

İnfeksiyonu ve İskemisi Olan Hastada Revaskülarizasyon mu Debridman mı Önce Yapılmalı?

Prof. Dr. Hasan Tüzün

Cerrahpaşa Tıp Fakültesi

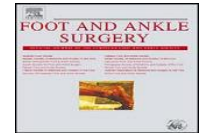
Diyabet/Diyabetik Ayak/PAH

- Dünyada 350 milyon diyabetli mevcuttur
- Bu hastaların %25 de diyabetik ayak ülseri gelişir
- DAÜ gelişimini takip eden 12 ay içinde %5 de amputasyon gerekir
- DAÜ li hastaların %50 de PAH
- DAÜ lerinin %60 enfeksiyonla başvurur

- 1- World Health Organisation, Fact sheet no.312, 2011.
- 2- Singh N, Armstrong DG, Lipsky BA. Preventing foot ulcers in patients with diabetes. JAMA 2005; 293: 217-228.
- 3- Prompers L, Huijberts M, Apelqvist J et al. High prevalence of ischemia, infection and serious comorbidity in patients with diabetic foot disease in Europe. Baseline results from the Eurodiale study. Diabetologia 2007;50: 18-25.
- 4- Prompers L, Schaper N, Apelqvist J, et al. Prediction of outcome in individuals with diabetic foot ulcers: focus on the differences between individuals with and without peripheral arterial disease. The EURODIALE Study Diabetologia 2008; 51: 747-755.
- 5- Forsythe RO, Brownrigg J, Hinchliffe RJ. Peripheral arterial disease and revascularization of the diabetic foot. Diabetes Obes Metab 2015; 17: 435-444.

Diyabetik Ayak Sepsis

BİRİNCİ AMAÇ YAŞAMI KURTARMAK, SONRA
BACAĞI KURTARMAK VE SONUNDA BACAK
FONKSİYONUNU SAĞLAMAK



Foot and Ankle Surgery

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A reliable surgical approach for the two-staged amputation in unsalvageable limb and life threatening acute progressive diabetic foot infections: Tibiotalar disarticulation with vertical crural incisions and secondary transtibial amputation

Muzaffer Altindas MD^a, Ali Kilic MD^{b,*}, Can Cinar MD^c *Turkey*

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ABSTRACT

Background: If all efforts to treat acute progressive diabetic foot infection remain insufficient, the decision of major amputation should be undertaken. For this purpose, guillotine amputation is usually performed first. However, guillotine amputation below the knee level may cause the corresponding infection to spread to preserved anatomical spaces.

Method: First stage of our procedure consists of tibiotalar disarticulation and vertical incisions performed throughout the lower leg to remove the septic foot and drain the compartments. During the interval period, appropriate antibiotherapy and wound care are applied. After the interval period, definitive transtibial amputation is performed in the second stage.

Results: Fifty-nine percent of the 62 transtibial amputations were healed completely. Failure developed in 3 cases which required opening of the amputation stump. In one patient, revision amputation at a higher transtibial level was done. Infection and necrosis reached to the knee joint in the other two patients and transfemoral amputation became the only treatment option for these 2 cases.

Conclusion: Tibiotalar disarticulation with vertical lower leg incisions as a first stage of two-stage transtibial amputation is a safe and reliable method. It reduces the risk of unnecessary tissue sacrifice and failure rate of the secondary transtibial amputation.

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1. Introduction

Diabetic foot infections are often encountered in daily clinical practice. If not treated promptly and appropriately, diabetic foot infections may lead to septic gangrene. If the diagnosis of ‘septic foot’ is established, the surgeon should be involved in the treatment. Some of the common surgical procedures are incision and drainage of the abscesses, debridement of necrotic materials, removal of any foreign bodies, arterial revascularization and when needed, amputation. Amputation decision is a bothersome and challenging issue for both the surgeon and the patient. However, it is the only option to save the life of the patient in some instances:

(1) All efforts to treat acute progressive diabetic foot infection remain insufficient. (2) the treatment does not leave a functional foot for ambulation and (3) the foot continues to be the source of

septicemia. On the other hand, after making a decision of major amputation, we face other challenging issues that need to be addressed. It is crucial to determine the amputation level and to decide whether primary definitive or two-staged amputation should be done. Since the transfemoral amputation usually ends up with high morbidity, it is wise to keep the amputation level below the knee in these patients.

