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Dr. Mark Fleming, DO *Board Certified in Orthopedic Surgeon*

Articulate, Board certified Orthopedic Surgeon with more than 20 years of clinical expertise and 1 year of medical-legal expertise. Highly specialized in Orthopedic Surgery.

EDUCATION

- **Alabama A&M University, Huntsville, AL (1989)**
Bachelor of Science, Physics & Computer Science
- **Michigan State University College of Osteopathic Medicine, East Lansing, MI (1999)**
Doctor of Osteopathic Medicine, DO
- **Naval Medical Center Portsmouth, Portsmouth, VA (2000)**
Internship - General Surgery
- **Mount Clemens Regional Medical Center (MSU Affiliated), Mount Clemens, MI (2006)**
Residency - Orthopedic Surgery
- **Hennepin County Medical Center/Regions Hospital, University of Minnesota (2007)**
Fellowship - Orthopedic Traumatology

PROFESSIONAL EXPERIENCE

- **Mark Fleming, DO, FAOAO, LAC+USC Medical Center, Orthopedic Surgeon (2015 to present)**
- **Walter Reed National Military Medical Center, Bethesda, MD, Orthopedic Surgeon (2007 to 2015)**

ACADEMIC APPOINTMENTS

- **Uniformed Services University of the Health Sciences, Bethesda, MD, Assistant Professor of Orthopedic Surgery (2007 to 2015)**

LICENSURE AND CERTIFICATION

- State of California Osteopathic Medical Board Licensure (2015)
- State of Virginia Osteopathic Medical Board Licensure (2001)
- State of Maryland Osteopathic Medical Board Licensure (2008)
- State of Minnesota Osteopathic Medical Board Licensure (2006)
- State of Washington Osteopathic Medical Board Licensure (2016)
- Diplomate, American Osteopathic Board of Orthopedic Surgery (2013)
- Fellowship, American Osteopathic Academy of Orthopedic Surgery (2014)

PROFESSIONAL MEMBERSHIPS

- American Academy of Orthopedic Surgeons
- Arthroscopy Association of North America
- American Osteopathic Association
- American Osteopathic Academy of Orthopedic Surgeons
- Orthopedic Trauma Association, past Chair, Military Committee
- Society of Military Orthopedic Surgeons

HONORS AND AWARDS

Military Honors and Awards

- Navy Meritorious Service Medal
- Defense Meritorious Service Medal
- Army Commendation Medal
- Navy and Marine Corps Achievement Medal
- Joint Service Achievement Medal
- Southwest Asia Service Medal
- Iraq Campaign Medal
- Kuwait Liberation Medal
- Navy Meritorious Unit Commendation Medal
- Navy Unit Commendation Medal
- Global War on Terror Service Medal
- National Defense Service Medal
- Sea Service Deployment Ribbon
- Navy Battle Efficiency Ribbon
- **Master Clinician's Award** - Walter Reed National Military Medical Center
- Fleet Marine Force Warfare Officer qualified

- United States Naval Flight Surgeon designation
- Armed Forces Institute of Regenerative Medicine (AFIRM) Traveling Fellowship

Civilian Honors and Awards

- Awarded Fellow American Osteopathic Academy of Orthopedic Surgeons
- Hand-selected to deliver the Commencement Address at MSU-COM 2017
- Michigan State University Distinguished Alumni Award - 2013
- Michigan State University COM Alumnus of the Year 2011
- Alabama A&M University Class of 1989 “Alumnus of the Year” 2009
- Alabama A&M University MARC Research Fellow
- Awarded US Navy Baccalaureate Degree Completion Program Scholarship
- Awarded US Navy Armed Forces Health Professions Scholarship
- Nominated to Outstanding Young Men in America

RESEARCH & PUBLICATIONS

Research

- 1st Place – 7th Annual National Capital Region Research Competitions Faculty category “Restoration of a Full Thickness Soft Tissue Defect with Autologous Spray Skin Epidermal Regenerative Technology in Conjunction with a Dermal Regenerate Template and Widened Meshed STSG” May 19, 2015
- 1st Place - Mount Clemens Regional Medical Center Research Symposium. May 2006; “Predictive Factors Associated with an Increase Risk for Blood Transfusion in Patients with Peritrochanteric Hip Fractures.”

