PROF. DOUTOR FERNANDO FONSECA EPE
HOSPITAL

PÉ DIABÉTICO
- Isquémia & Infecção





SERVIÇO DE CIRURGIA B
*SERVIÇO DE IMAGIOLOGIA

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28 de Junho de 2012

Pé Diabético - Prognóstico

- 50 % Sobrevida livre de doença um ano após o diagnóstico
- Mortalidade peri-operatória:
  - Acima do joelho: 15-20%
  - Abaixo do joelho: 5-10%
- 40 % de mortalidade aos 2 anos após amputação major
- 30 % submetidos nova amputação

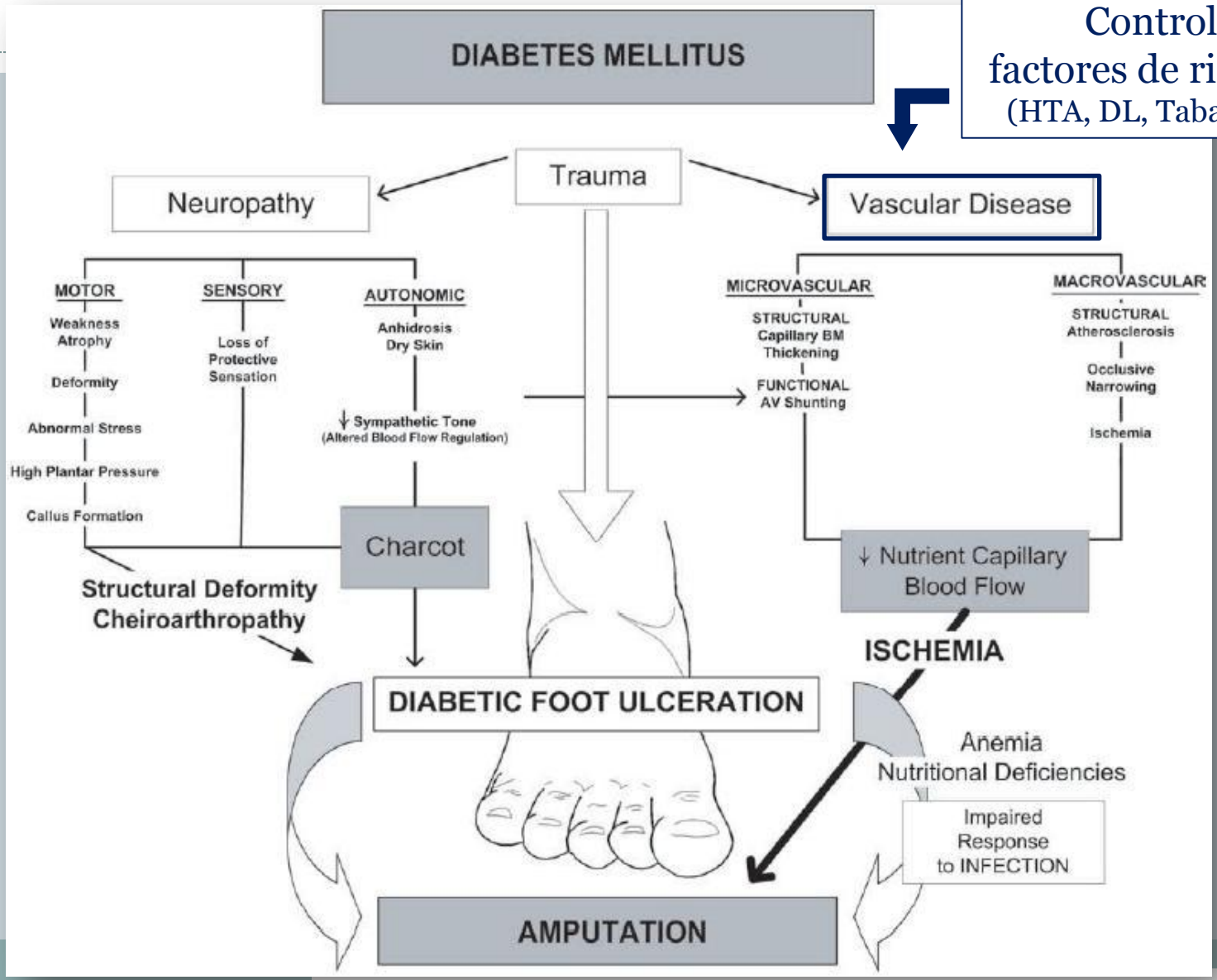
Pé Diabético - Prognóstico

- Reabilitação motora/Mobilidade total:
  - Acima do joelho: 25%
  - Abaixo do joelho: 50%

- Índices de qualidade de vida semelhantes aos dos doentes oncológicos terminais

Pé Diabético - Etiologia

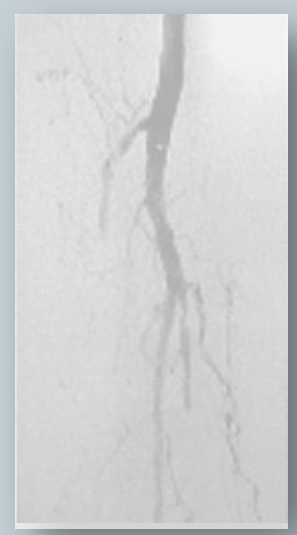
Controlo
factores de risco CV
(HTA, DL, Tabagismo)



"*Diabetic Foot Disorders – A Clinical Practice Guideline*", 2006

Pé Diabético – Doença Arterial

- Sobretudo distal (infra-genicular)
- Tronco tíbio-peroneal (TTP)
- Calcificações tipo II
  (estenoses, concêntricas, contínuas)
- Ausência de circulação colateral e "*out-flow*"
- Processo inflamatório



