

Diabetic Wounds: Podiatry's Impact

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- . No Disclosures for this lecture

Global Diabetes Numbers

- 537M in 2021 : 1 in 10
- 643M by 2030
- 783M by 2045

Some Stats

- In the USA, we are at the forefront of amputation prevention.
- APMA: "In 2013 about 73K Americans with diabetes needed amputations. The average cost for each amputation is over \$70K."
- Podimetrics 2022: "Every four minutes, there's a limb lost to diabetes and each procedure costs as much as \$100K."

So What?

- According to CMS: If diabetic patient has one amputation, they are 50% more likely to have a second amputation within three years. Once they've had two amputations, they are 50% more likely to succumb to complications of amputation and diabetes within five years.



What do we do?

- Ideally, see newly diagnosed patients for foot evaluation in the office upon diagnosis.
- If they have issues with PVD or PN, we see them every 9 weeks for “at risk foot care” – Cut toenails, trim callus, foot exam.
- If they have healthy feet, see them semi-annually to annually for follow up foot checks.

What do we do?

- Forge a relationship with our patients.
- Call if they see anything unusual on their feet
- Asked to inspect their feet daily.
- We see them within 24 hours if there is a problem.

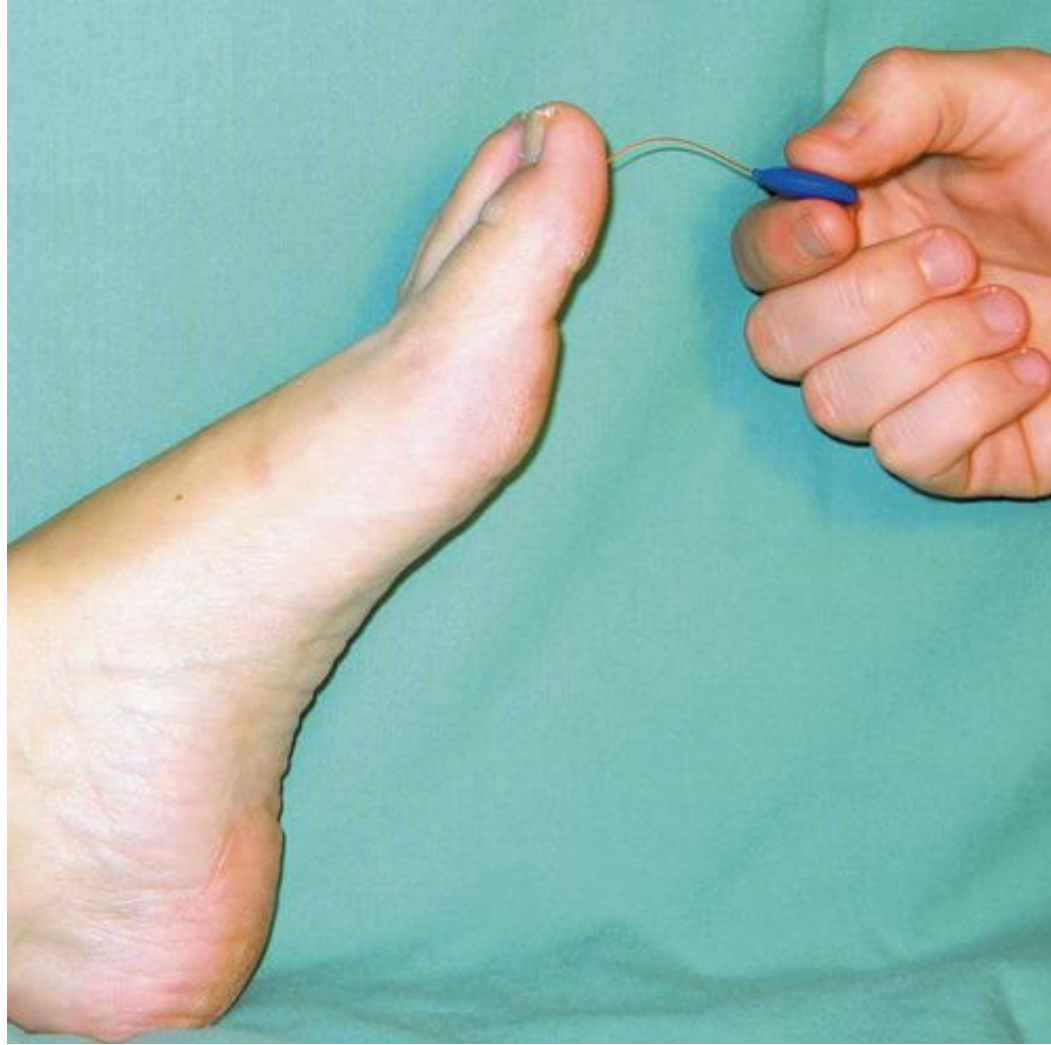


Medical Status

- Reviewed each visit
- Medical health: HTN, Cardiac Status, Hepatic Function, Kidney Function, Pulmonary function
- Labs: Blood Glucose levels, HbA_{1c}
- New meds/diagnoses/doctors.

Podiatric Exam

- Vascular: Pedal pulses, Edema, Cyanosis, Skin texture/turgor
- Neurologic: Proprioception, Vibration, Protective Sensation (S/W)
- Orthopedic: Mechanical deformities that can cause callus/wounds
- Dermatological: Tinea, Onychomycosis, Pre-Ulcerative Callus



Team Approach

- Primary Care
- Endocrinology
- Vascular Surgery
- Infectious Disease

In Office Goal

- Education
- Keep patients out of hospital
- Keep their toes/feet!
- #1 Challenge: Patient compliance

Unfortunately...

- Patients miss their appointments...
- They don't call when a problem arises...
- They don't take their meds...
- And show up with this...







Before we get into those...

- Let's talk wounds
- Types of wounds
- Wound care dressings

Important Wound Care Concepts

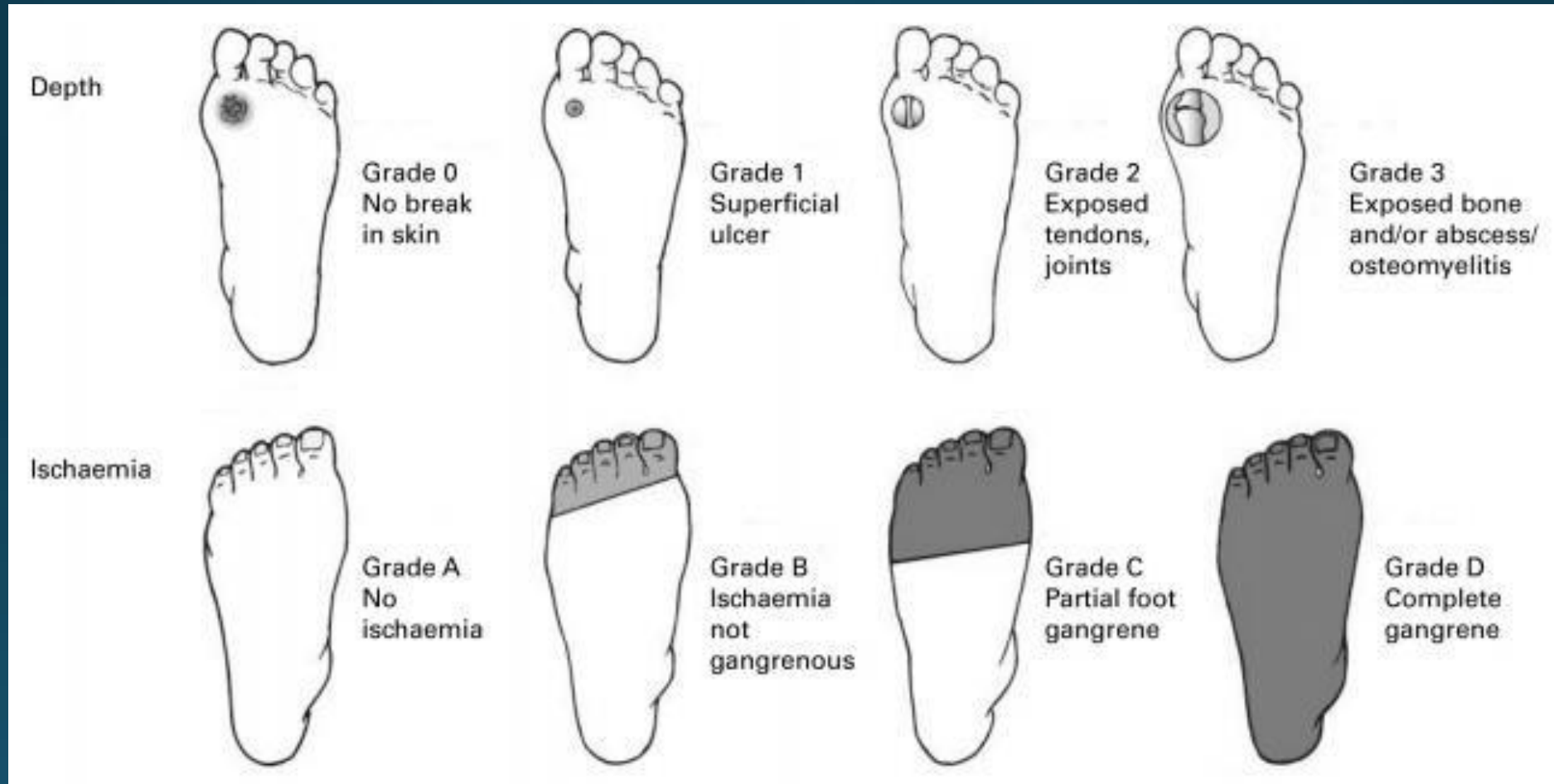
- Patient's medical status
- Depth of Wound
- Drainage/Type of Drainage
- Infected?

