2018 MID-ATLANTIC
CONFERENCE

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VASCULAR THERAPIES

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Lose a toe, Save a Limb: The Value of Complex Foot Reconstructions

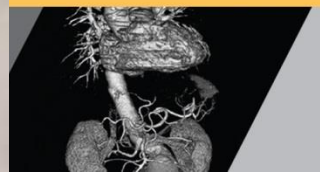
Objectives

- Review the morbidity and mortality associated with amputation
- Discuss important anatomic considerations and the effects on function following amputation
- Discuss long-term salvage rates with various amputation levels
- Identify indications for complex reconstruction and its role in limb salvage

Epidemiology

- Who gets amputations?
  - Overwhelming majority due to sequelae of diabetes and peripheral vascular disease
  - 9.4% (30.3 million Americans) have diabetes from 2015 ADA data
  - Diabetes accounts for 63-69% of amputations performed in the US

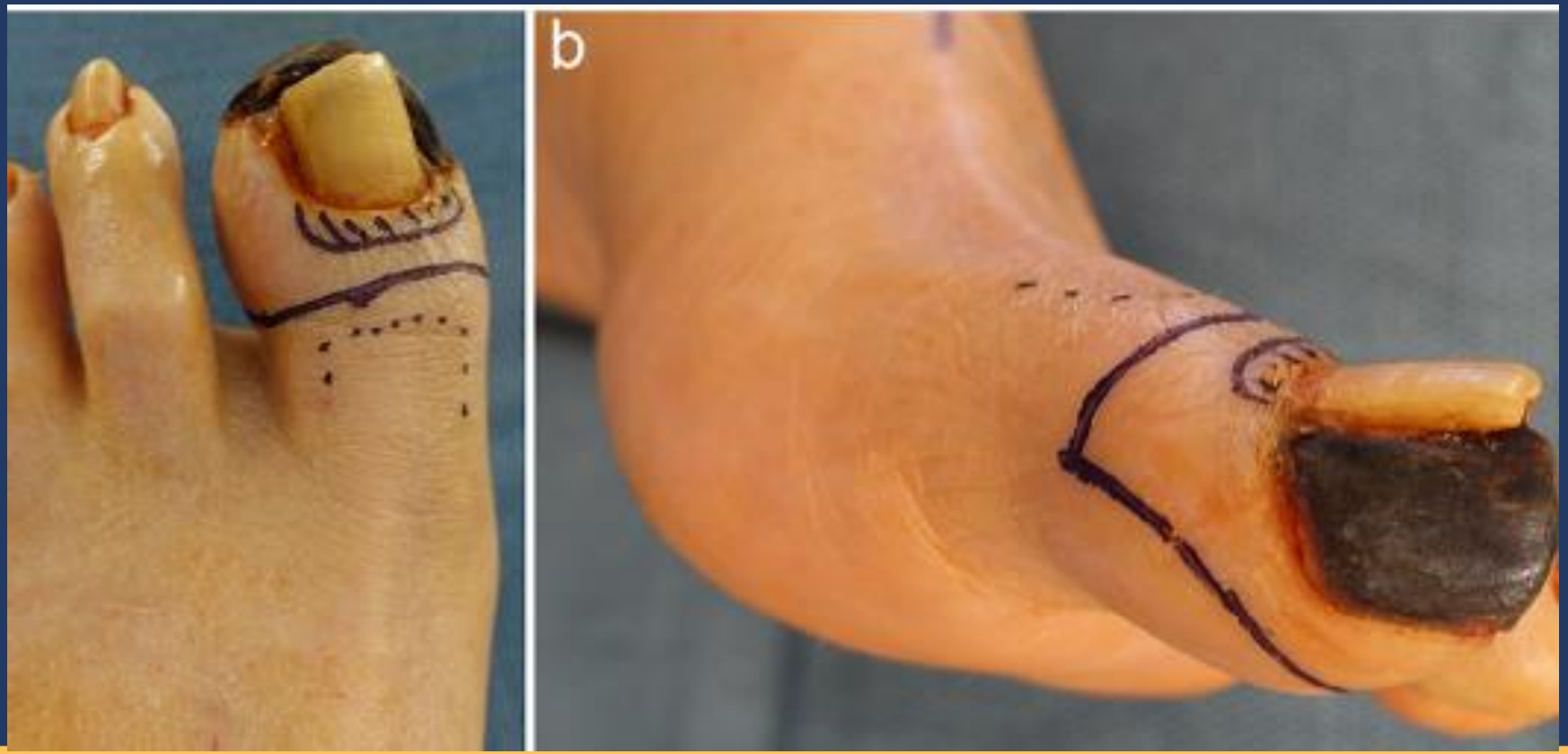
Smith, DG. Amputation. Preoperative assessment and lower extremity surgical techniques. Foot and ankle clinics 6(2): 271-296, 2001.