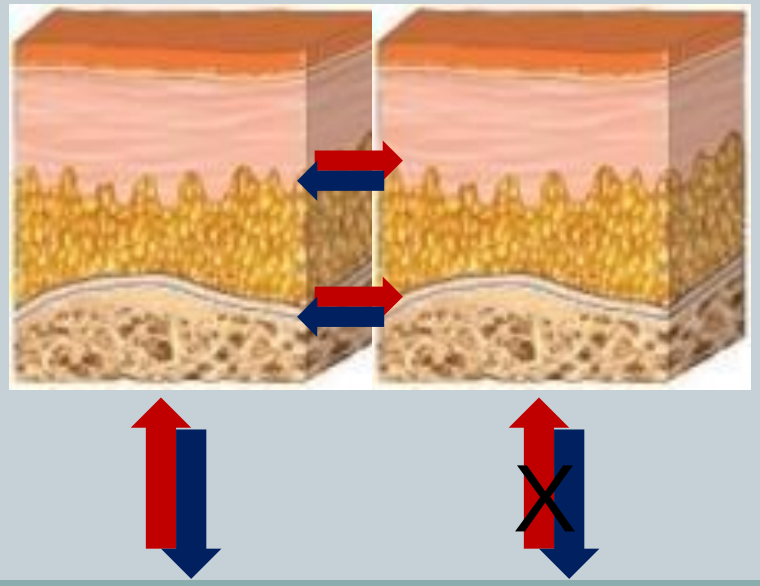
ANGIOPLASTIA

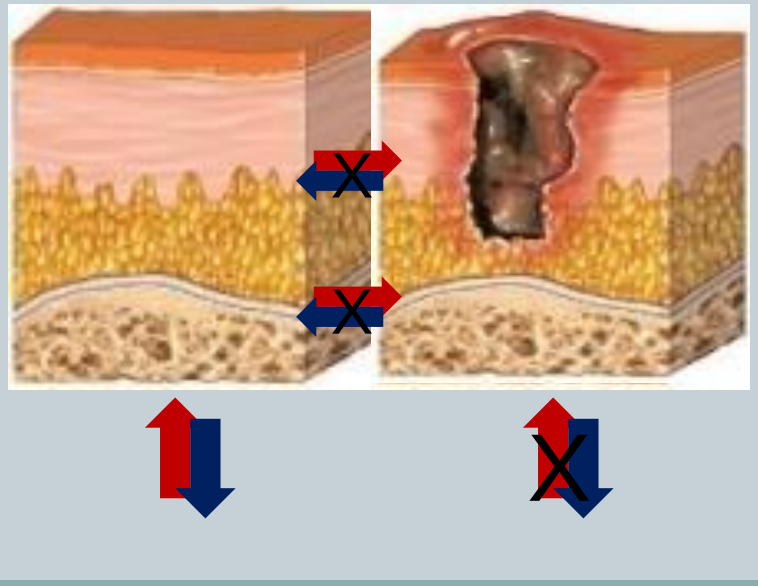
Pé Diabético – "*The Angiosome Concept*"

- Jan Taylor e Christopher Attinger em 1987

- "Bloco" 3D de tecido
  - vascularização terminal ("*feeding vessels*")
  - rede colateral ("*choke-vessels*")

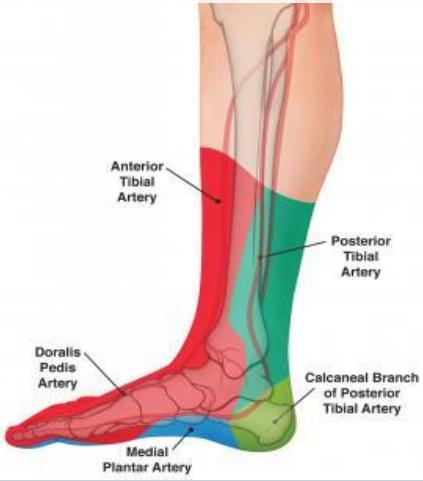
Diabetes

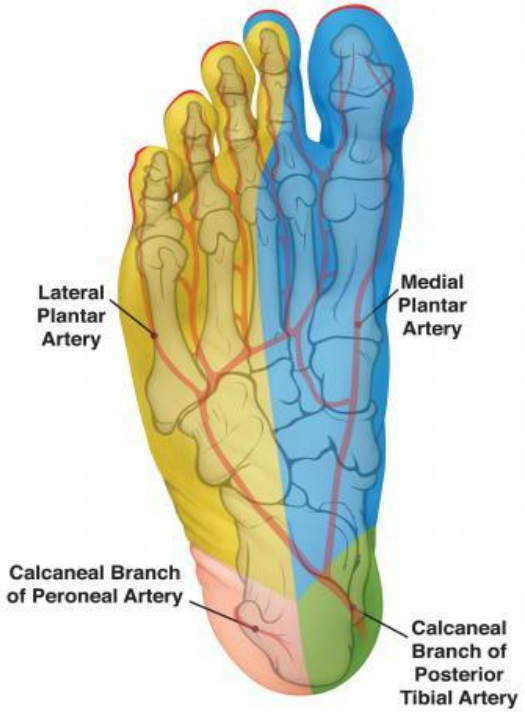


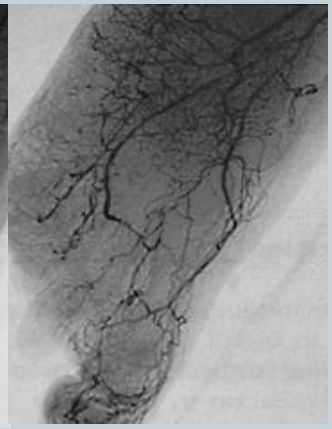


Pé Diabético – "*The Angiosome Concept*"

- 6 x territórios
- Artérias:
  - Tibial anterior
  - Tibial posterior
  - Peroneal







- Microangioplastia da artéria nutritiva
- Fluxos "*directos*"
- Optimizar o "*out-flow*"

Pé Diabético – "*The Angiosome Concept*"

Alexandrescu, V., Hubermont, G., "*The challenging topic of diabetic foot revascularization: does the angiosome-guided angioplasty may improve outcome*", J Cardiovasc Surg 2012; 53: 3-12

TABLE I.—*Available publications for AP applicability in CLI.*

Author	Year	Series	Clin. success/limb salvage without the angiosome model	Clin. success/limb salvage with the angiosome model	P
Bulan [41]	2001	Surg.	68%	91%	P<0.05
Attinger *et al.*[15]	2006	Surg.	62%	89%	P<0.05
Neville *et al.*[18]	2009	Surg.	62%	91%	P<0.05
Varela *et al.*[44]	2010	Surg.+ Endovasc.	73%	92%	P<0.05
Iida *et al.*[42]	2010	Endovasc.	69%	86%	P<0.05
O'Brien-Irr *et al.*[24]	2011	Surg.	61%	82%	P<0.05
Alexandrescu *et al.*[43]	2011	Endovasc.	67%	86%	p<0.05
Blanes *et al.*[49]	2011	Endovasc.	73%	79%	p>0.05
Deguchi *et al.*[50]	2010	Surg.	72%	73%	p>0.05
Iida *et al.*[47]	2011	Endovasc.	68%	82%	p>0.05

Limitações:

- pouca experiência (necessários mais estudos)
- tecnicamente exigente/disponibilidade de material
- aplicabilidade no "*pé neuropático*", sem doença microvascular

Pé Diabético – Infecção

- Tecidos moles (20% osteomielite)
- ↑ da frequência e dos dias de internamento
- ↑ risco de amputação *major*
- Polimicrobianas/Multiressistentes
- Infecção vs Colonização

⬇

Síndrome compartimental

Desbridamento Cirúrgico URGENTE!

