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Opinion Article

Current Strategies for Limb Salvage in Diabetic Foot Reconstruction

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DESCRIPTION

Diabetic foot complications remain one of the most challenging problems in modern surgical and reconstructive practice, often leading to infection, tissue loss, prolonged hospitalization, and in severe cases, amputation. In my opinion, the focus of care has progressively shifted from amputation toward limb salvage, driven by advancements in surgical techniques, improved understanding of wound biology, and the development of multidisciplinary treatment models. Limb salvage in diabetic foot reconstruction is no longer limited to addressing local wounds but requires a comprehensive strategy that integrates vascular assessment, infection control, deformity correction, metabolic optimization, and structured rehabilitation.

One of the most critical elements in successful limb salvage is early and accurate assessment of vascular status. Peripheral arterial disease is highly prevalent in individuals with diabetes and significantly impairs wound healing. Without adequate blood flow, even the most advanced reconstructive procedures are unlikely to succeed. Therefore, vascular evaluation using clinical examination and imaging techniques is essential before any surgical intervention. In many cases, collaboration with vascular specialists allows for revascularization procedures that restore adequate perfusion, thereby creating a foundation for wound healing and reconstruction. In my view, no limb salvage protocol can be effective without prioritizing restoration of circulation.

Infection control is another cornerstone of diabetic foot management. Chronic infections in diabetic wounds often involve multiple bacterial species and may extend to deeper tissues, including bone. Early and aggressive debridement of necrotic tissue is essential to reduce bacterial load and promote healthy granulation tissue formation. Systemic antibiotic therapy, guided by culture sensitivity, plays an important role in controlling infection, but it must always be combined with surgical intervention. Delayed or inadequate treatment of infection frequently results in progressive tissue destruction, making limb salvage increasingly difficult. A coordinated approach involving orthopedic surgeons, infectious disease specialists, and wound care teams is therefore essential for optimal outcomes.

Advances in reconstructive techniques have significantly expanded the possibilities for limb preservation. Soft tissue coverage using local, regional, and free flaps allows reconstruction of complex defects that were previously considered unsalvageable. Microsurgical techniques have enabled the transfer of well-vascularized tissue to areas with poor healing potential, improving both functional and structural outcomes. Additionally, skin substitutes and biologically active dressings have contributed to improved wound healing in selected cases. However, surgical reconstruction must always be carefully individualized, as not all patients are suitable candidates for complex procedures. Factors such as vascular status, infection severity, comorbid conditions, and patient compliance must be considered when planning reconstruction.

Correction of underlying foot deformities is another important component of limb salvage strategies. Abnormal pressure distribution due to deformities such as Charcot changes or claw toe deformities often leads to recurrent ulceration. Surgical offloading procedures, including osteotomy, arthrodesis, and tendon balancing, help restore functional foot biomechanics and reduce the risk of future ulceration. In my opinion, addressing deformity is not merely a corrective step but a preventive strategy that ensures long-term success of limb salvage efforts.

Metabolic control also plays a vital role in the success of reconstruction. Poor glycemic control impairs immune function, delays wound healing, and increases the risk of infection. Close coordination with endocrinology teams is necessary to optimize blood glucose levels before and after surgical intervention. Nutritional support further enhances healing capacity, particularly in patients with chronic illness and protein deficiency. These systemic factors are often underestimated but are essential determinants of surgical success.

Equally important is the role of rehabilitation and patient education. After reconstruction, patients require structured offloading, physiotherapy, and long-term follow-up to prevent recurrence of ulcers. Education regarding foot hygiene, footwear selection, and early recognition of complications empowers patients to participate actively in their care. Without proper adherence to postoperative protocols, even successful surgical reconstruction may fail over time.

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