Amputation Terminology

- Commonly Performed Pedal Amputations
  - Toe Amputation
  - Ray Amputation
  - Midfoot Amputations (TMA and LisFranc)
  - Chopart's Amputation

Toe Amputation



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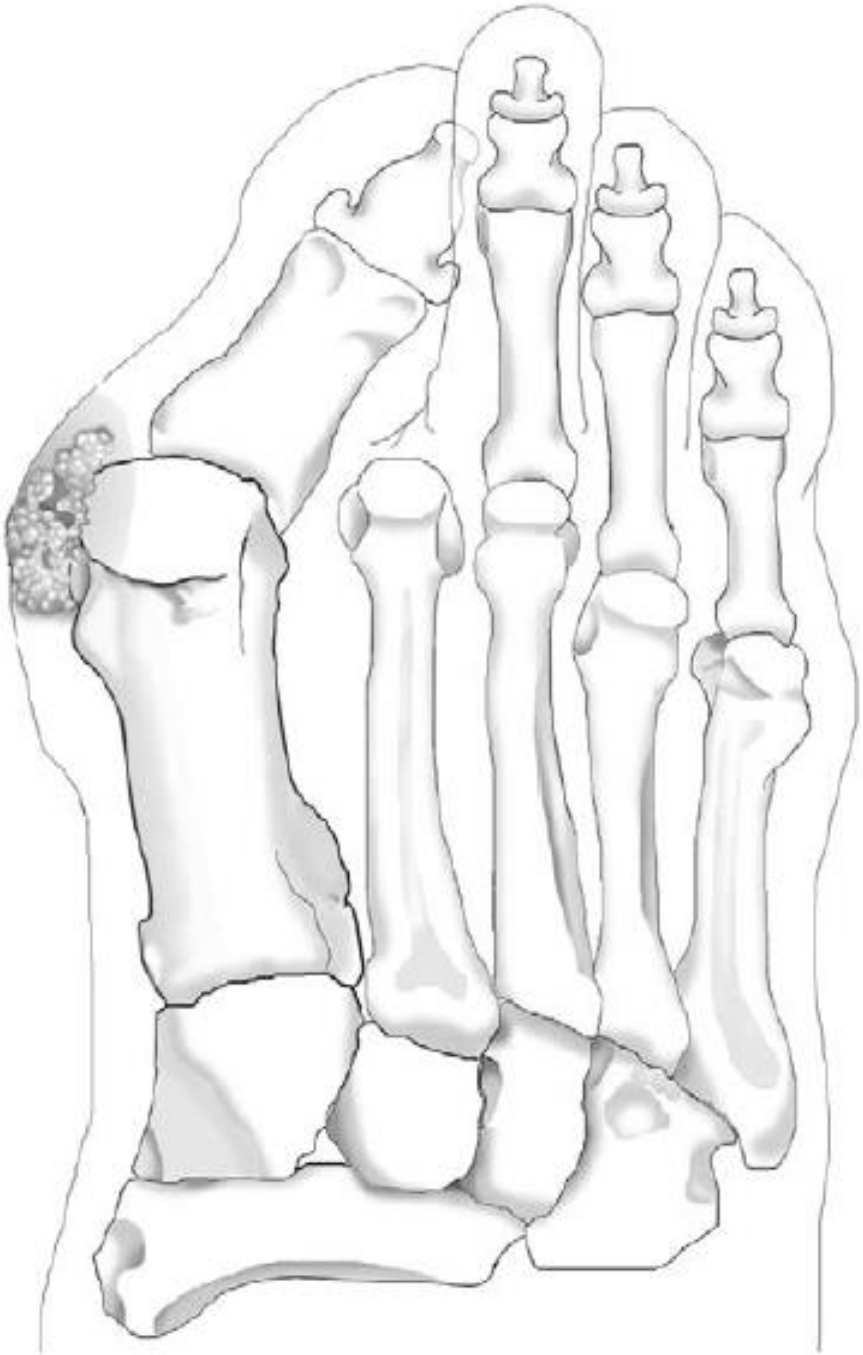