Primary definitive amputation performed in the presence of acute progressive foot infection carries a high risk of wound infection [1]. Therefore, several authors have advocated the two-staged amputation technique which allows secondary wound closure with a reduced chance of wound infection [2]. For this purpose guillotine amputation is usually performed at the first stage. Although the guillotine amputation is quick and safe method, it has some significant disadvantages. Classical guillotine amputation performed below the knee level may cause the infection and necrosis to spread to preserved anatomical spaces between muscles and bones. In addition, after being cut, during the interval period the retraction of muscles occurs which leads to difficulty in obtaining reliable coverage of the stump. These efforts

* Corresponding author. Y. Yanyakaptan mah. Esenyel sok., F49 Blok Daire 31, Izmit - Kocaeli. Tel.: +90 338 330 00 00.

E-mail address: dralikilic@hotmail.com (A. Kilic).
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DAÜ/İnfeksiyon/PAH

- Ekstremiteyi tehdit eden infeksiyonda
 - İnfeksiyon drenajı
 - Nekrotik dokuların debridmanı
 - Antibiyoterapi
- Ayak infeksiyonu ekstremiteyi tehdit etmiyorsa
önce revaskülarizasyon sonra debridman
- Forsythe R et al. The J of Cardiovasc Surg 2016;57(2):273-81

Zamanlama ve Sıralama

- Derin infeksiyon ve abse mevcudiyetinde acilen insizyon, drenaj, debridman
- 2-5 gün arasında infeksiyon kontrolü sağlandıktan sonra revaskülarizasyon
- Simültane revaskülarizasyon tercihan endovasküler
- Pürülan infeksiyonda drenaj,minör amputasyon,
- Mumyalaşmış gangrende revaskülarizasyon

Sheahan MG et al. J Vasc Surg 2005;42:476-80, Lipsky BA. Diabetes Metab Res Rev 2004;20:S68-77, Chang BB. Cardiovasc Surg 1996;4:792-5













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**İNFEKSİYONUN ŞİDDETİNE GÖRE
ÖNCE DEBRİDMAN VEYA
REVASKÜLARİZASYON VEYA
SİMULTANE İŞLEM YAPILMALI (LEVEL
2C; GRADE C)**

ESVS Kılavuzu (Eur J Vasc Endovasc Surg
2011;42:S60-74)

Diyabetik Ayak Ülseri

- IWGDF DAÜ de 6 haftalık konservatif yaklaşım önermektedir. Bu süre zarfında iyileşme olmazsa vasküler görüntüleme ve kanlandırma işlemi önermektedir

Hinchliffe R J et al. Diabetes Metab Res Rev 2015;Epub

DAÜ

- Yatak başı yapılan parmak basıncı ölçümleri <30 mmHg, veya $TcPO_2 < 25$ mmHg ise görüntüleme ve revaskülarizasyon erken düşünülmelidir

Forsythe RO. The J Cardiovasc Surg 2016;57:273-81

DAÜ

- Parmak basıncı >50 mmHg ülser iyileşmesi için yeterli perfüzyonun olduğunu gösterir
- Parmak basıncı <50 mmHg kritik iskeminin işaretidir
- TBI <0.3 iyileşme için yeterli perfüzyonun olmadığını gösterir
- Dijital gangrende kullanılamaz

Hoyer C et al. J Vasc Surg 2013; 58: 231-8

PAH bulunan Diyabetik Hastalar

- Genellikle genç yaş grubundadırlar
- BMI leri yüksektir
- Nöropati de yaygın olarak mevcuttur
- İlave kardiyovasküler hastalıkları mevcuttur

