donor site also examined for split thickness skin graft acceptability, and also examine about pain, and scar or keloid formation.

DISCUSSION

Malignant melanoma are tumors that derived from melanocytes. Malignancy will grow irregularly and then might function made abnormally. Melanoma will produce pigment in varying number and can elicit immune response of the body. When the immune response decreased might function made clinical appearance would worsen (Figure 1, Figure 2).

Factor that caused and made major contribution to melanoma maligna is exposure to ultraviolet light [8]. The others factors is family history that had melanoma maligna. The pathophysiology that caused melanoma is the exposure of ultraviolet and then will make damage in DNA and unrepaired condition will create mutation in cell gene. If mutation cannot controlled from the cell, it will become a tumor such as melanoma maligna.

We can treat melanoma maligna using operative surgery. We can perform surgical removal of tumor followed by adjuvant chemotherapy for melanoma if recurrence occurs. In United states five year survival rates of melanoma averages to be 91%.

Soft tissue defect in ankle area such as in calcaneal region is difficult area to cover. Anatomical area need high surgical technique procedure to cover defect. We can use sural fasciocutaneous flap that had excellent coverage especially in large soft tissue defect like in this case. This procedure is a technically demanding procedure and need well trained surgeon (Figure 3).

Patient performed in general anesthesia in prone position and we make outlining landmark for the patient in posterior part of the lower leg, that should not exceed in middle of the leg. Pivot point pedicle located 9 cm over tip of lateral malleolus and flap is centered over the sural nerve. Dimension of the flap determined according to size of defect that in this case appropriate from defect of tumor after performing wide excision tumor.

Make tear drop shaped design in tumor size ± 10 cm in calcaneal region in tumor area. Outlining landmark in calcaneal region will be same with outlining landmark of the flap in lower leg. We performed wide excision tumor of melanoma malignaand then performingfrozen section for the patient and need to ensured that achieved free tumor margin with size : width 2 cm & depth 0,5 cm (Figure 4).

We performed sural fasciocutaneous flap and started incision proximally and continued until we reached gastrocnemius muscle. At mid-calf, identified superficial sural artery, sural nerve, and lesser saphenous vein, performing ligated and included in the flap. Continue the dissection in distal area until pivot pint of pedicle. After that transposed flap to the recipient area in calcaneal region through subcutaneous tunnel (Figure 5).

The flap transposed to the recipient site and the performing 180° rotated and performed covered defect in calcaneal region. The donor site we covered with STSG that harvest from anterolateral of the thigh. After that we will asses the viability of the flap and the evaluate the color and bleeding assessment for the patient (Figure 6).

The flap was assessed and evaluated was viable without any complication like infection. Flap showed slight venous congestion but the condition which cleared few days. Cutaneous hypoesthesia was seen long the distribution of sural nerve. Donor area healed without a problems like pain, and ulceration. Dressing changes were done after the surgery (Figure 7). Flap showed slight venous congestion but cleared in few days. Dressing changes were done on after the surgery (Figure 8).

The flap was viable. The condition of the flap is good and then however we found cutaneous hypoesthesia in this patient and we check seen along the distribution of sural nerve in the patient. Donor area healed without problems in this patient and then like pain, and ulceration.

Soft tissue defect is one of the problem in the lower extremity, especially in area that difficult to closure such as in calcaneal region. Sural Flap can become the answered and alternative solution to closure defect in the calcaneal region. We combined method the tumor excision for malignant melanoma and performed sural flap to closure the soft tissue defect after performing

wide excision tumor. The result after performing surgery flap was viable without any complication. Cutaneous hypoesthesia was seen along distribution of sural nerve. Donor area healed without problem like pain, and ulceration.

Figure 1(A and B): Clinical picture of melanoma maligna of the left calcaneal region in patient male, 72-years-Old.

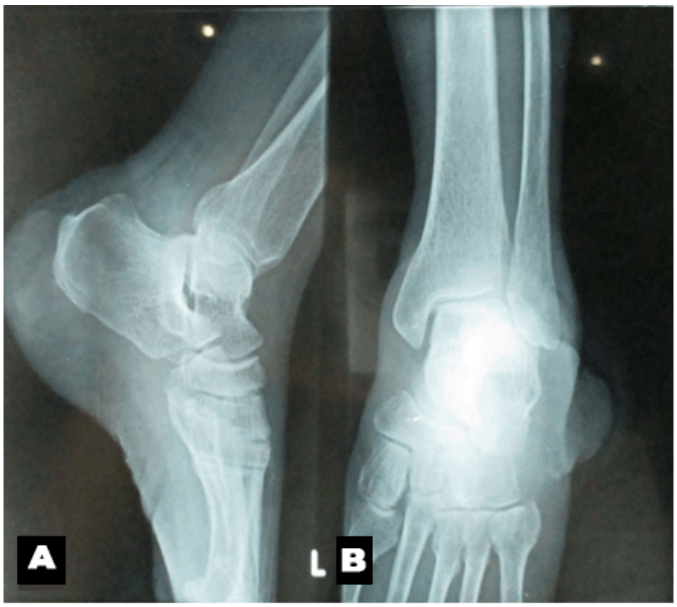

Figure 2(A–C): X-ray of the left ankle AP view (A) lateral view (B) and mortise view (C) in patient with diagnosed of melanoma maligna of the left calcaneal region.

