Necrotizing soft tissue diabetic foot infections

Our experience in 116 consecutive patients

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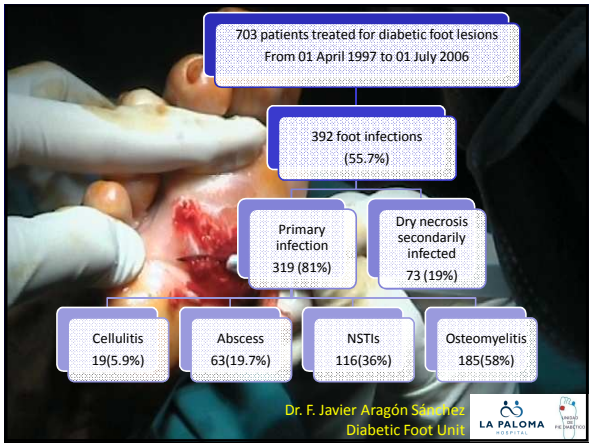

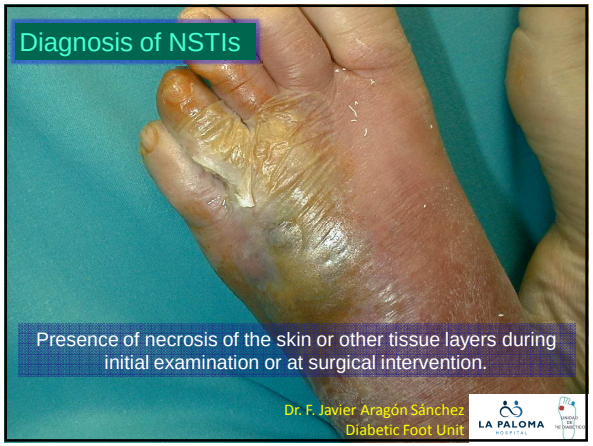

Diabetic Foot Infections

- Sof tissue infections
  - Cellulitis
  - Abscess
  - Tendovaginitis
  - Necrotizing soft tissue infections
    - Superficial
      - Necrotizing cellulitis
    - Deep
      - Necrotizing fasciitis
      - Myonecrosis
- Bone infections
  - Osteitis
  - Osteomyelitis

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Necrotizing fasciitis
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Myonecrosis
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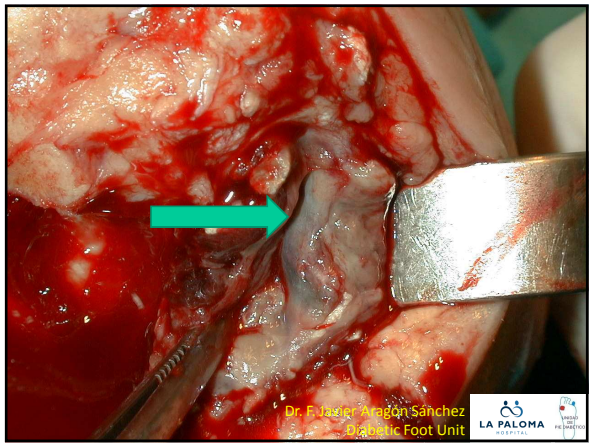
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Why surgical treatment?
•NSTIs produce a destruction of local microcirculation and antibiotics cannot penetrate to the infection site.
•This entity requires early aggressive debridement, which will allow the surgeon to establish the layers affected by the necrotizing process and the dissemination of infection