Pé Diabético – Triagem/Avaliação Inicial

TABLE I.—*Texas wound classification.*

			Grade			
			0 Pre or postulcerative lesion completely epithelialized	I Superficial wound, not involving tendon, capsule or bone	II Wound penetrating to tendon or capsule	III Wound penetrating to bone or joint
Stage	A	No infection or ischemia	0A	IA	IIA	IIIA
	B	Infection present	0B	IB	IIB	IIIB
	C	Ischemia present	0C	IC	IIC	IIIC
	D	Infection and ischemia present	0D	ID	IID	IIID

Caravaggi, C., "*Integrated surgical protocol for the treatment of the infected diabetic foot*", J Cardiovasc Surg 2012; 53: 23-30

Pé Diabético – Triagem/Avaliação Inicial

TABLE II.—*Diabetic foot triage.*

Code	Where to treat the patient?	lesion	treatment
White Patient does not have any emergency	General Practitioner Level I DFC	Ulcer 0A-1A	1. daily wound dressings 2. dressing shoe 3. LMWH
	Referral to a level 2 DFC in case of: non-progression of ulcer healing after one week plantar ulcer needing off-loading		
Green The patient has a foot lesion wich does not require urgent surgery, without involvement of vital functions	Level 2 DFC	– Acute Charcot – Swollen foot with erythema and increased skin temperature.	1. Total off-bearing of the foot with rigid cast (fiberglass or plaster) 2. LMWH
		Ulcer 0-B 1-B 2-A	1. Broad-spectrum antibiotic therapy 2. LMWH 3. Daily dressing 4. Dressing shoe
Yellow The patient has a foot lesion which needs urgent surgery, without involvement of vital functions	Level 3 DFC	Ulcer 0-CD 1-CD 2-BCD 3-ABCD	1. Broad-spectrum antibiotic therapy 2. LMWH 3. Emergency surgery according to the severity of the local infectious process
Red The patient has a foot lesion with partial impairment of the function of the circulatory or respiratory system	Level 3 DFC	Patient with lesion /ulcer of the font of every T UC degree Regardless of the type of injury patient must be taken immediately to an emergency department for emergency treatment of vital functions. Achieving a stable hemodynamic profile, the patient will be subjected, if necessary, to a surgical treatment of the infection and to revascularization procedures as indicated at the Green and Yellow Code treatment protocol.	
Diagnostic tools 1) foot radiograph in three projections 2) MRI (Charcot, osteomyelitis) 3) vascular assessment: is early revascularization needed?			

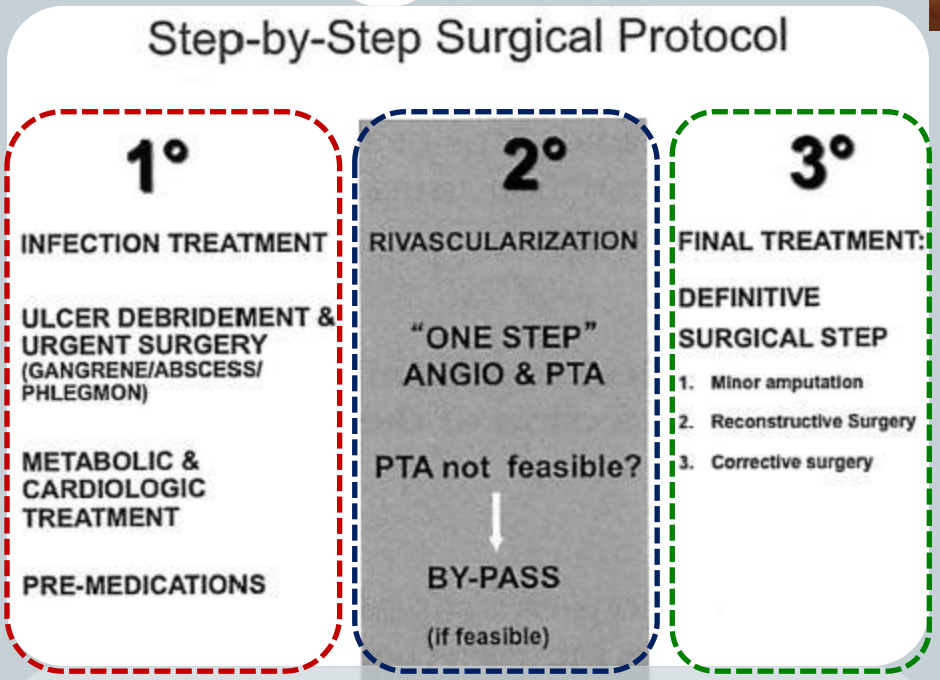
Caravaggi, C., "*Integrated surgical protocol for the treatment of the infected diabetic foot*", J Cardiovasc Surg 2012; 53: 23-30

Pé Diabético – Tratamento

AB *ev* largo espectro:
- Gram+
- Gram –
- Anaeróbios

Controlo:
- metabólico (insulina)
- factores de risco CV

Profilaxia:
-TVP/TEP (HBPM)
- Úlcera Stress (IBP's)



Tratamento cirúrgico URG:
- Desbridamento
- Drenagem de abcesso
- Fasciotomia (Sínd. Compartimental)
- Amputação *minor*

Arteriografia M. Inf:
- Diagnóstica
- Terapêutica

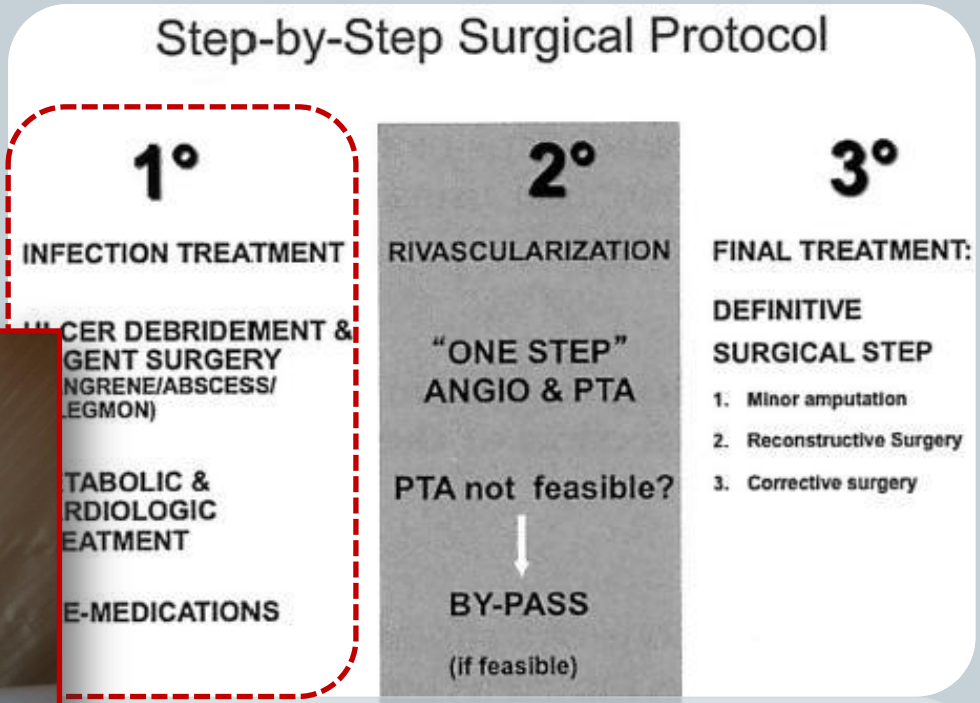
Tratamento médico:
- Antiagregação
- Vasodilatadores