Publications

1. Kabirian N, Jiang D, **Fleming ME**, Marecek GS. Restoring Condylar Width: Radiographic Relationship Between the Lateral Tibial Plateau and Lateral Femoral Condyle in Normal Adult Knees. J Orthop Trauma. 2019 Apr;33(4):180-184
2. Rodriguez CJ, Tribble DR, Malone DL, Murray CK, Jessie EM, Khan M, **Fleming ME**, Potter BK, Gordon WT, Shackelford SA. Treatment of Suspected Invasive Fungal Infection in War Wounds. Mil Med. 2018 Sep 1;183(suppl_2):142-146.
3. Gordon WT, **Fleming ME**, Johnson AE, Gurney J, Shackelford S, Stockinger ZT. Pelvic Fracture Care. Mil Med. 2018 Sep 1;183(suppl_2):115-117.
4. Gordon W, Talbot M, **Fleming M**, Shero J, Potter B, Stockinger ZT. High Bilateral Amputations and Dismounted Complex Blast Injury (DCBI). Mil Med. 2018 Sep 1;183(suppl_2):118-122.
5. Wade SM, Harrington C, **Fleming M**, Potter BK. A Combined Distal Tibial Turn-up Plasty and Intercalary Calcaneal Osteocutaneous Fillet Flap for Salvage of a,Transtibial Amputation: A Case

Report. JBJS Case Connect. 2017 Oct-Dec;7(4):e91

6. Donohoe S, Alluri RK, Hill JR, **Fleming M**, Tan E, Marecek G. Impact of Computed Tomography on Operative Planning for Ankle Fractures Involving the Posterior Malleolus. *Foot Ankle Int.* 2017 Dec;38(12):1337-1342.
7. Alluri RK, Hill JR, Donohoe S, **Fleming M**, Tan E, Marecek G. Radiographic Detection of Marginal Impaction in Supination-Adduction Ankle Fractures. *Foot Ankle Int.* 2017 Sep;38(9):1005-1010.
8. Hammer D, Rendon JL, Sabino J, Latham K, **Fleming ME**, Valerio IL. Restoring full thickness defects with spray skin in conjunction with dermal regenerate template and split-thickness skin grafting: a pilot study. *J Tissue Eng Regen Med.* 2017 Mar 22.
9. Valerio IL, Hammer DA, Rendon JL, Latham KP, **Fleming ME**. A Case Report of the First Nonburn-related Military Trauma Victim Treated with Spray Skin Regenerative Therapy in Combination with a Dermal Regenerate Template. *Plast Reconstr Surg Glob Open.* 2016 Dec 27;4(12):
10. Stinner DJ, **Fleming ME**. Introduction. *J Orthop Trauma.* 2016 Oct;30 Suppl 3:S1.
11. Fairbairn NG, Ng-Glazier J, Meppelink AM, Randolph MA, Valerio IL, **Fleming ME**, Kochevar IE, Winograd JM, Redmond RW. Light-Activated Sealing of Acellular Nerve Allografts following Nerve Gap Injury. *J Reconstr Microsurg.* 2016 Jul;32(6):421-30
12. Hammer D, Rendon JL, Sabino J, Latham K, **Fleming ME**, Valerio IL. Restoring full-thickness full-thickness defects with spray skin in conjunction with dermal regenerate template and split-thickness skin grafting: a pilot study. *J Tissue Eng Regen Med.* 2017 Mar 22. doi: 10.1002/term.2264.
13. Fairbairn NG, Ng-Glazier J, Meppelink AM, Randolph MA, Valerio IL, **Fleming ME**, Kochevar IE, Winograd JM, Redmond RW. Light-Activated Sealing of Acellular Nerve Allografts following Nerve Gap Injury. *J Reconstr Microsurg.* 2016 Jul;32(6):421-30
14. Seavey JG, Masters ZA, Balazs GC, Tintle SM, Sabino J, **Fleming ME**, Valerio IL. Use of a bioartificial dermal regeneration template for skin restoration in combat casualty injuries. *Regen Med.* 2016 Jan;11(1):81-90.
15. Valerio IL, Campbell P, Sabino J, Dearth CL, **Fleming M**. The use of urinary bladder matrix in the treatment of trauma and combat casualty wound care. *Regen Med.* 2015;10(5):611-22
16. Fairbairn NG, Ng-Glazier J, Meppelink AM, Randolph MA, Valerio IL, **Fleming ME**, Winograd JM, Redmond RW. Light-Activated Sealing of Nerve Graft Coaptation Sites Improves Outcome following Large Gap Peripheral Nerve Injury. *Plast Reconstr Surg.* 2015 Oct;136(4):739-50