Our approach in NSTIs
•Early surgical treatment (first 12 hours)
•Aggresive debridement
•Amputations are conservative where possible
•Repeat surgery when needed
•Antibiotic treatment (initially empiric)
•Postoperative advanced wound care
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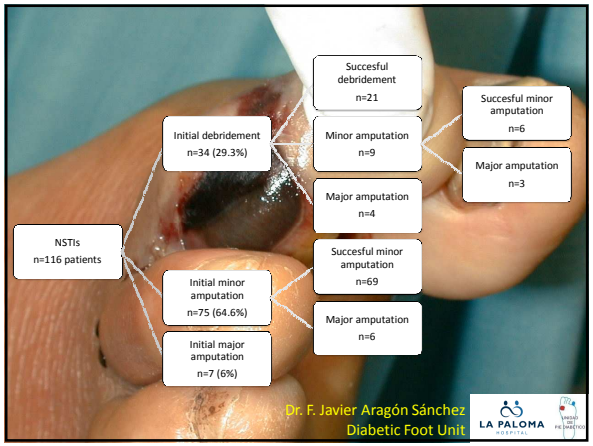
NSTIs
n=116 patients
Initial debridement
n=34 (29.3%)
Initial minor amputation
n=75 (64.6%)
Initial major amputation
n=7 (6%)
Succesful debridement
n=21
Minor amputation
n=9
Major amputation
n=4
Succesful minor amputation
n=69
Major amputation
n=6
Succesful minor amputation
n=6
Major amputation
n=3
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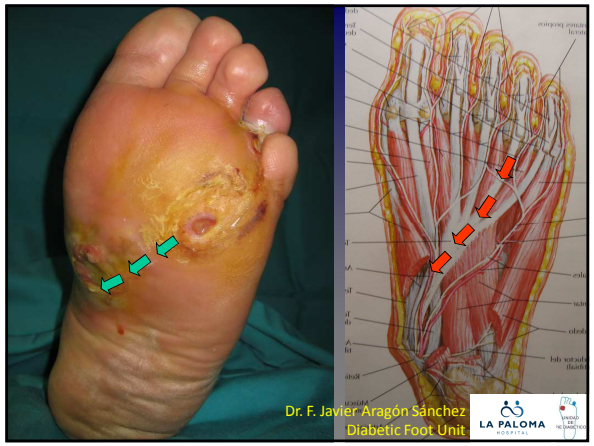
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Free gas in sof tissue
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Ulcer as point of entry of infection, n(%)	88 (75.8)
Evolution of skin lesion, median days (range)	20 (0-730)
Evolution of infection, median days (range)	7 (1-28)
Temperature>37ºC, n(%)	52 (45)
ESR, median (range)	90(25-150)
Leucocytosis, n(%)	89(76)
Glycated haemoglobin, median (range)	9.6 (4.3-13.5)
Clinical signs of infection, n(%)	Suppuration,35 (30.1) / Redness, 105 (90.5) Swelling, 100 (86.2) / Skin necrosis, 99 (85.3) Fetid smell, 94 (81)
Osteomyelitis, n(%)	43 (37)
Gas in soft tissue in X-Ray, n(%)	27 (23)
Lower limb ischaemia, n(%)	65 (56)

Staphylococcus aureus	41 (20 MRSA)
Proteus	19
Staphylococcus epidermidis	15
Escherichia coli	11
Enterobacter	9
Enterococcus	7
Streptococcus pyogenes	6
Pseudomonas aeruginosa	6
Citrobacter freundii	5
Serratia	4
Streptococcus saprophyticus	1
Streptococcus viridans	2
Klebsiella pneumoniae	1
Klebsiella oxytoca	1
Acinetobacter	2
Morganella morganii	4
Providentia	2
Aeromonas	1
Burkholderia cepacia	1
Without growth	13

	Debridements	Minor amputations	Major amputations	Deaths
Necrotizing cellulitis n= 92 (79%)	n= 19 (20.6%)	n= 67 (72.8%)	n= 6 (6.5%)	n=2 (2.1%)
Necrotizing fasciitis n= 18 (15,5%)	n= 2 (11.1%)	n= 7 (38.8%)	n= 9 (50%)	n=4 (22.2%)
Myonecrosis n= 6 (5,5%)		n= 1 (17%)	n= 5 (83%)	n=1 (16.6%)
Total	n=21 (18.1%)	n=75 (64.6%)	n=20 (17%)	n= 7 (6%)

Univariate Analysis

Variables	Limb salvage (n=96)	Major amputation (n=20)	p
Age, median	64,6	70,7	0.03
ESR, median	88,9	106,8	0.03
White blood cell count, median	13763	19243	0.00
Forefoot	85,4%	50%	0.000
Hindfoot	11,5%	45%	0.000
Necrotizing cellulitis	89,6%	30%	0.000
Necrotizing fasciitis	9,4%	45%	0.000
Myonecrosis	1%	25%	0.000

Logistic Regression model

	Variable	Odds ratio (95% confidence interval)	p-value
Limb loss			
	Necrotizing fasciitis	19.3 (3.5-105.6)	0.0006
	Myonecrosis	58 (4.5-737.8)	0.0018
Mortality			
	Age > 75 years old	16 (1.7-150.7)	0.014
	Deep infection	20 (2.5-157.6)	0.006

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NSTIs require aggressive surgical treatment. Life-threatening infections may require a major amputation to save the patient's life.

The division into superficial infections or necrotizing cellulitis and deep infections, including necrotizing fasciitis and myonecrosis have prognostic value as regards the risk of major amputation and mortality.

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