



SOMOS Sentinel

The Official Publication of the Society of Military Orthopaedic Surgeons

SOMOS Sentinel, Vol X, No. 1

March 2010

President's Message

John "JT" Tokish, MD
Lt Col. USAF

Greetings to the SOMOS membership!

SOMOS had a tremendous year in 2009. Not only did we hold an outstanding meeting, major organizational changes were made and set the stage for a very bright future.

A few highlights of the year included:

- PRORP funding of military relevant research totaling \$112 million for orthopaedic injuries sustained by military service members during combat or combat related activities
- Extremity War Injury Symposium IV: SOMOS co-sponsored the premier conference on research, host nation care, and disaster preparedness
- Publication of the first SOMOS Research Collaborative paper (JBJS Dec 2009)

As we jump into 2010, we are poised to take our mission throughout the military and to our civilian colleagues.

Highlights for the year include:

- The first SOMOS sponsored AAOS Specialty Day, March 13! Moderated by Col. James Ficke, MD, this session will highlight SOMOS' unique mission of emergency care of the orthopaedic injury in the austere environment
- Extremity War Injuries V: Co-Sponsored by SOMOS, the OTA, and the ORS. This is the premier national meeting on the topic! This year's meeting, Jan 27-29 in Washington, DC, focused on barriers to return to duty, limb salvage vs. delayed amputation, and research updates from AFIRM and OETRP. This meeting is at the heart of the SOMOS mission- a must-attend event for 2011!
- A special military edition of the Journal of Surgical Orthopaedic Advances (JSOA) - distributed February, 2010
- An opportunity to earn 24 free CME's through the JSOA

- SOMOS Members' Reception at the AAOS Annual Meeting - March 9-13, 2010, New Orleans
- Re-invigoration of the SOMOS website and newsletter! Under the direction of JP Rue, MD, the SOMOS website will be re-defined to make it a source of unified collaboration for research, education, and information pertinent to all SOMOS members.
- Launching of the wider SOMOS Research Collaborative! Military training programs, Academies, and other centers of excellence will begin collaboration on 6 relevant research questions for 2010 with unified goals and outcomes' measures.
- The 2010 Annual meeting in Vail, Colorado! The meeting will combine the nation's most respected orthopaedic lecturers, cutting edge militarily relevant research, and superb educational symposia- all at the base of the world's best ski mountain.



Thank you for being an active participant and engaged with where SOMOS is going!

Best regards,

John "JT" Tokish, MD
2010 SOMOS President

Inside...

2010 Membership Categories
Save the Dates
Consultants Corner
SOMOS At the AAOS Annual Meeting
51st Annual Meeting Report
2009 Award Winning Abstracts
Message from the Editor

2009 SOMOS Officers

Lt Col. John (JT) Tokish, MD
President

CDR Matthew Provencher, MD
1st Vice-President

LTC(p) Tad Gerlinger, MD
2nd Vice-President
AAOS BOS Education Rep

LTC Daniel W. White, MD
Immediate Past President

Lt Col. Andrew Moore, MD
Secretary

LTC Benjamin Kam, MD
Treasurer

Col. (Ret) Theodore Parsons, MD
Managing Director

COL Edward Arrington, MD
AAOS Board of Councilor Rep

COL (Ret) Allan Bucknell, MD
COL (Ret) Alonzo Diodene', Jr., MD
Historian - Retired Representative

Brig. Gen Michael Yaszemski, MD, PhD
Reserve Representative - Air Force

Wallace "Brad" Brucker, MD
Reserve Representative - Army

CAPT William Hennrikus, MD
Reserve Representative - Navy

COL James Ficke, MD
CAPT Daniel Unger, MD
Lt Col. Warren Kadmas, MD
Members at Large