Diabetes and Wound Healing

- Poor Vascularity
- Excessive cellular inflammation
- Reduced Angiogenesis
- Improper pH: Ideal is slightly acidic at 4.5 - 5.5
- Biofilm production
- Disrupted Keratinocyte migration
- Decrease fibroblast proliferation

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8432997/>

Depth – Wagner Classification



Drainage

- Serous
- Serosanguinous
- Exudate
- Purulent

Infected?

- Erythema
- Edema
- Increase in temperature
- Purulence
- Sinus tracts
- Probing to bone = Osteomyelitis



Managing Wounds

- If it's wet, dry it.
- If it's dry, wet it.
- Wounds can change weekly, and protocols can change more frequently.
- This is why non-compliance is such an issue.

Dry Wound Management

- Wet to Dry Dressing
- HydroGel
- Monitor wound daily and change dressing daily
- Home Health Agencies



Wet Wound Management

- Depends on how much drainage
- Depends on type of drainage: Serous/Exudate
- Depends on tissue: Fibrotic/Granular

Mild to Moderate Drainage

- New Copper dressing: Revolutionary product
- Changed weekly but depends on the wound.
- Can use for tunneling wounds.
- Betadine?

Heavy Drainage/Exudate

- Alginates
- May need to change daily: Biofilm!
- Not Silver!
- Causes discoloration, irritation and falls apart. Was the gold standard, but recent studies disproved its effectiveness.



Eschar/Fibrotic Wounds

- Requires debridement or cross hatching
- Collagenase: Enzymatic debridement
- Changed every 2-3 days
- Infected wounds are contraindicated.



Collagenase

- Enzymatic Debridement.
- Expensive.
- Need to know how to apply properly and when to change.
- Patient education: Drainage and odor.

A Word About Debridement

- Mandatory (with exceptions)
- Weekly if possible.
- Patient must bleed.
- Clean any hyperkeratotic tissue.

Necrotic Wounds/Gangrene

- Dry, no odor, no drainage: Leave it alone!
- Wet/Odor/Drainage: Operating room.

Wet Gangrene

- Dangerous situation medically
- Can be medical emergency: Necrotizing Fasciitis
- Amputation required.

Go to the Hospital!!