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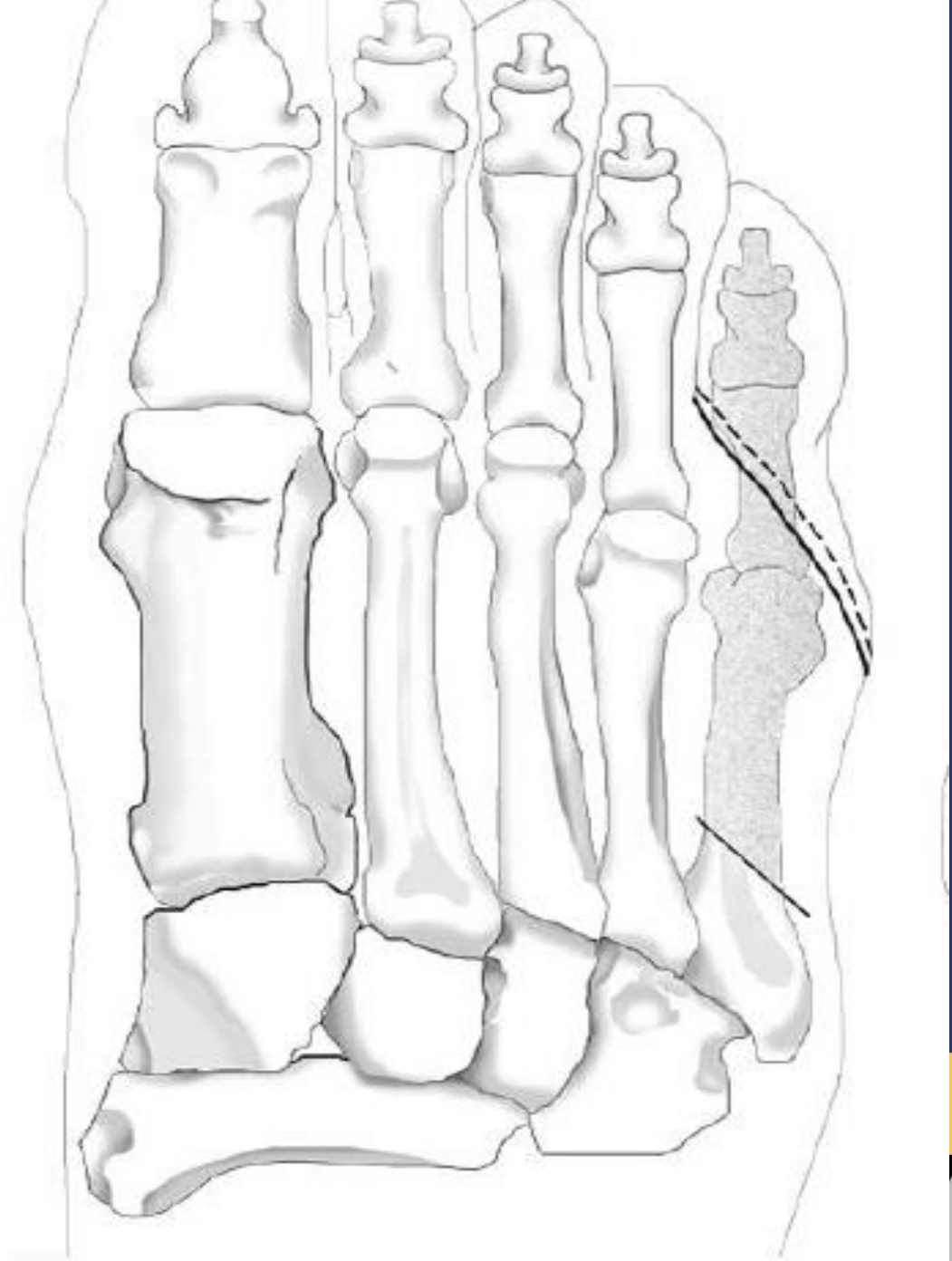