Brevetti G et al. Nutr Metab Card Dis 2010;20:676-82

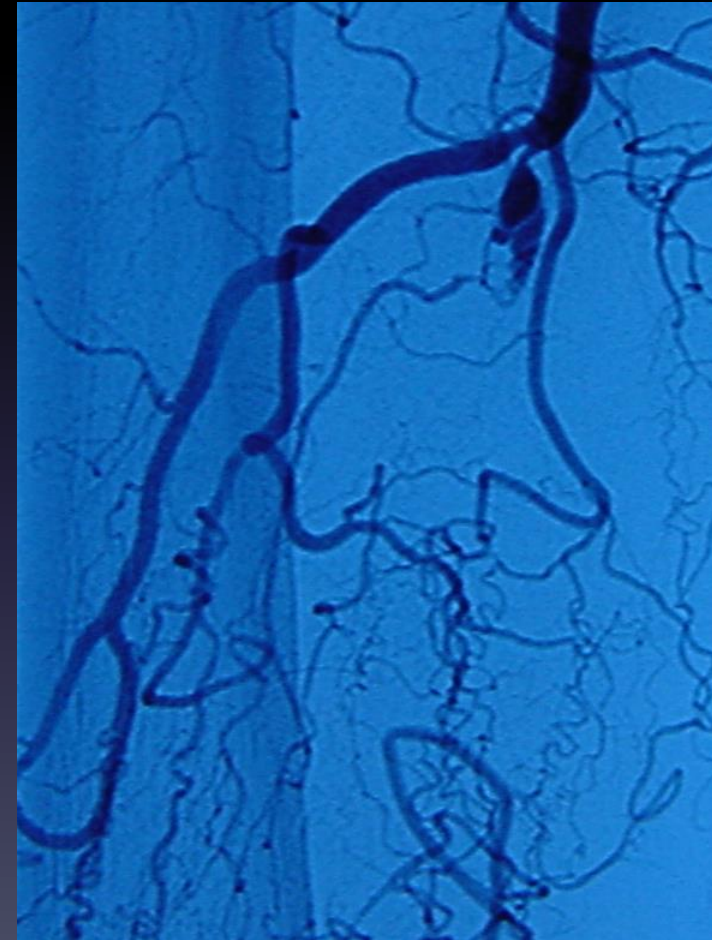
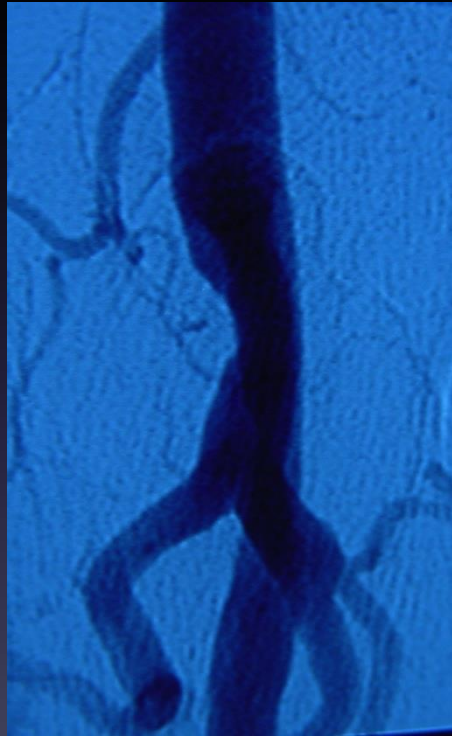
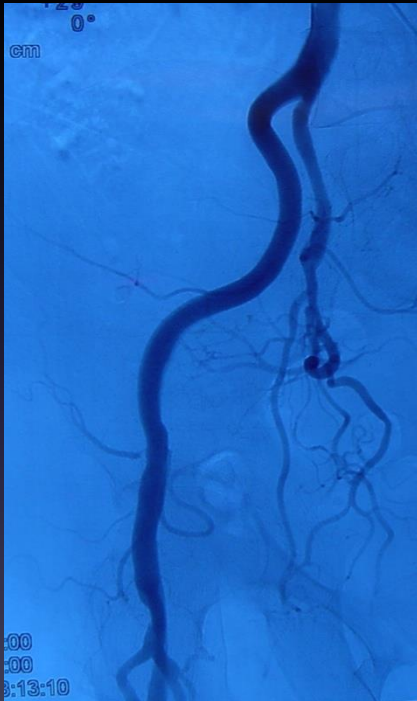
Diyabetik Hastalarda PAH