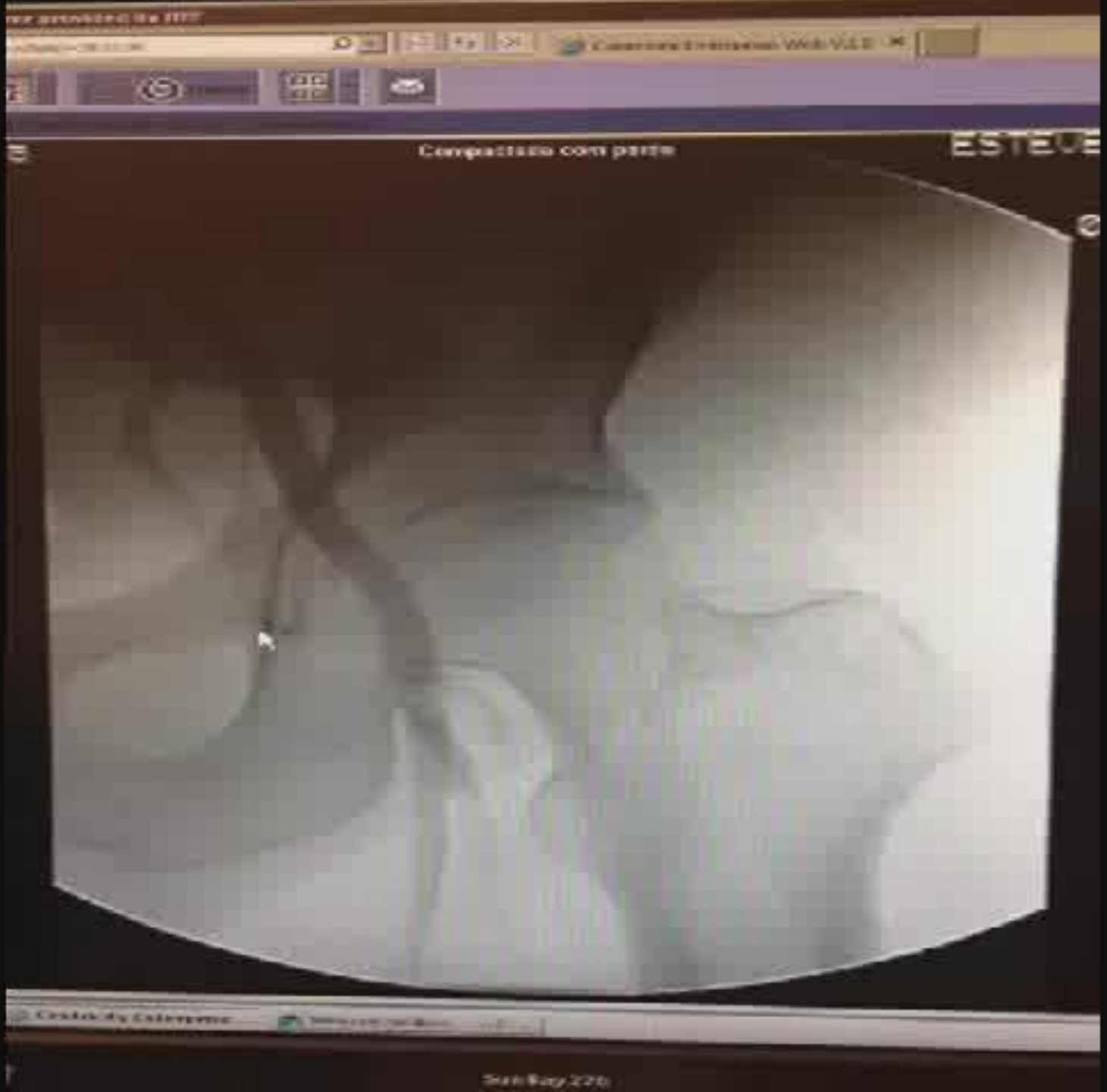
- Nível de Amputação
- Reconstrução
- Reabilitação Motora

Caravaggi, C., "*Integrated surgical protocol for the treatment of the infected diabetic foot*", J Cardiovasc Surg 2012; 53: 23-30

Pé Diabético – Tratamento

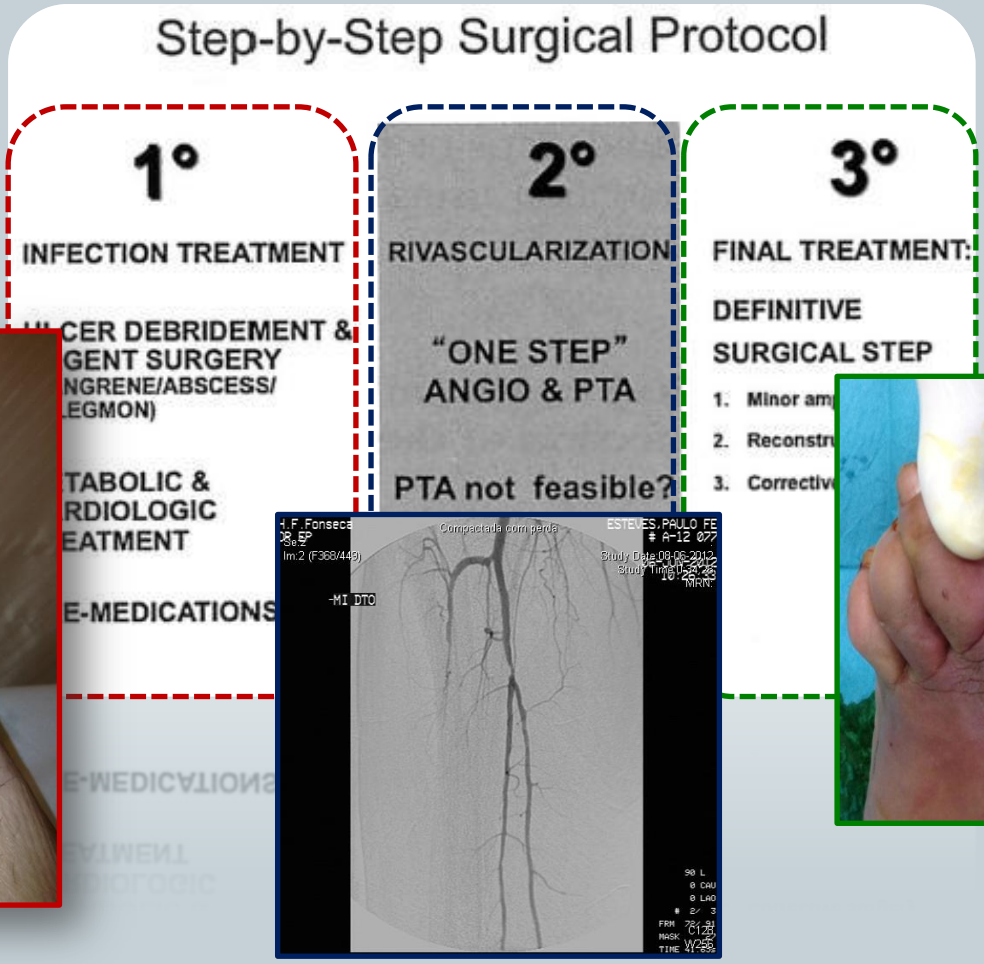
- Homem
- 62 anos
- DM tipo 2
- Autónomo