Lt Col. Robert Sullivan, MD
2010 Program Committee Chair

MAJ Joseph HSU, MD
AAOS BOS Research Representative

CDR John Paul Rue, MD
AAOS BOS Communications Representative

CPT Daniel Stinner, MD
Army Resident Representative

Jonathan Roth, MD
Navy Resident Representative

Dustin Liebeck, MD
Air Force Resident Representative

COL Peter Sharwood
Allied Force Representative

Chuck Freitag - Executive Director
Deborah Shelton - Board Liaison
Data Trace

About The Sentinel

The primary mission of the *SOMOS Sentinel* is to share information with our SOMOS membership. We would like to provide a forum where information may be conveyed from our orthopaedic consultants/service advisors, SOMOS leadership, and annual meeting organizers to all our members. We encourage you to give us your input for future editions. We, the SOMOS Board, are here to serve you, our members.

Our Society's mission is to provide a forum for the interchange of medical knowledge as it relates to the practice of orthopaedic surgery in the military. This newsletter serves as an important link.

SOMOS Newsletters are sent electronically March, July and October. Please renew your membership and/or update your information (to include a current email address) online at www.somos.org.

2010 Membership Categories

Active Members: Active duty, reserve, retired, or honorably discharged orthopaedic surgeons in the Armed Forces of the United States of America.
Annual Dues: \$150

Resident Members: Active duty, reserve, retired, or honorably discharged resident orthopaedic surgeons in the Armed Forces of the United States of America.
Annual Dues: \$0

Allied Members: Orthopaedic Surgeons who are active, reserve, retired or honorably discharged members of foreign military services.
Annual Dues: \$150

Associate Members: Non-military orthopaedic surgeons, either active in practice or retired who reside in the United States.
Annual Dues: \$125

Affiliate Members: Military or non-military physicians (active practice or retired) and physician assistants who have demonstrated interest in the advancement of military medicine and the mission of SOMOS.
Annual Dues: \$75

Emeritus Members: Upon request of the member, Emeritus Membership may be conferred by the Board of Directors upon an Active Member who has reached the age of 65 and has retired from active practice.
Annual Dues: \$0

Save the Dates

SOMOS Member Reception at the AAOS 2010 Annual Meeting

March 11, 2010

Wyndham Riverfront New Orleans

7:35 p.m. Attire: Casual

(see page 5 for a complete list of SOMOS activities at the AAOS Annual Meeting)

AANA SOMOS - A Combined Advanced Shoulder Arthroscopy Course

October 16-18, 2010

Chicago, IL

52nd Annual Meeting (Submit abstracts online from May 1 - August 1, 2010)

December 13-17, 2010

Vail, Colorado

Visit www.somos.org for more information.

Consultant's Corner

Dear USAF Colleagues,

I think it is only appropriate to start off this update with a word of thanks to Jim Keeney, MD. Jim has done an outstanding job as our consultant over the past three years and has paved the way for us all to have a rewarding practice, both personally and professionally. Please take the opportunity to thank Jim as he separates from the Air Force and wish him well on his way to St. Louis.



Hope this catches everyone off to a good start in 2010! There are a number of things in the works and I look forward to discussing them in greater detail with you in the coming months.

Most of you are aware of the increased deployment tempo over the past 6 months. We have been tasked to provide relief in Haiti, support OIF/OEF, and provide occasional backfill for our sister services, while we all respond to these challenging and rewarding environments. The USAF is now being tasked to cover 11 deployable positions in addition to various humanitarian missions. As such, previous deployment projections that you have all received are currently being revamped and will be sent out as soon as possible. We have a growing number of surgeons serving on second, third, and even fourth tours since 2003, and I sincerely appreciate all of the hard work and cooperation you and your families have shown in fulfilling these obligations.

I am also working with Lt Col. Jan Allen (AFPC) on assignments for Summer 2010. Because of the limited number of PCS moves this year, most of our CONUS surgeons will be staying in place. There may be multiple opportunities for overseas assignment next summer so would ask that you keep this in mind and let me know early if you are interested. CONUS to CONUS PCS requires 4 years time on station while CONUS to OCONUS may move after two years. Hopefully, we can have the assignment information released to everyone ahead of schedule. I hope that each of you will mark your calendars for the 2010 SOMOS Meeting in Vail, Colorado, Dec 13-17, under the direction of Lt Col. JT Tokish. JT and his staff are putting together an excellent academic program and are looking forward to making this the most productive meeting to date.