17. 2: D'Alleyrand JC, Lewandowski LR, Forsberg JA, Gordon WT, **Fleming ME**, Mullis BH, Andersen RC, Potter BK. Combat-Related Hemipelvectomy: 14 Cases, a Review of the Literature and Lessons Learned. J Orthop Trauma. 2015 Dec;29(12):e493-8.
18. Wheatley BM, Hanley MG, Wong VW, Sabino JM, Potter BK, Tintle SM, **Fleming ME**, Valerio IL. Heterotopic Ossification following Tissue Transfer for Combat-Casualty Complex Periarticular Injuries. Plast Reconstr Surg. 2015 Dec;136(6):808e-14e.
19. **Fleming ME**, Bharmal H, Lewandowski L, Evans K. Combat Periarticular Tibia Injury Outcome Study (CAPTIIOUS): Risk Factors For Reoperation And Amputation After Open Periarticular Tibia Fractures. Journal of the American College of Surgeons. 201 OCT; 221(4) e24
20. Rendon JL, Hammer D, Sabino J, Martin B, Latham K, **Fleming ME**, Valerio IL. Restoration of Full Thickness Soft Tissue Defects with Spray Skin Epidermal Regenerative Technology in Conjunction with Dermal Regenerate. Plast Reconstr Surg. 2015 Oct;136(4 Suppl):74.
21. Valerio IL, Campbell P, Sabino J, Lucas DJ, Jessie E, Rodriguez C, **Fleming M**. TXA in Combat Casualty Care-Does It Adversely Affect Extremity Reconstruction and Flap Thrombosis Rates? Mil Med. 2015 Mar;180(3 Suppl):24-8
22. Sabino J, Tintle S, Martin B, Howard R, **Fleming M**, Valerio IL. Review of Pedicled Groin and Thoracoepigastric Flaps in War-Related Extremity Trauma. Plast Reconstr Surg. 2015 Oct;136(4 Suppl):10-1
23. Sabino J, Polfer E, Tintle S, Jessie E, **Fleming M**, Martin B, Shashikant M, Valerio IL. A decade of conflict: flap coverage options and outcomes in traumatic war-related extremity reconstruction. Plast Reconstr Surg. 2015Mar;135(3):895-902.
24. Green JM 3rd, Sabino J, **Fleming M**, Valerio I. Intraoperative fluorescence angiography: a review of applications and outcomes in war-related trauma. MilMed. 2015 Mar;180(3 Suppl):37-43.
25. Valerio IL, **Fleming M**. More Than A Decade Of Ongoing Conflict: Application And Merger Of Traditional Reconstructive Techniques With Regenerative Medicine Therapies In Traumatic Extremity Reconstruction- Introduction Of The Hybrid Reconstructive Elevator. Tissue Engineering, Part A. Dec 2014;20(1)S49.
26. Valerio IL, **Fleming M**. Military-lead Novel Regenerative Medicine Case Study: Spray Skin Epidermal Regenerate in Conjunction with Dermal Regenerate for Reconstruction of Full Thickness Traumatic Soft Tissue Injuries. Tissue Engineering, Part A. Dec 2014;20(1)S49.
27. **Fleming M**, Valerio IL. The Use of Urinary Bladder Matrix in the Reconstruction of Combat

Related Extremity Wounds. Tissue Engineering, Part A. Dec 2014;20(1)S124.