- Daha ziyade derin femoral, popliteal, tibiyal peroneal ve plantar arterler simetrik çoklu segment oklüzyonları gösterirler
- Kollateral damarlar azdır veya darlıklar mevcuttur
- Kalsifikasyon yaygındır

Ciavarella A et al. Diabet Med 1993;19:586-9

Graziani I et al. Eur J Vasc Endovasc Surg 2007;33:453-60

Arteriografi(DSA)





PAH ve Diyabet

- Diyabetik hastada PAH'nın revaskülarize edilmemesi amputasyon için bağımsız belirleyici faktör olup yaşamı da kötü etkileyen bağımsız bir faktördür

Gabrielli L et al. Diabetes Care 2009; 32:822-7

Jude EB et al. Diabet Med 2010;

PERFÜZYON EKSİKLİĞİNDE HER ZAMAN REVASKÜLARİZASYON DÜŞÜNÜLMELİDİR

ESC guidelines on diabetes, prediabetes and cardiovascular diseases.

Eur Heart J 2013. <http://dx.doi.org/10.1093/eurheartj/ehz108>

- Testlere göre perfüzyonu yeterli olan($TcPO_2 > 40$ mmHG veya parmak basıncı > 50 mmHg) bir ayakta optimal lokal tedaviye rağmen yara 4-6 hafta içinde ilerleme göstermiyorsa iskemik komponent düşünülmelidir

Aiello A et al. Nutrition, Metabolism&Cardiovascular Diseases 2014;24:355-369

Revaskülarizasyon Teknikleri

- Önce Anjioplasti Stratejisi
 - Uygulanabilir olması ve erken dönemde iyi sonuçlar alınması nedeniyle cerrahiye uygun olmayan hastalarda diagnostik anjiografi ile birlikte sürdürülebilir
 - Restenoz oranları yüksektir
 - Bazı yazılarda başarılı olmayan anjioplastinin cerrahiye zorlaştırdığı belirtilmektedir

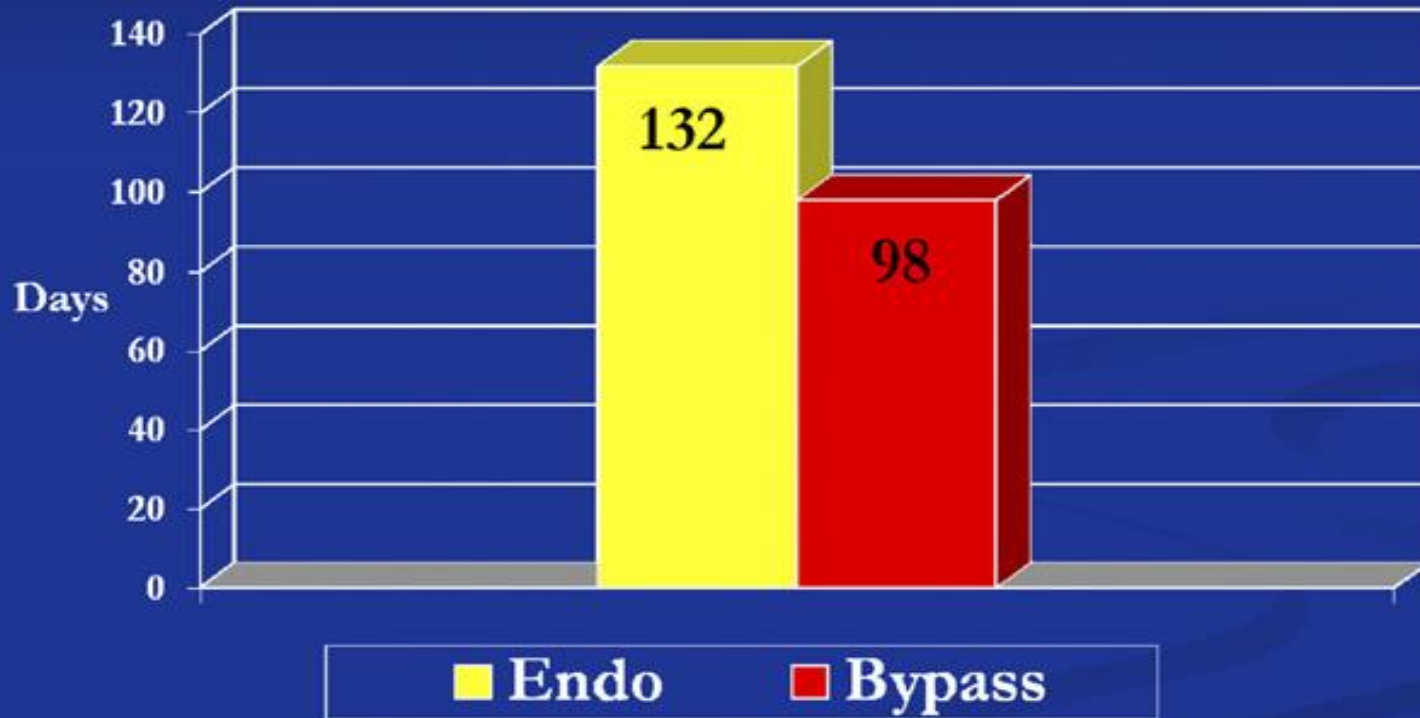
Romiti M et al. J Vasc Surg 2008;47:975-81, Nolan BW et al. J Vasc Surg 2011;54:730-5