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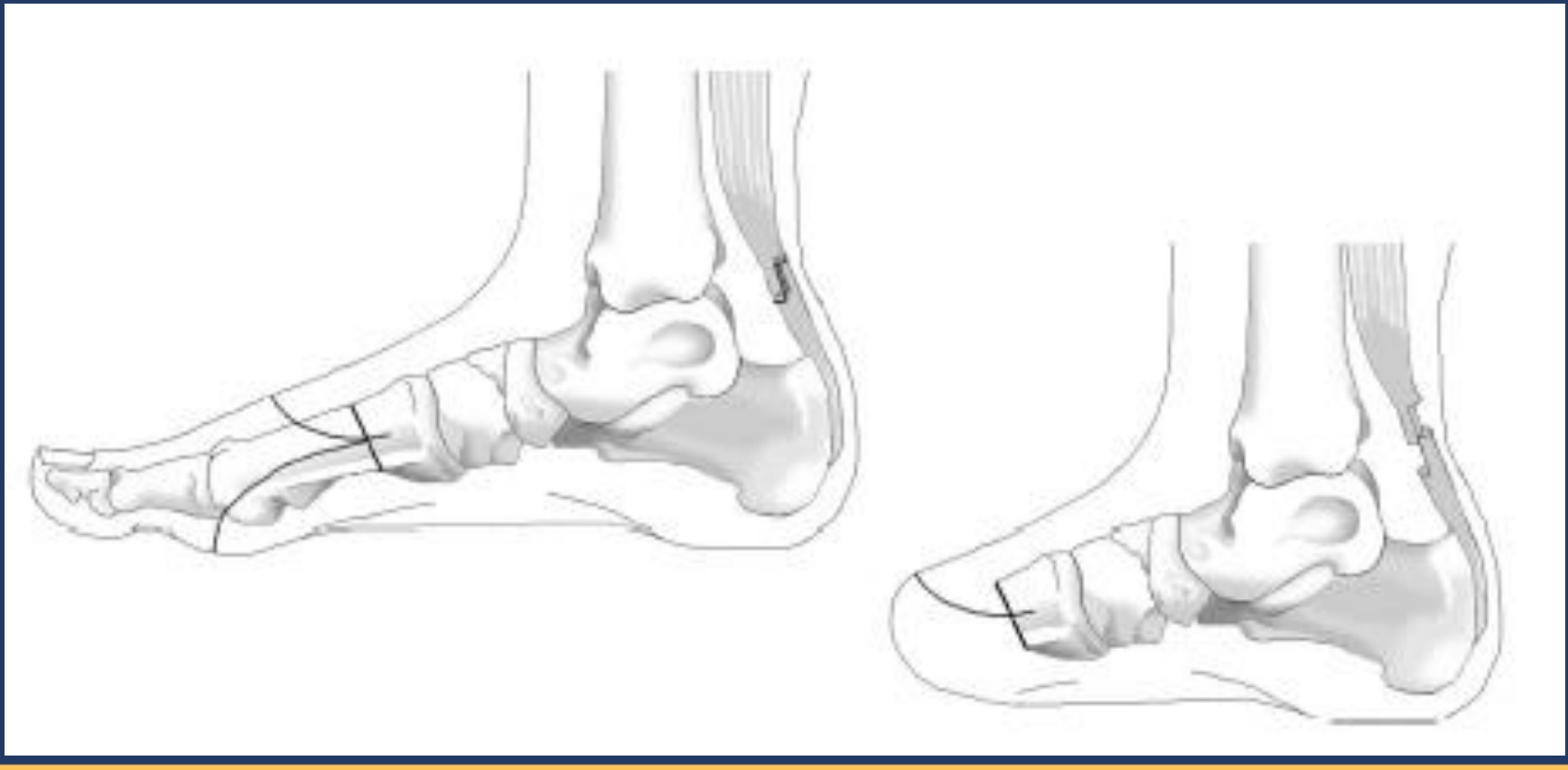
Incidence of Repeat Amputation after Partial First Ray Amputation Associated with Diabetes Mellitus and Peripheral Neuropathy: An 11-Year Review