28. Sabino J, Polfer E, Tintle S, Jessie E, **Fleming M**, Martin B, Shashikant M, Valerio I. A Decade of Conflict: Flap Coverage Options and Outcomes in Traumatic War-related Extremity Reconstruction. Plast Reconstr Surg. 2014 Nov 20.

29. Valerio I, Sabino J, Thomas S, Tintle S, **Fleming M**, Shashikant M, Kumar A. Multiple limbs salvaged using tissue transfers in the same casualty: a cohort comparison study chronicling a decade of war-injured patients. Plast Reconstr Surg. 2014 Aug;134(2):333-8

30. **Fleming ME**, Bharmal H, Valerio I. Complications and Outcomes Associated with Combat-Related Grade III Periarticular Tibia Fractures. Plast Reconstr Surg. 2014 Oct;134(4 Suppl 1):30.

31. **Fleming ME**, Bharmal H, and Valerio IL. Regenerative Medicine Applications in Combat Casualty Care. Regenerative Medicine. 9(2): 179-190, 2014.

32. **Fleming ME**, O'Daniel A, Bharmal H, Valerio I. Application of the Orthoplastic Reconstructive Ladder to Preserve Lower Extremity Amputation Length. Ann Plast Surg. 2014 Mar 28

33. Polfer EM, Forsberg JA, **Fleming ME**, Potter BK. Neurovascular entrapment due to combat-related heterotopic ossification in the lower extremity. J Bone Joint Surg Am. 2013 Dec 18; 95(24):e1951-6

34. Valerio IL, Sabino J, Bevevino A, Tintle SM, **Fleming M**, Kumar A. Sequential free tissue transfers for simultaneous upper and lower limb salvage. Microsurgery. 2013 Sep;33(6):447-53

35. Lewandowski L, Tintle SM, Daniel C, O'Daniel JA, **Fleming M**, Keeling J. Circular external fixation for treatment of distal humerus fractures: case report. J Hand Surg Am. 2013 Jun;38(6):1155-60

36. Lewandowski L, Purcell R, **Fleming M**, Gordon WT. The use of dilute Dakin's solution for the treatment of angioinvasive fungal infection in the combat wounded: a case series. Mil Med. 2013 Apr;178(4):e503-7

37. **Fleming ME**, Waterman SS, Lewandowski LR, Chi BB. Use of 3-dimensional stereolithographic polymer models for heterotopic ossification surgical excision. Orthopedics. 2013 Apr;36(4):282-6

38. Valerio I, Sabino J, Heckert R, Thomas S, Tintle S, **Fleming M**, Kumar A. Known preoperative deep venous thrombosis and/or pulmonary embolus: to flap or not to flap the severely injured extremity? Plast Reconstr Surg. 2013 Jul;132(1):213-20

39. Formby P, Flint J, Gordon WT, **Fleming M**, Andersen RC. Use of a Continuous External Tissue Expander in the Conversion of a Type IIIB Fracture to a Type IIIA Fracture. Orthopedics. 2013 Feb 1;36(2):e249-51