Compactação com perda

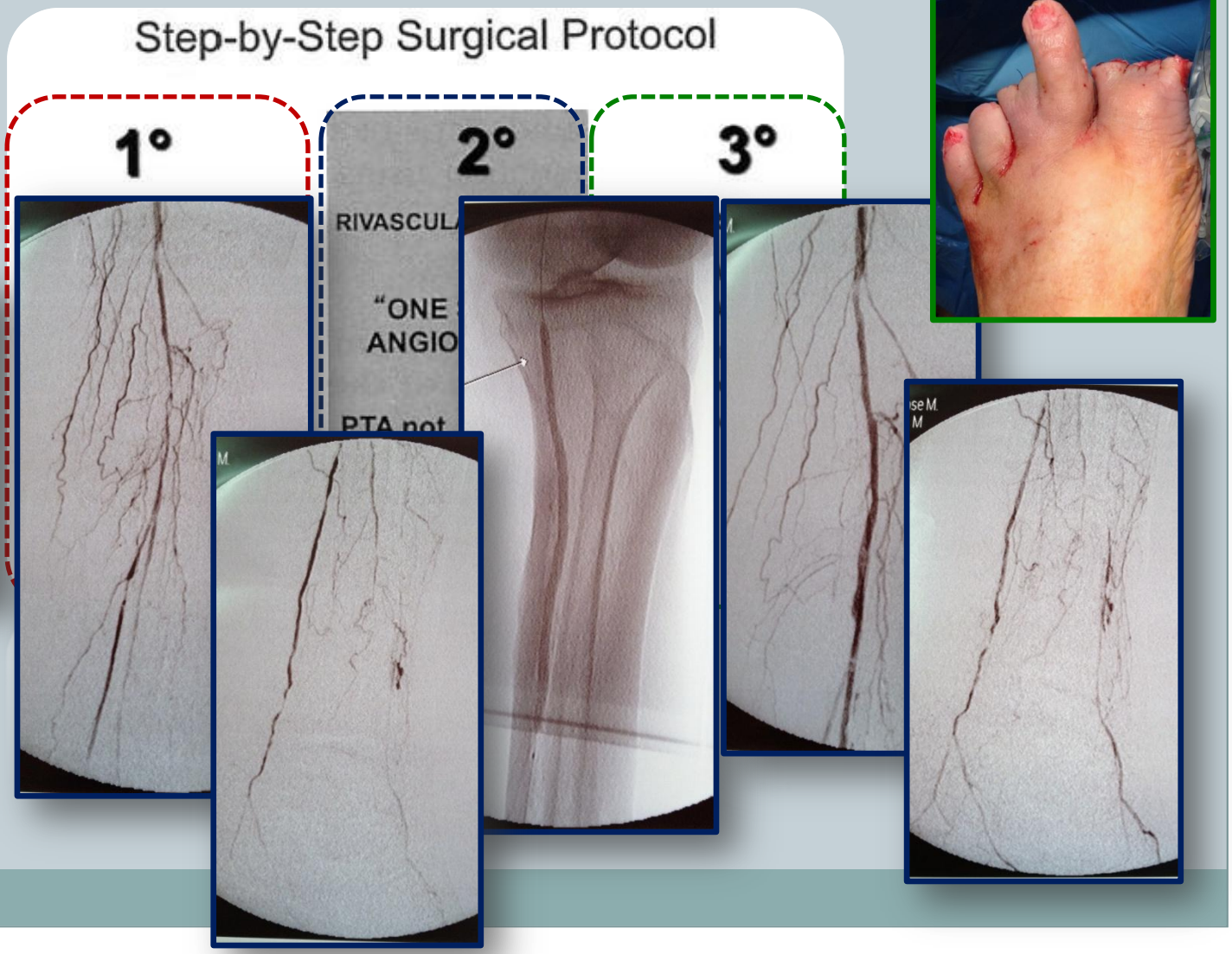
Pé Diabético – Tratamento

- Homem
- 62 anos
- DM tipo 2
- Autónomo



Pé Diabético – Tratamento

- Homem
- 59 anos
- DM tipo 2
- Autónomo



Pé Diabético – Amputação Primária?

Indicações (TASC II):

- Controlo de foco na sépsis grave
- Acamados, anquilose articular
- Esperança de vida curta
- Amputados?

Decisão:

- Vontade do doente/familiares
- Potencial de cicatrização
- Potencial de reabilitação
- Qualidade de vida

Custo?