Thank you for your continued support of Air Force Orthopaedics and the quality people that we are taking care of, both overseas and at home.

Best wishes for a successful 2010.

Warren R. Kadrmas, MD
Orthopaedic Surgery Consultant to the
USAF Surgeon General
(210) 292-5875 DSN 554-5875
warren.kadrmas@lackland.af.mil
kadrmasw@gmail.com

Greetings to our Army Colleagues.

I want to offer praise to LTC Dan White and LTC John Devine for the absolutely outstanding Annual Meeting in Hawaii. The speakers and social events, were once, again spectacular and the addition of the COL Brian Allgood Leadership Symposium was yet another excellent addition to the program. Congratulations to COL(ret) Bill Doukas for his receipt of the Allgood Leadership Award. This meeting, the first run in coordination with Data Trace, set a high standard and further built on the momentum that Dan initiated during his Presidency. We all are indebted to his pioneering leadership.



As most of you are aware, the deployment tempo continues—we are currently sending over 30 orthopaedic surgeons into hostile zones annually, in support of our brave comrades in arms overseas. With deployments remaining around 180 days, all eligible candidates are able to take part II of boards, and, to my knowledge, successfully pass. Similarly, we have not yet required second deployments unless a surgeon volunteers. I applaud all recent graduates who, once again, demonstrated 100% pass rate for part I— you are setting the bar very high! As we are speaking of graduate surgical education, our programs continue at the pinnacle of performance, not only with the board passage rates, but competition for initial training, for fellowships, and assignments. For the 2011 school year, we were authorized to have 12 fellows, and remained with very qualified 19 resident starts. I want to remind everyone interested in competing for a subspecialty fellowship that these applications are due by 15 September. Following the AAOS meeting, after guidance from the teaching program chiefs, I will announce the fellowship mix for the 2012 school year.

As of this posting, assignments have been completed, and sent to Human Resources Command. All graduating residents should expect requests for orders in the next few weeks, and I anticipate most will be satisfied with their locations. As always, I am an email or phone call away, and welcome your contact. Following identification of assignments, and prior to the AAOS meeting in New Orleans, I will finalize the deployment roster for the next 12 months. We expect deployment schedules that support oral board exams without returning from theater. If anyone discovers this occurring, please notify myself as soon as you identify this issue as I serve to ensure this doesn't happen. One final word with respect to ARMY TRAINING— the option for an abbreviated Captains' Career Course is enabling Captains and Majors to complete this requirement in 2 weeks instead of the longer 9 week option. I strongly encourage you to speak with our career field manager, Major Beverly Scott, in order to enroll.

With respect to predeployment training, MEDCOM has been working with the Army Trauma Training Center to revise the deployment requirements. We owe a great deal to MAJ Jess

Continued on p. 4

Consultant's Corner Continued...

the effort he has made the past 4 years running the Combat Extremity Surgery Courses. We anticipate another session at the SOMOS meeting in Vail and this may include a concurrent course in ATLS. Please provide the Board of Directors input on your interest in such a course for the Vail meeting.

Finally, you should all be well aware that SOMOS is currently one of the major forces in the AAOS. Dr. White has been named to the Board of Directors, and we enjoy very active leadership in the Board of Counselors by Dr. Ed Arrington, and the 3 Board of Specialty Societies Representatives: JP Rue- Communications; Tad Gerlinger- Education; and Joseph Hsu- Research. While cooperatively sponsoring the fifth Extremity War Injuries Symposium, the organization is also co-branding several symposia and scientific sessions in New Orleans. I encourage you to attend in March and hope to see you there.

In your Service,

COL James Ficke, MD

CAPT Unger was deployed to Haiti. We look forward to the Navy update in the July 2010 Edition.