40. Shin E, Evans KN, **Fleming ME**. Injury severity score underpredicts injury severity and resource utilization in combat-related amputations. *J Orthop Trauma*. 2013 Jul;27(7):419-23
41. Valerio, Ian MD, MS, MBA; Sabino, Jennifer MD; Tintle, Scott MD; **Fleming, Mark DO**; Kumar, Anand MD. Emerging Trends in Limb Salvage Over the Last Decade of War Trauma. *Plastic & Reconstructive Surgery*. November 2012 - Volume 130 - Issue 5S-1- p 55
42. Valerio, Ian MD, MS, MBA; Sabino, Jennifer MD; Tintle, Scott MD; **Fleming, Mark DO**; Howard, Robert MD; Basile, Patrick MD; Martin, Barry MD; Shashikant, Mark MD. Multiple Flap Limb Salvages within Same War Wounded Casualties: A Consecutive Case Series over a Decade of War Trauma. *Plastic & Reconstructive Surgery*. Volume 130 - 5S-1. November 2012, p 92–93
43. Valerio, Ian L. MD, MS, MBA; Heckert, Reed MD; Tintle, Scott MD; Sabino, Jennifer MD; Fleming, Mark DO; Kumar, Anand MD. Does Recent DVT and/or Pulmonary Embolus Preclude Complex Extremity Flap Reconstruction? *Plastic & Reconstructive Surgery*. Volume 130 5S-1. November 2012, p 98
44. Warkentien T, Rodriguez C, Lloyd B, Wells J, Weintrob A, Dunne JR, Ganesan A, Li P, Bradley W, Gaskins LJ, Seillier-Moiseiwitsch F, Murray CK, Millar EV, Keenan B, Paolino K, **Fleming M**, Hospenthal DR, Wortmann GW, Landrum ML, Kortepeter MG, Tribble DR; Infectious Disease Clinical Research Program Trauma Infectious Disease Outcomes Study Group. Invasive mold infections following combat-related injuries. *Clin Infect Dis*. 2012 Dec;55(11):1441-9
45. Santiago GF, Bograd B, Basile PL, Howard RT, **Fleming M**, Valerio IL. Soft tissue injury management with a continuous external tissue expander. *Ann Plast Surg*. 2012 Oct;69(4):418-21
46. Bear J, McKay P, **Fleming M**, Nanos G, Rich N. Vascular injury and concomitant long bone fracture in war wounds. *J Vasc Surg*. 2012 Dec; 56(6):1795-8. Epub 2012 Sep 23
47. **Fleming ME**, Watson JT, Gaines RJ, O'Toole RV; Extremity War Injuries VII Reconstruction Panel. Evolution of orthopaedic reconstructive care. *J Am Acad Orthop Surg*. 2012;20 Suppl 1:S74-9.
48. Ficke JR, Obremskey WT, Gaines RJ, Pasquina PF, Bosse MJ, Mamczak CN, O'Toole RV, Archer KR, Born CT, **Fleming ME**, Watson JT, Gordon WT, Stannard JP, Rispoli DM, Mackenzie EJ, Wenke JC, Hsu JR, Pollak AN, Andersen RC. Reprioritization of research for combat casualty care. *J Am Acad Orthop Surg*. 2012;20 Suppl 1:S99-102.
49. Doukas WC, Powell ET, **Fleming ME**, Strauss J. Moderators' summary: outcomes data driving technological advances (session I). *J Am Acad Orthop Surg*. 2012;20 Suppl 1:S1-2
50. Husain Bharmal, MD; Korboi N. Evans, MD, MS; Ashton Goldman, BS; Stanley Okoro, MD; **Mark E. Fleming, DO**. Use of the Vertical Rectus Abdominis Muscle Flap for an Open Pelvic Fracture Secondary to a Blast Injury: A Case Report. *JBJS Case Connector*, 2012 Aug 22;2(3):e39 1-