- Amputação primária

  VS

- Revascularização

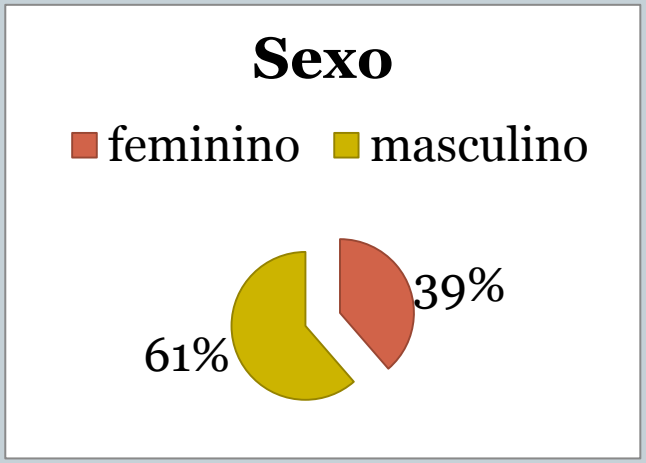
Norgren. *et al*, "*Inter-Society Consensus for the Management of Peripheral Arterial Disease (TASC II)*", Eur J Vasc Endovasc Surg 2007;

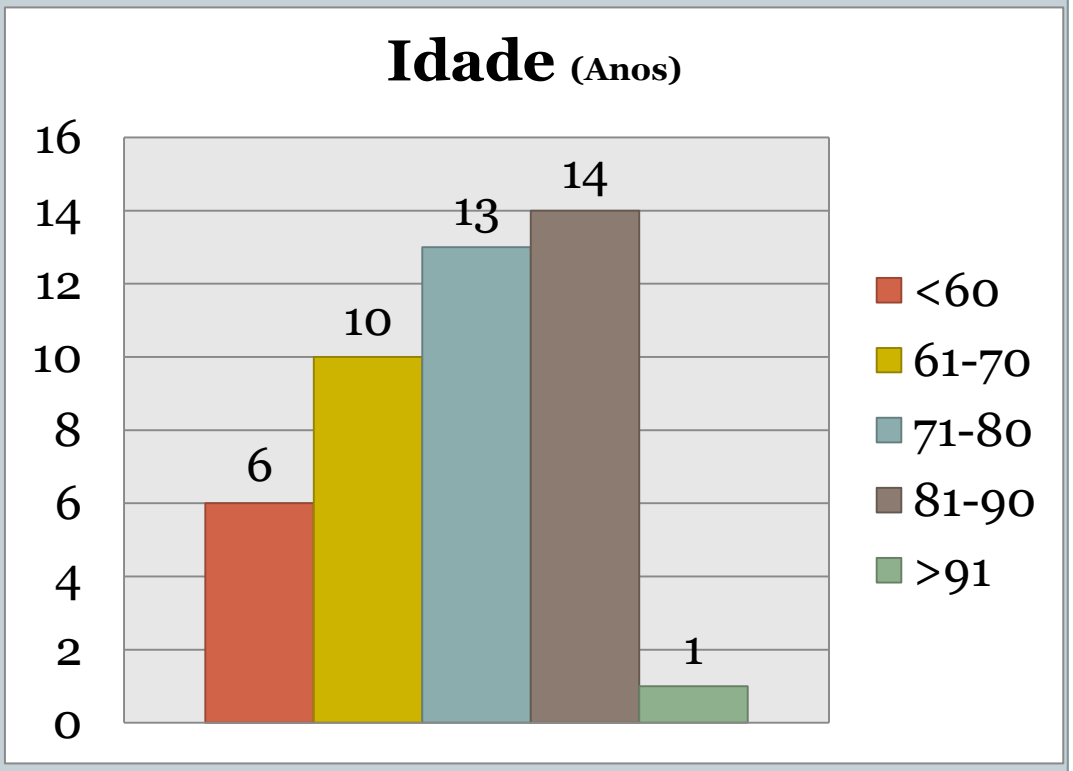
Setacci, *et al*, "*Primary amputation: is there still a place for it?*", J Cardiovasc Surg 2012

Pé Diabético – Casuística Cirurgia B

Janeiro a Abril de 2012

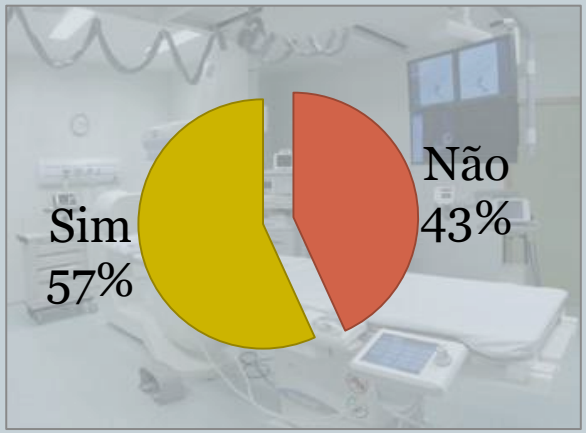
- **44** Doentes (**5,8%** Total)
- 6 Óbitos
- **13,6 %** Mortalidade (Global: 1,6%)

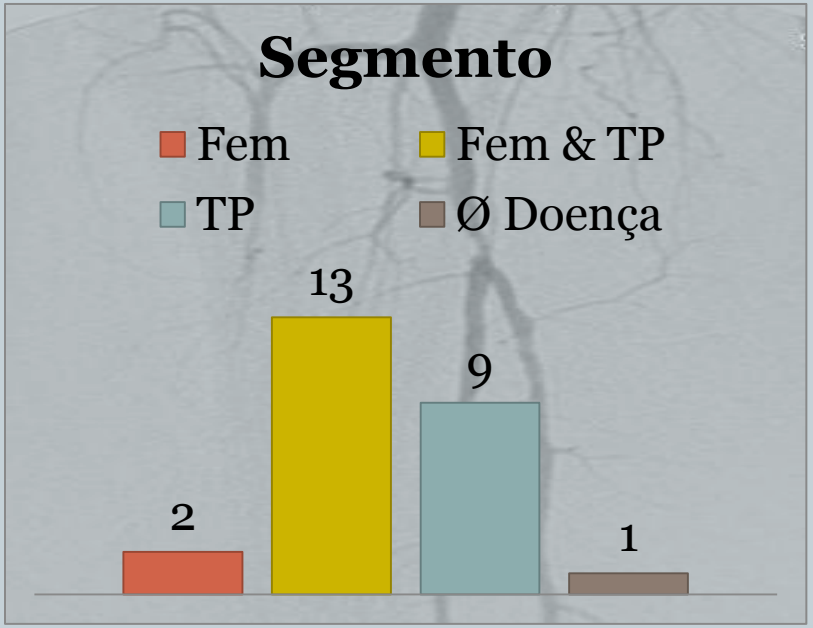




Pé Diabético – Casuística Cirurgia B

Arteriografias

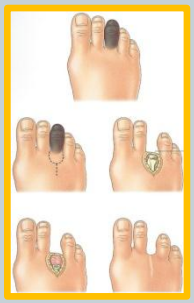


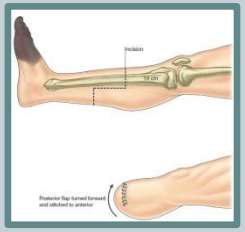


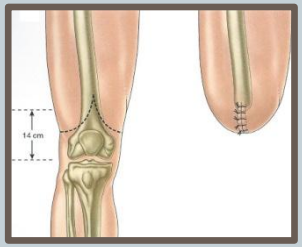
- 20% Terapêutica
- 9% Referenciados para Cirurgia de Revascularização