SOMOS/AANA Announce Scholarships to a Masters' Arthroscopy

With the generous support of DePuy Mitek and Smith & Nephew, the Arthroscopy Association of North America, along with the Society of Military Orthopedic Surgeons announces A Combined Advanced Shoulder Arthroscopy Course, October 16 - 18, 2010 at the Orthopaedic Learning Center in Rosemont, IL.

Members of SOMOS will have the course fee WAIVED, allowing them to learn from the best arthroscopic teachers in the world, free of charge (reduced hotel and air fare not included). The course will be open to the first 50 participants who are SOMOS members. Please join us for what promises to be a "fellowship in a weekend"!

Visit www.somos.org for details.

 **smith&nephew**

 **DePuy Mitek**

a Johnson & Johnson company



AANA
Arthroscopy Association of North America



SOMOS at the AAOS 2010 Annual Meeting

Tuesday, March 9, 2010

SOMOS Community Activity - Family Fitness Fun Park Build
0700 - 1530

Contact: Daniel Stinner, MD

Wednesday, March 10, 2010

Morial Convention Center (Wednesday - Friday)
1130 - 1230

Scientific Exhibit Number SE83

Heterotopic Ossification Following Combat-Related Trauma

Presented by: Benjamin "Kyle" Potter, MD

Thursday, March 11, 2010

SOMOS Collaborative Research Group Meeting

Wyndham Riverfront New Orleans

0600 - 0730

Room: Rex B

SOMOS Board of Directors' Meeting

Wyndham Riverfront New Orleans

1500 - 1900

Room: Rex B

AAOS Reception - Convention Center

Wounded in Action Art Exhibition

1830 - 1930

SOMOS Member Reception

Wyndham Riverfront New Orleans

1935 - 2200

Room: Bacchus Ballroom



Friday, March 12, 2010

SOMOS Symposium

1330 - 1530

Damage Control For The General Orthopaedic Surgeon:

Getting Your Patient Safely To The Traumatologist

Presented by: Romney Anderson, MD, Michael Charlton, MD, Joseph Hsu, MD

Saturday, March 13, 2010 - Specialty Day

Orthopaedic Rehabilitation Association

Morial Convention Center, Room 342

1330 - 1530

Symposium: *Injured Warrior Rehabilitation*

Presented by: Jim Ficke, MD, Dan White, MD, Scott Shawen, MD, Kevin Kirk, MD, Scott Helmers, MD, Joseph Hsu, MD

American Elbow and Shoulder Surgeons

Morial Convention Center, Room 245

1140 - 1145

Circumferential Lesions of the Glenoid Labrum: A

Prospective Cohort Study of Arthroscopic Repair with

Minimum 2-Year Follow-up: A Multi-Center Study

Presented by: Matthew T. Provencher, MD, John Tokish, MD, Colleen McBratney, MD, Daniel J. Solomon, MD, Lance LeClere, MD, Christopher B. Dewing, MD

51st Annual Meeting Report

Daniel W. White, MD
LTC US Army

Dear Colleagues,

I want to take a moment to recap a very successful Society of Military Orthopaedic Surgeons (SOMOS) 51st Annual Meeting!

A hearty thank you to all the hard work by the Scientific Program Directors, LTC John Devine, MD US Army, Lt Col Robert Sullivan, MD US Air Force, and CDR John-Paul Rue, MD US Navy. Additionally, this year we made a successful transition to Data Trace Management Services and they did a fantastic job making our meeting a success.

There were many highlights of the meeting. The first annual COL Brian Allgood Military Leadership Symposium was exceptional. The guest lecture staff included CAPT Dana Covey, MD, the first COL Brian Allgood Memorial Leadership Award recipient, and US Army BG Robert Brown. These lectures were inspirational and highlighted the challenges of leadership in the ever-changing military medical environment. Similarly, LTG Eric Schoomaker, the US Army Surgeon General, delivered the Presidential Guest Lecture as the closing act on Tuesday. Tuesday's schedule started with the Leadership Symposium, transitioned to the Trauma Sessions and management of war injuries, and then was followed by the Extremity War Injury Symposium update on the research opportunities. LTG Schoomaker's address was the perfect ending to a fantastic opening day, recapping the importance of leadership and the continued war effort, and presenting the challenges that will face military orthopaedic surgeons in the future.



will face military orthopaedic surgeons in the future.