51. Hall G, Griffis C, **Fleming M**, Strauss J, Andersen RC. Recognition of Small Bowel Entrapment in Pubic Symphysis Following Combat Related Traumatic Pelvic Fracture: A Case Report and Literature Review. JBJS Case Connector Volume 2 D Number 1 D March 28, 2012
52. **Fleming ME**, Waterman S, Dunne J, D'Alleyrand J, Andersen RC. Dismounted Complex Blast Injuries: Patterns of Injuries and Resource Utilization Associated with the Multiple Extremity Amputee. J Surg Orthop Adv. 21(1): 32-37, 2012
53. Andersen RC, **Fleming ME**, Forsberg JA, Gordon WT, Nanos GP, Charlton MT, Ficke JR. Dismounted Complex Battle Injury. J Surg Orthop Adv. 21(1):2-7,2012
54. D'Alleyrand J, **Fleming ME**, Gordon WT, Potter BK, Andersen RC. Combat-Related Hemipelvectomy. J Surg Orthop Adv. 21(1):38-43, 2012
55. Will RE, **Fleming ME**, Lafferty PM, Fletcher JW, Cole PA. Low complication rate associated with raising mature flap for tibial nonunion reconstruction. J Trauma. 2011 Dec; 71(6):1709-14.
56. Hospenthal DR, Murray CK, Andersen RC, Bell RB, Calhoun JH, Cancio LC, Cho JM, Chung KK, Clasper JC, Colyer MH, Conger NG, Costanzo GP, Crouch HK, Curry TK, D'Avignon LC, Dorlac WC, Dunne JR, Eastridge BJ, Ficke JR, **Fleming ME**, Forgione MA, Green AD, et al.Executive summary: Guidelines for the prevention of infections associated with combat-related injuries: 2011 update: endorsed by the Infectious Diseases Society of America and the Surgical Infection Society. J Trauma. 2011 Aug;71(2 Suppl 2):S202-9. Review.
57. Hospenthal DR, Murray CK, Andersen RC, Bell RB, Calhoun JH, Cancio LC, Cho JM, Chung KK, Clasper JC, Colyer MH, Conger NG, Costanzo GP, Crouch HK, Curry TK, D'Avignon LC, Dorlac WC, Dunne JR, Eastridge BJ, Ficke JR, **Fleming ME**, Forgione MA, Green AD, et al.Guidelines for the prevention of infections associated with combatrelated injuries: 2011 update: endorsed by the Infectious Diseases Society of America and the Surgical Infection Society. J Trauma. 2011 Aug;71(2 Suppl 2):S210-34. Review.
58. Murray CK, Obrebskey WT, Hsu JR, Andersen RC, Calhoun JH, Clasper JC, Whitman TJ, Curry TK, **Fleming ME**, Wenke JC, Ficke JR; Prevention of Combat-Related Infections Guidelines Panel. Prevention of infections associated with combat-related extremity injuries. J Trauma. 2011 Aug;71(2 Suppl 2):S235-57. Review.
59. Forgione MA, Moores LE, Wortmann GW; Prevention of Combat-Related Infections Guidelines Panel. Prevention of infections associated with combat-related central nervous system injuries. J Trauma. 2011 Aug;71(2 Suppl 2):S258-63. Review.
60. Petersen K, Colyer MH, Hayes DK, Hale RG, Bell RB; Prevention of Combat-Related Infections Guidelines Panel. Prevention of infections associated with combat-related eye, maxillofacial, and

neck injuries. J Trauma. 2011 Aug;71(2 Suppl 2):S264-9.

61. Martin GJ, Dunne JR, Cho JM, Solomkin JS; Prevention of Combat-Related Infections Guidelines Panel. Prevention of infections associated with combat-related thoracic and abdominal cavity injuries. J Trauma. 2011 Aug;71(2 Suppl 2):S270-81. Review.

62. D'Avignon LC, Chung KK, Saffle JR, Renz EM, Cancio LC; Prevention of Combat-Related Infections Guidelines Panel. Prevention of infections associated with combat-related burn injuries. J Trauma. 2011 Aug;71(2 Suppl 2):S282-9.

63. Hospenthal DR, Green AD, Crouch HK, English JF, Pool J, Yun HC, Murray CK; Prevention of Combat-Related Infections Guidelines Panel. Infection prevention and control in deployed military medical treatment facilities. J Trauma. 2011 Aug;71(2 Suppl 2):S290-8. Review.

64. Freeman AL, Tornetta P 3rd, Schmidt A, Bechtold J, Ricci W, **Fleming M**. How much do locked screws add to the fixation of "hybrid" plate constructs in osteoporotic bone? J Orthop Trauma. 2010 Mar;24(3):163-9.

65. **Fleming, M.**; Tintle, S.; Davila, J.; Mickel, T.; Kumar, A.; Andersen, R.; Soft Tissue Care About the Knee in High-energy War Injuries Techniques in Knee Surgery: March 2010 - Volume 9 - Issue 1 - pp 17-29

66. Mounasamy, V.; **Fleming, M.**; Birnbaum, M.: Ipsilateral posterior sternoclavicular dislocation and fracture of the medial third clavicle: a case report. European Journal of Orthopaedic Surgery & Traumatology 2006 16(4), pages 351-353