Bypass Cerrahisi

- Hastanın klinik durumu
 - Yaş, ilave hastalıklar, yaşam beklentisi
- Ayağın değerlendirmesi
 - Lezyonlar, infeksiyon
 - Anastomoz yerleri tutulumu
 - Planlanan ayakla ilgili cerrahi girişimler
- Greft durumu
- Outflow damarları
 - Hedef arter çapı, kalsifikasyon mevcudiyeti
 - Angiosom konsepti

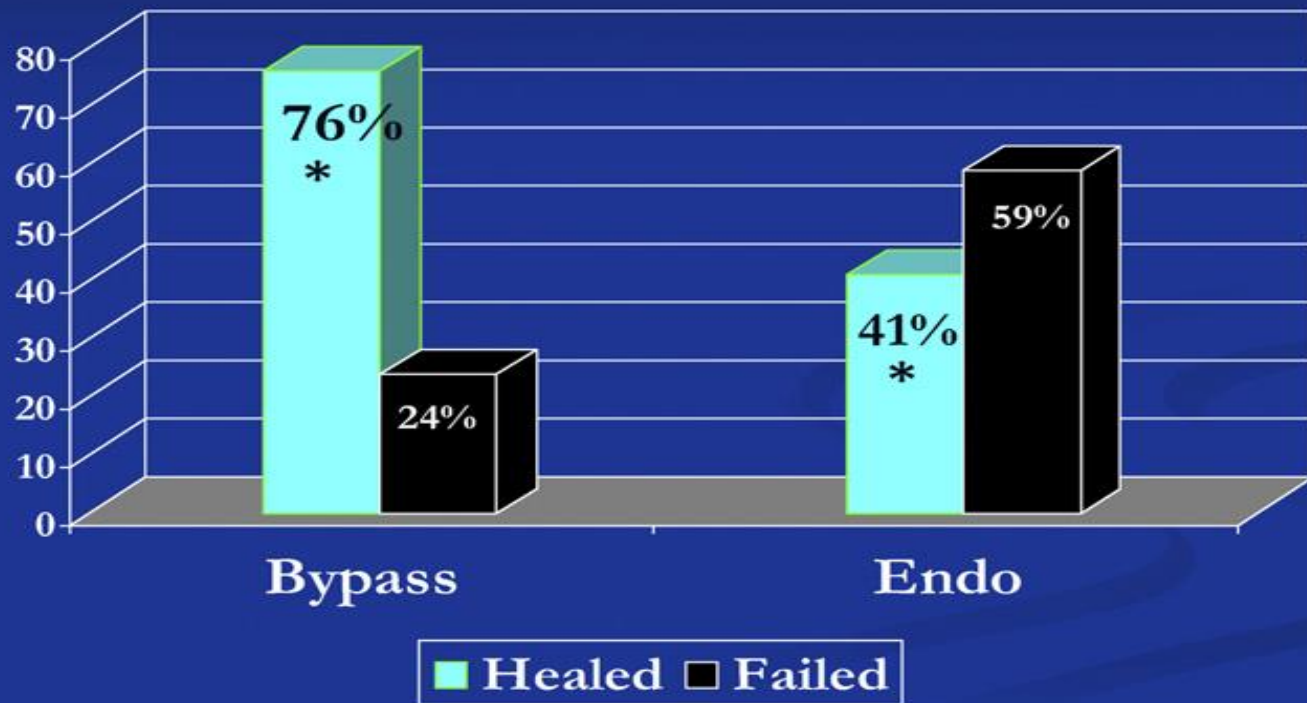
Bypass vs Endovascular

Median time to healing



Neville RF et al. Semin Vasc Surg 2012;25:102-107

Bypass vs Endovascular *Complete Healing*

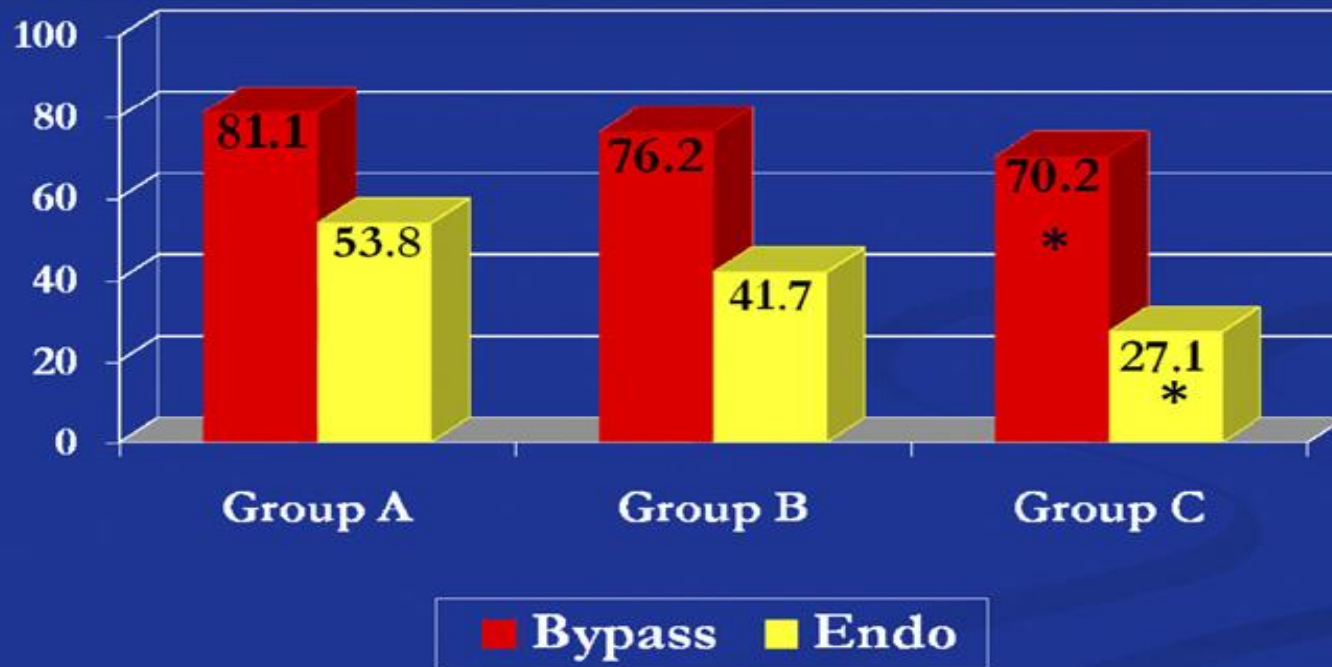


* Log rank *P* value = 0.03