- Infected/Purulence
- Severe Odor
- Patient is ill/Septic
- We send through ED for admission: Team Approach

Patient Admitted

- Blood Work
- X-Ray: - Gas in soft tissue is medical emergency (Odor!!)
- Also looking for Osteomyelitis
- MRI: Abscess or Osteomyelitis
- Consults: Vascular and ID

In House Wound Care

- Same as in office.
- Products generally more available
- Work closely with Wound Care Nurses

Intra-Operative Management

- Debridement
- Ultra Sonic Mist Debridement
- Antibiotic beads
- Skin Substitutes
- Negative Pressure therapy





Ultra Sonic Mist Debridement

- Removes Biofilm and Bacteria
- Preserves healthy tissue and vital structures
- Helps with wound bed prep



Antibiotic Beads

- Biodegradable: Calcium Sulfate
- Impregnated with Vancomycin or Gentamycin (Kidneys!)
- Locally applied.



Fig. 1

Skin Substitutes

- Far superior to patient STSG or FTSG
- No Donor Tissue Morbidity
- Umbilical Tissue: Grafix/Stravix (refrigeration)
- STSG Human allograft: Theraskin





Negative Pressure Therapy

- Excellent surgical adjunct
- Especially with skin substitutes: Prevents seromas
- Labor intensive
- Highly effective.



From Infection to Healed

- Case Study
- Severely infected wound in the office...
- To Healed...6 months.



















OR patient 1/10/24

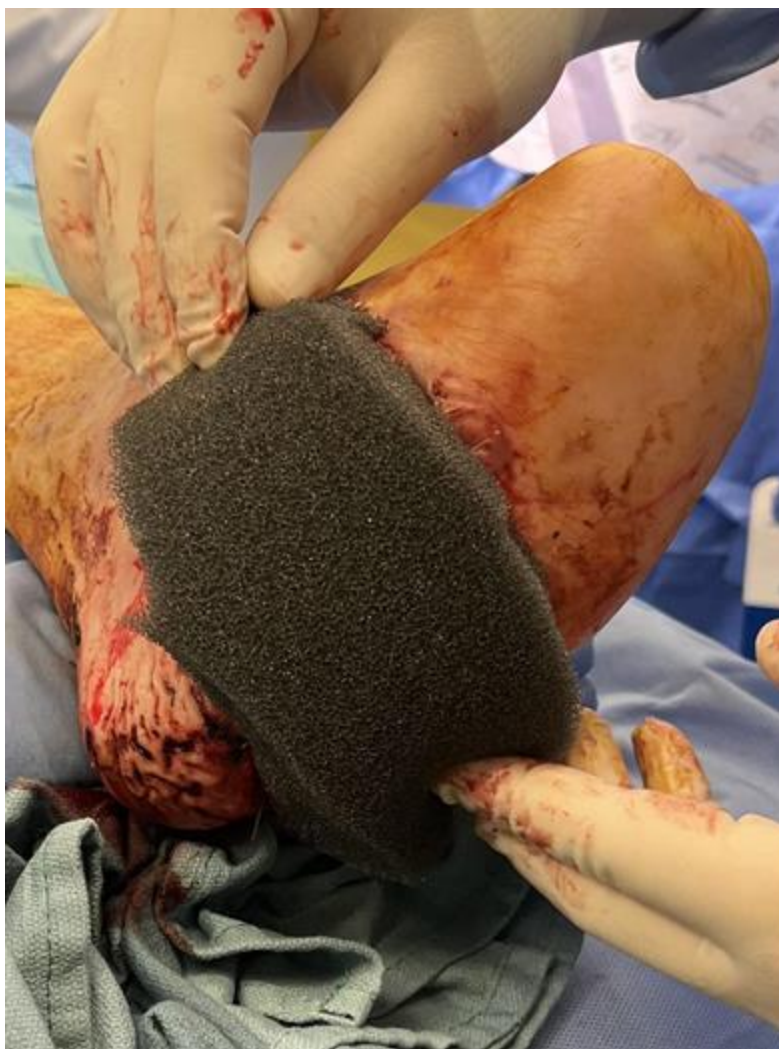
- Severely infected.
- Did bedside debridement sharply.
- Then:
 - Wound debride in OR with Ultrasonic Mist.
 - Applied Amniograft.
 - Wound VAC.

















Thank You!!!

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