Sara L. Borkosky, DPM [1], Thomas S. Roukis, DPM, PhD, FACFAS [2]

- 11 year review of 59 partial first ray amputations
- 69% developed mean of 3.1 subsequent foot ulcerations at a mean of 10.5 months
- 36% required ancillary surgical procedures

The Natural History of Great Toe Amputations

Transmetatarsal Amputation (TMA)



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Transmetatarsal Amputation


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LisFranc/Chopart's Amputations

- Lose attachment of peroneus brevis and tibialis anterior, causes imbalance within foot and equinovarus deformity from gastroc-soleal complex and PT tendon

Smith, DG. Amputation. Preoperative assessment and lower extremity surgical techniques. Foot and ankle clinics 6(2): 271-296, 2001.

Outcome of Midfoot Amputations in Diabetic Gangrene

Mohamed A. Elsharawy, Al-Khobar, Kingdom of Saudi Arabia

- Prospective study of 32 amputations for foot gangrene
  - 24 LisFranc, 8 Chopart's
  - 8 patients (27%) with non-healing stump
  - 4 BKA, 2 AKA required 3-28 months later
  - Functional ambulation achieved in 20/30 (67%) of patients at 6 months

Elsharawy, MA. Outcome of midfoot amputations in diabetic gangrene. Ann Vasc Surg 25: 778-782, 2011.

A Modification of Chopart's Amputation With Ankle and Subtalar Arthrodesis by Using an Intramedullary Nail

Michael W. DeGere, DPM,[1] and John F. Grady, DPM, FACFAS[2]

DeGere, MW and Grady, JF. A modifcation of chopart's amputation with ankle and subtalar arthrodesis by using an intramedullary nail. Journal of foot and ankle surgery 44(4): 281-286, 2005.

Mortality of Amputations

- Approximately 40% at 1 year, 80% at 5 years
- Despite the development and more widespread availability of new diagnostic procedures and peripheral vascular interventions, the rates of amputation and subsequent survival have remained relatively unchanged over the last few decades

Wrobel,JS et al. The high-low amputation ratio: A deeper insight into diabetic foot care? The journal of foot and ankle surgery 45(6): 375-379, 2006.

Feinglass J, Pearce WH, Martin GJ, et al. Postoperative and late survival outcomes after major amputation: findings from the Department of Veterans Affairs national surgical quality improvement program. Surgery 2001; 130: 21-9.

Mortality and Reoperations following Lower Limb Amputations

Noam Rosen MD, Roy Gigi MD, Amir Haim MD, Moshe Salai MD and Ofir Chechik MD

Division of Orthopedics, Tel Aviv Sourasky Medical Center, affiliated with Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel

- 198 amputations (91 AKA, 107 BKA, 10 bilateral)
- Overall mortality (AKA + BKA)
  - 30 day: 16.7%
  - 1 year: 44%
- 1 year mortality:
  - 58% AKA versus 33% BKA
  - AKA with higher cardiovascular complication rate
    - 33.7% AKA versus 18.8% BKA

Rosen, N, et al. Mortality and reoperation following lower limb amputation. IMAJ 16: 83-87, 2014.

Summary

- Unfortunately, the rate of amputation and mortality remain relatively unchanged over the past few decades
- Energy expenditure during ambulation and muscle imbalance increase with the more proximal amputation that is performed
- Losing all toes in certain circumstances can provide a highly functional result and long term limb preservation
- Complex reconstruction in the form of amputations, tissue transfers, tendon balancing, or osseous procedures play integral roles in efforts to preserve function and salvage limb

References

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