Neville RF et al. Semin Vasc Surg 2012;25:102-107

Bypass vs Endovascular

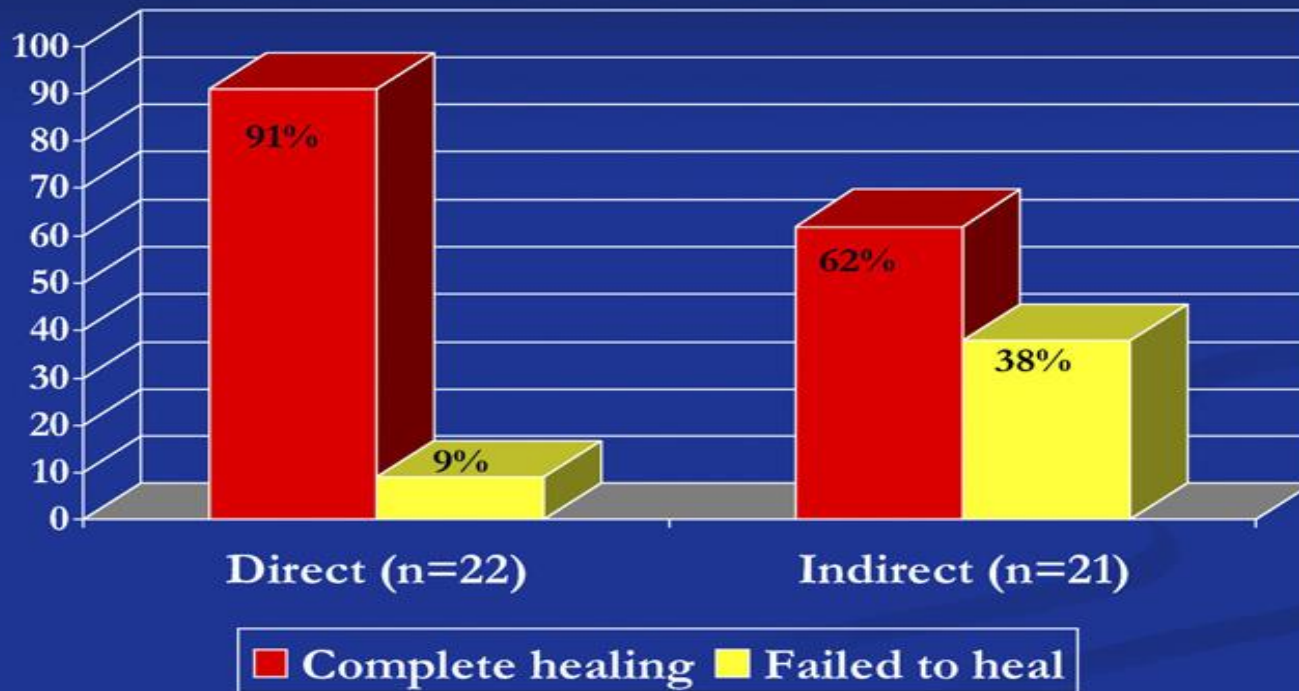
Healing based on initial wound size



** Log rank P value = 0.02*

Neville RF et al. Semin Vasc Surg 2012;25:102-107

Angiosome healing *Direct vs Indirect revascularization*



Fisher's exact test $P = 0.03$

Neville RF et al. Semin Vasc Surg 2012;25:102-107

Diyabetik Ayak ta Acil Cerrahi Yaklaşım

- 2007-2009 arasında 192 hastada acil debridman ve geç revaskülarizasyon (3 gün)
- 2010-2011 arasında 183 hastada
 - 24 saat içinde erken tanı
 - Acil debridman
 - 24 saat içinde revaskülarizasyon
 - Rekonstrüktif cerrahi, ortez

Setacci C et al. International J of Vascular Medicine 2013

Sonuçlar

	1. Grup(%)	2. Grup(%)
Mortalite	11	4.4
Majör Amp	39.6	24.6
Yara iyileşmesi	17.8	20.8

ZAMAN KAYBI DOKU KAYBIDIR

Setacci C et al. International J of Vascular Medicine 2013

Sonuç

- İnfeksiyonun şiddetine ve yayılımına bakarak debridman/revaskülarizasyon kararı
- Önce debridman yapılanlarda erken revaskülarizasyona sonuçları daha iyi
- Hastanın klinik durumuna göre balon anjiyoplasti veya cerrahi bypass

TEŞEKKÜR EDERİM

