

***ABSTRACT: Advances In Skin & Wound Care Clinical Symposium, San Antonio, TX, October 2009***

**Title:**

**Wound Center Open Toe Amputation: "Stump" Cavity Management with Hydroxyethylmethacrylate 78 Nanometer Sphere Powder Dressing.**

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**Behavioral Objectives:**

- Define advantages of open toe amputation in the face of infection and ischemia.
- Review anesthesia and surgical technique, step by step, for wound center open toe amputation.
- Understand options to manage post operative "cavity" healing in the face of exposed metatarsal bone.

**Background:**

Open toe amputation is easy to perform in the wound center environment.(1) A three centimeter deep cavity results from resection of the distal third of the metatarsal bone. This "stump cavity" heals slowly creating a considerable management challenge. Open amputations dependably heal in spite of profound ischemia and infection because: devitalized fat, tendon, cartilage, clot and bone are not trapped beneath suture line, skin edge perfusion is not decreased by suture tension, and anaerobic conditions do not occur.

Negative Pressure Wound Therapy (NPWT) has improved "stump cavity" healing at the cost of limiting patient ambulation. Device necrosis, technical problems and high cost remain significant complications of NPWT.(2)

NPWT draws fluid from the wound surface via a mechanical vacuum.

Hydroxyethylmethacrylate 78 nm nanosphere gel (\*), a novel powder wound dressing, packs nicely into the cavity forming a durable gel that draws water from wound interface via capillary, not osmotic, action. Said another way, the geometry nanoparticle gel creates a high Moisture Vapor Transpiration Rate

(MVTR). (3, 4) This anecdotal study supports the hypotheses that nanosphere gel is an effective dressing for open amputation cavity.

**Methods:**

Step by step operative technique and stump cavity healing over time are illustrated with photos in one ambulatory dialysis dependent patient with dry gangrene due to ischemia.

**Outcomes:**

Photographs document healing. Costs are discussed.

**Conclusion:**

Hydroxyethylmethacrylate 78 nm nanosphere gel is a novel, cost effective, therapy for stump cavity management after ambulatory open toe amputation.

**References:**

1 Kaufman, Jeffrey L., Stark, Karl, Shah, Dhiraj M., Chang, Benjamin B., Koslow, Alan R. and Leather, Robert P. "Local anesthesia for surgery on the foot: Efficacy in the ischemic or diabetic extremity." Journal Annals of Vascular Surgery, Volume 5, Number 4, July, 1991

2 Andros, George MD, Niezgod, Jeffrey A. MD, FACHM, FACEP. "Consensus Statement on Negative Pressure, Wound Therapy (V.A.C.® Therapy) for the Management of Diabetic Foot Wounds: Should small, superficial wounds be considered for V.A.C.® Therapy?" Supplement, Ostomy Wound Management, June 2006.

3 Fitzgerald, R., Bharara, M., Mills, J., Armstrong, DG. "Use of a Nanoflex powder dressing for wound management following debridement for necrotizing fasciitis in the diabetic foot." International Wound Journal (2009), 6(2): 133-139.

4 Martin, Barry D. MD, FACS, LTC(P), Medical Corps, USA. "Comparison in Management of Large, Open Combat Wounds in Service Personnel Using Negative Pressure Wound Therapy and a Novel Powder Dressing." Poster Presentation 2009 SAWC Meeting Grapevine, Texas

\* Altrazeal™ Uluru Corporation, Addison, Texas