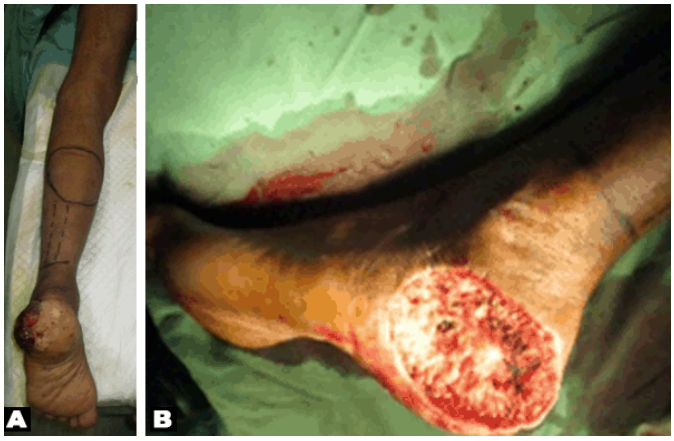

Figure 3: Clinical picture of patient in durante op after we performed wide excision tumor (melanoma maligna) in calcaneal region .

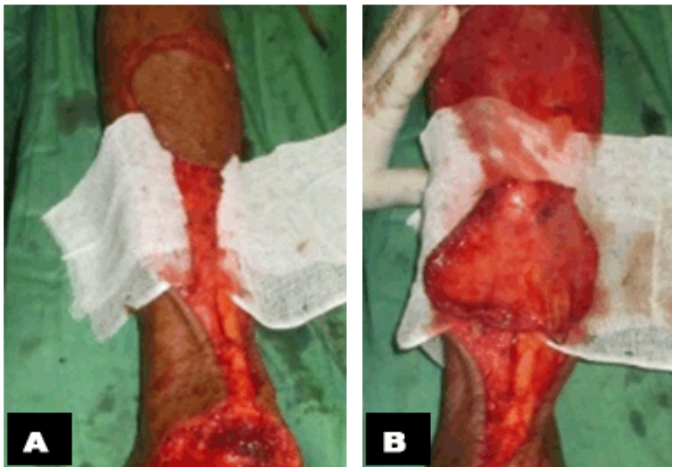

Figure 4(A and B): Clinical picture patient after performing wide excision of melanoma maligna in calcaneal region and performing sural flap surgery to coverage of skin defect.

Sural flap is a useful procedure in the reconstruction of the skin defect of the distal area of the lower limb because of a long vascular malleable pedicle. This type of pedicle offers many advantages: the removal of technique is fast, easy, and repeatable. Advantages of this flap are mainly absence of sacrifice of the principal vascular axis, tha vascular reliability related to anastomotic arterial networks, the anatomic constancy of the neurovascular axis, as well as the length of the pedicle conferring a rotation arch that defines its performance [9–13]. The flap then can be used in the coverage of soft tissue defect at the level of the lower third of the leg, ankle, lateral side of the heel, and hindfoot. The cutaneous paddle of the sural flap can become large and can cover even 180 cm^2 [14]. With the possibility of limited aesthetic damage each time the donor site is closed [13]. A cross leg flap has been used by Atiyeh et al. [10], Mainard et al. [15] reported a case of the dual use of the distally based fasciocutaneous sural flap in the coverage of both cutaneous lesion in the ankle and heel within an interval three weeks. It should be noted

Figure 5(A and B): Clinical picture patient after performing sural flap in calcaneal region and we performed STSG in donor area.

Figure 6(A and B): Clinical picture patient after performing sural flap and then after performing STSG in donor site.

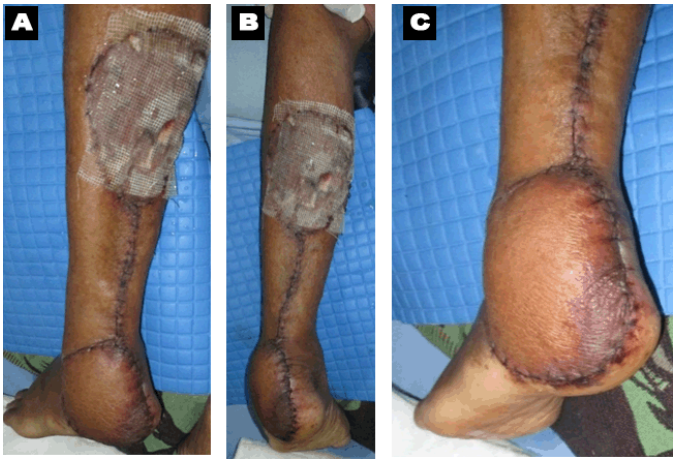

Figure 7(A–C): Clinical picture of patient 3 days after performed sural flap for coverage defect in calcaneal region.

Figure 8(A–D): Cinical picture condition of patient 7 days after performing surgery.

that in some cases, the length of pedicle is not enough to cover the forefoot. Despite its reliable vascularization, the neurocutaneous sural flap seems insufficient in cases of chronic or severe infection. In this case, sural flap is appropriate to closure defect after performing wide excision of malignant melanoma in calcaneal region.

CONCLUSION

We want to recommend sural flap as a good choice to closure defect which it from wide excision of soft tissue malignancy in the calcaneal region. This is one stage operation which doesn't require microsurgical technique. Elevation of the flap is easy and quick. The donor site has minimal morbidity as it can done skin graft for large area of flap.

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Author Contributions

Rahadyan Magetsari – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published
Yudha Mathan Sakti – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published
Arie Nugroho – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Guarantor of Submission

The corresponding author is the guarantor of submission.

Source of Support

None.

Consent Statement

Written informed consent was obtained from the patient for publication of this case report.

Conflict of Interest

Authors declare no conflict of interest.