Role of Partial Calcanectomy in Limb Salvage; a Case Series.

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INTRODUCTION

Partial Calcanectomy is a limb salvage procedure which can provide options for patients facing the decision to undergo below knee amputation in limb threatening conditions, such as calcaneal osteomyelitis or severe traumatic injury. This procedure has become especially relevant today in patient populations affected by diabetes and peripheral vascular disease in which research shows that five-year mortality following a first-time ulceration to the lower extremity in patients with diabetes is approximately 40% and ranges from 52 to 80% after a major amputation like a below amputation. This can lead to significant challenges when patients leave the hospital setting and are forced to function at home without assistance. Techniques provided in this case series offer the podiatric surgeon pre- and post-operative decision making guidance in managing limb threatening conditions.

Patient Demographics

8 Patients	
Age	43-64 years old
Sex	M=3, F=5
Follow Up Period	6-18 months
DM	7
HbA1C	6.3-12.8
Renal	4
PVD	4
Hx BKA	2

Methods

- 8 patients with heel wounds and associated osteomyelitis to the calcaneus and average of 12 month follow up were identified.
- X-rays and MRI of the affected extremity were obtained for preoperative planning for surgical approach and calcaneal osteotomy
- Surgical approach was highly dependent on heel wound location
- Patients underwent Partial Calcanectomy and serial debridement of surrounding bone and soft tissue until there were no remaining signs of infection
- Antibiotics were given initially based on wound and bone cultures. Long term post operative antibiotics were given based on pathology resection margin and bone cultures per Infectious Disease recommendations.
- Vascular intervention was provided when recommended by Vascular Surgery.
- Patients were placed in a posterior splint after surgery until surgical site had healed. Once sutures to the surgical site had been removed patients were placed in PODUS boot or CAM boot with plastazote heel lift and eventually transitioned to CROW boot for long term bracing
- Postoperatively patients were instructed to be non-weight bearing to the extremity of amputation for a period of 4-6 weeks for surgical wound healing and to prevent fracture at the calcaneal amputation site

Results

- Of the 8 patients involved in our study, 6 retained their Limb on which the partial calcanectomy was performed
- 5 patients have transitioned to weight bearing on their partial calcanectomy site and are able to use their partial calcanectomy site to transfer from bed to wheelchair using a CROW boot
- 2 of the 5 patients who have transitioned to weight bearing on their amputation site for transfers had contralateral extremity Above Knee or Below Knee Amputation without a limb prosthetic
- 2 Patients in the study required subsequent Below Knee Amputation due to noncompliance with postoperative weight bearing recommendations, residual bone infection and/or poor glycemic control

Conclusions

Patients with limb threatening conditions are left with few options, particularly in the setting of multiple co-morbidities. Partial calcanectomy is a useful procedure for limb salvage in patients with limb threatening conditions who are faced with the decision of undergoing proximal amputation to the lower extremity. This can become increasingly complicated when patients have previously undergone a below or above knee amputation to the contralateral lower extremity and only have one lower extremity on which they can transfer. Adding to the complexity of these patients are the financial and insurance limitations which may present as barriers from these patients acquiring a prosthetic on which to ambulate or transfer after undergoing a proximal amputation to the lower extremity. As discussed previously morbidity rates for patients increase significantly after undergoing a major amputation to their lower extremity not only due to increased stress on their cardiovascular system but also due to accelerated progression of disease states such as diabetes and peripheral arterial disease. Partial calcanectomy as shown in our case study can offer patients an alternative to below knee amputation in which patients can have a functional limb to transfer and ambulate with the assistance of bracing.

References

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