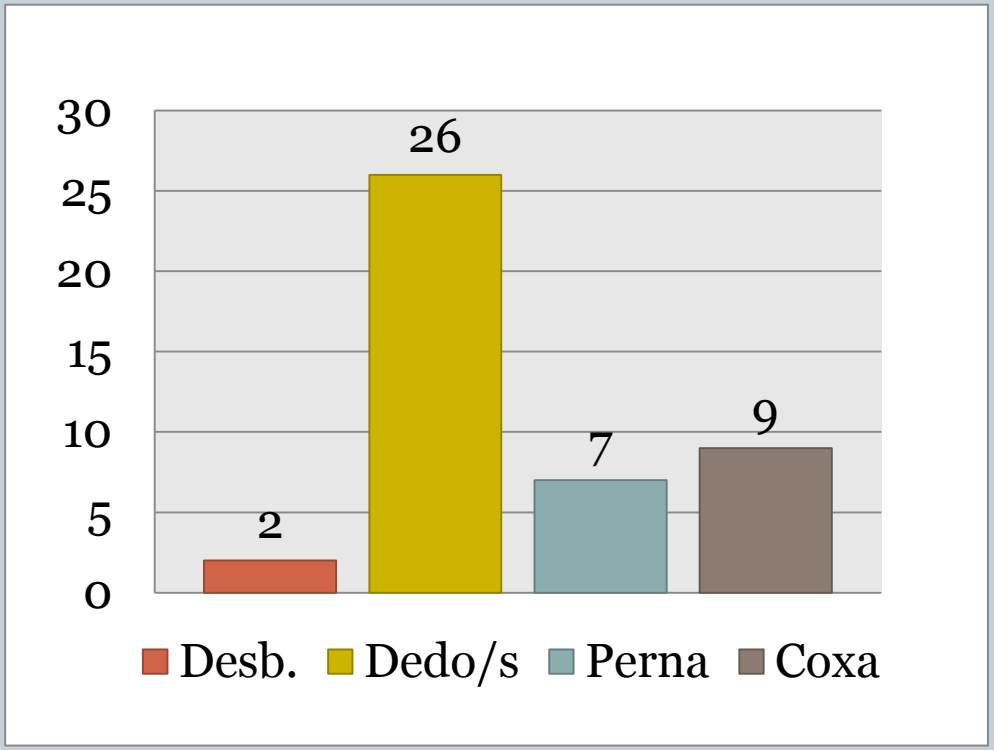
Pé Diabético – Casuística Cirurgia B

Tratamento Cirúrgico

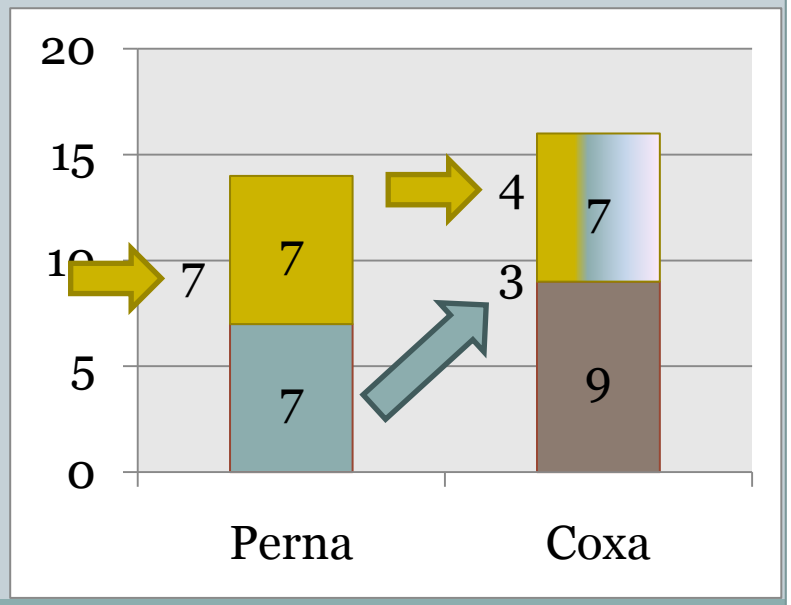






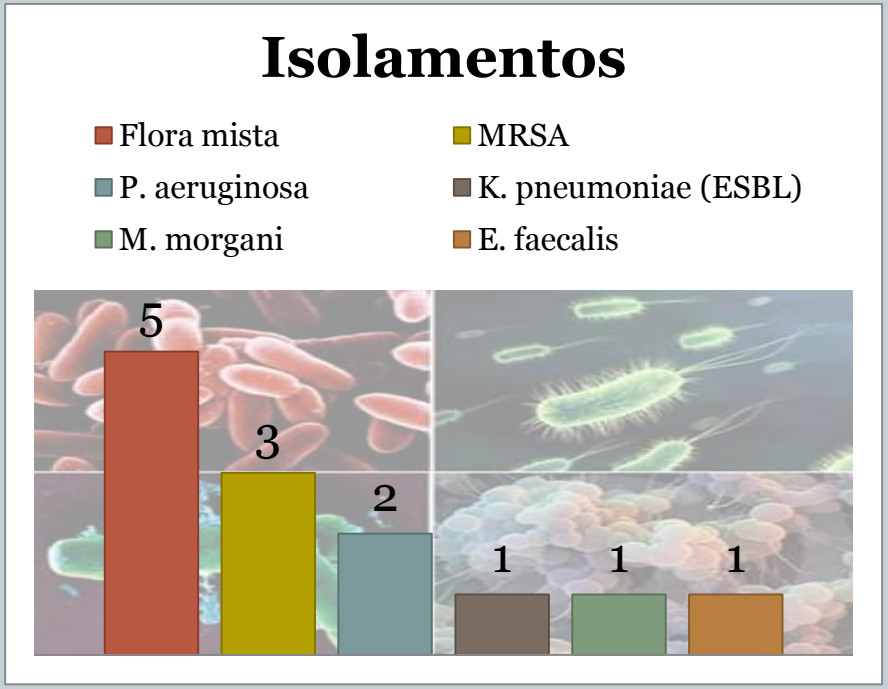


- Taxa de Re-Amputação: **31,8%**



Pé Diabético – Casuística Cirurgia B

Infecção (29,6%)



- Demora média: **14,3 dias**
  - Global: 4,6 dias
- Re-internamento: **40,9%**
  - Global aos 5 dias: 2,9%
  - Global aos 30 dias: 9,0%
- Re-amputação: **37 dias** (média)
- Mortalidade: **13,6 %** (Global: 1,6%)
  - Coxa: 25%
  - Perna: 14,3%

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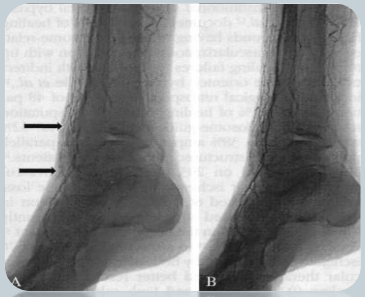
PÉ DIABÉTICO
- Uma Abordagem Multidisciplinar



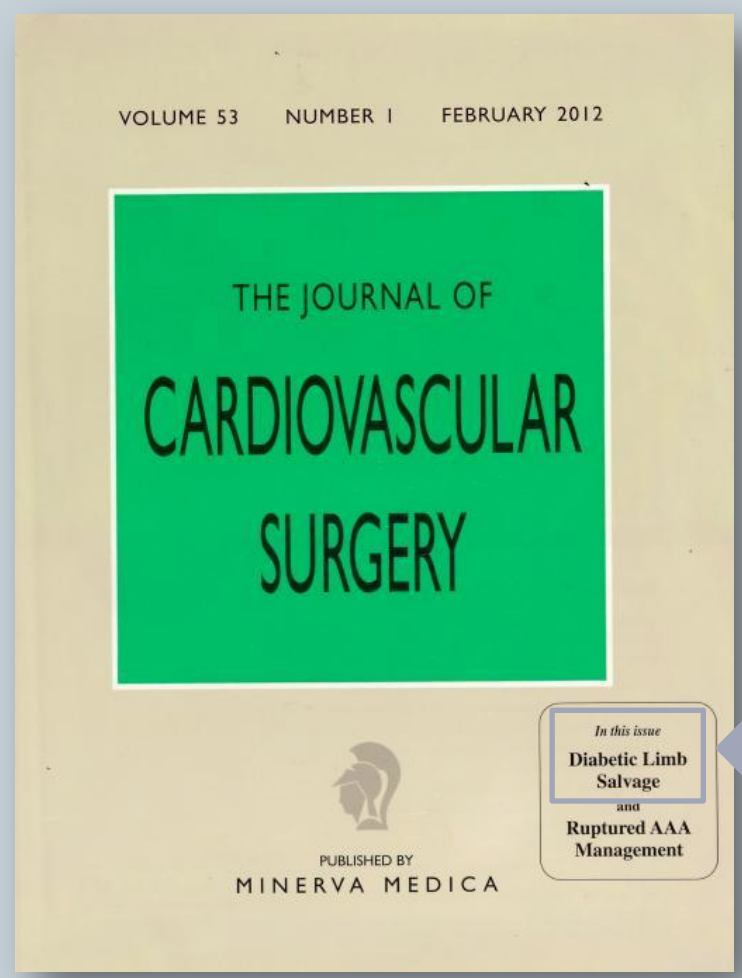




OBRIGADA PELA VOSSA ATENÇÃO!

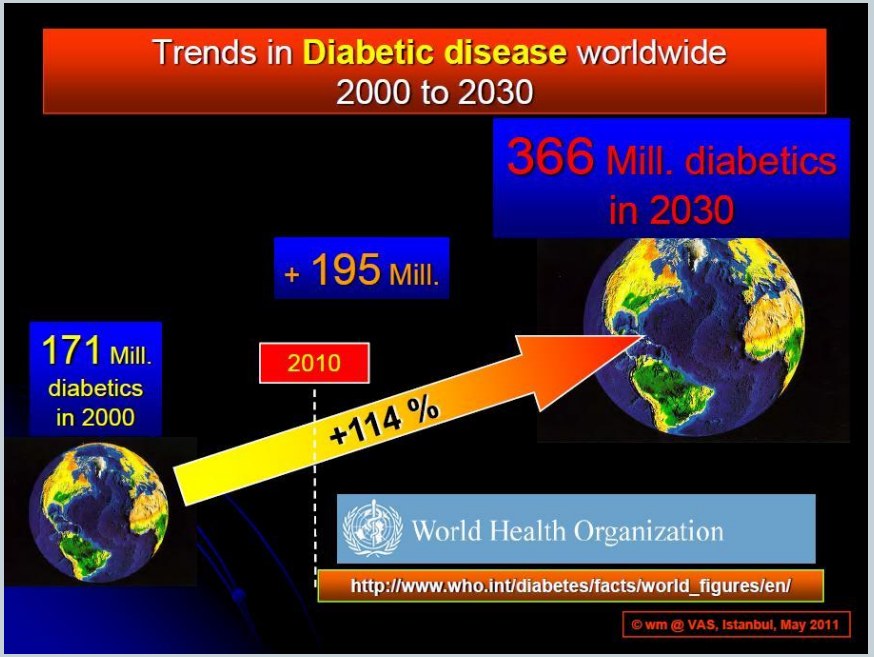
Bibliografia

- Bosiers, M., Deloose, K., "*New developments in diabetic limb salvage*", J Cardiovasc Surg 2012; 53: 1-2.
- Alexandrescu, V., Hubermont, G., "*The challenging topic of diabetic foot revascularization: does the angiosome-guided angioplasty may improve outcome*", J Cardiovasc Surg 2012; 53: 3-12.
- Caravaggi, C., "*Integrated surgical protocol for the treatment of the infected diabetic foot*", J Cardiovasc Surg 2012; 53: 23-30.
- Setacci, F., Sirignano, P., *et al*, "*Primary amputation: is there still a place for it?*", J Cardiovasc Surg 2012; 53: 53-9.
- Frykberg, R. G., *et al*, "*Diabetic Foot Disorders – A Clinical Practice Guideline*", Supplement to *The Journal Of Foot & Ankle Surgery* , Setember/October 2006, Volume 45, Number 5.
- Norgren L., Hiatt W.R., *et al*, "*Inter-Society Consensus for the Management of Peripheral Arterial Disease (TASC II)*", Eur J Vasc Endovasc Surg 2007; 33 (Suppl 1): S1-75
- Meichelboeck, W., "*End Stage Renal Disease (ESRD) epidemiology –Where are we going ?*", in the *International Congress of the Vascular Access Society*, Istanbul, Turkey, May 5-7, 2011.
- Alvim Serra, Luís M. , *et al*, "*Pé Diabético – Manual para a Prevenção da Catástrofe*", 2ª Edição, Lidel, Porto, Setembro 2008.

Pé Diabético – No Mundo



- Envelhecimento
- Diabetes Mellitus



"*End Stage Renal Disease (ESRD) epidemiology –Where are we going ?*", **W. Meichelboeck**, in the *International Congress of the Vascular Access Society*, Istanbul, Turkey, May 5-7, 2011.

Pé Diabético – Em Portugal

- Ausência de dados epidemiológicos!
- 700.000 Diabéticos em Portugal
  (1,4 Diabéticos por cada 20 habitantes)
- 15 % Pé Diabético
  (apróx 105.000 doentes)
- Prevalência "*Pé Neuroisquémico*"
- Aumento taxa de amputações
  (1200 amputações/ano, DGS 2001)