The academic sessions were exceptional and highlighted the contributions to the current state of orthopaedics to which our society contributes substantially. There were 225 abstracts submitted to the meeting and the chosen podium presentations were outstanding. All of the civilian moderators commented on the excellent quality of the research and work presented.

Each year, SOMOS has the honor to present awards for leadership and exceptional scientific presentations and



posters. The first award presented was the COL Brian Allgood Memorial Leadership Award. This year's recipient was COL (ret) William Doukas, MD US Army. Dr. Doukas recently retired from Walter Reed AMC, Washington, DC. Dr. Doukas' incredible career was highlighted by COL James Ficke as we honored him with this award. As a former partner and friend of COL Brian Allgood, this was a special event for Dr. Doukas and all that were in attendance. Congratulations, Dr. Doukas, ...well deserved.

The **Founder's Award** recognizes the best original paper with military relevance. This year's recipient was CPT Gens P. Goodman, DO for his presentation of "Disease And Non-Battle Injuries Sustained By A U.S. Army Brigade Combat Team During Operation Iraqi Freedom."

The **Norman T. Kirk Award** recognizes the best original paper by a resident. This year's recipient MAJ Jamie D. Bulken-Hoover, MD for her presentation "Progenitor Cells Derived from Traumatized Muscle as Trophic Mediators in a Novel Peripheral Nerve Graft."



The **Louise House Award** recognizes the best poster presentation with military relevance at the annual meeting. The recipient was MAJ Scott M. Waterman, MD with the poster titled "Comparison of Negative Pressure Dressing in a Contaminated Open Fracture Model."

Another highlight of this year's meeting was the Army's capture of the Commander's Cup Competition. This year we had several events in the competition. The first event was the Hilton Hawaiian Lagoon Relay Race.

Continued on p. 6

51st Annual Meeting Report Continued...

As you would suspect, the Navy won this competition, with the Army in second place, just ahead of the Air Force.



It has been a great honor to be your president. Thank you for attending the meeting. We look forward to seeing you in Vail next year!

Mahalo,

Daniel W. White, MD
LTC, US Army
2009 SOMOS President



The second competition was the Hula Competition at the Luau. Army clearly won with Air Force in second place. In the Golf Tournament at Kaneohe Marine Corps Base, the Army won with a score of 10 under par, with the Navy second at 7 under par. The final event was the Honolulu Beach Biathlon. The Air Force won with 1st, 3rd, 5th, and 8th place. Capt James Bales, an Ironman Athlete, finished well



before the rest of the pack. The Army took 2nd place with finishers at 2nd, 6th, 7th, and 10th. Overall, in the Commander's Cup Competition, the Army scored 30 points, and the Air Force and Navy scored 15 points.

The SOMOS Board of Directors achieved many goals this year. One of the biggest tasks we faced was updating the bylaws and the organizational structure of the board. This was achieved at the Annual Meeting and the new bylaws will be on the website in the near future. The Army's new member of the presidential line is LTC(p) Tad Gerlinger, MD. Dr. Gerlinger is on the Total Joint Staff at Brook Army Medical Center. He is also a residency program director and the AAOS Board of Specialty Society Education Committee Representative for SOMOS. We are excited to have his leadership in SOMOS and will look forward to another successful Army-run meeting in 2012!



52nd SOMOS Annual Meeting December 13 - 17, 2010



Vail Marriott Mountain Resort & Spa Vail, Colorado

Nestled at the base of Vail Mountain resort and conveniently located just a three minute walk to the gondola, Vail Marriott is ideal lodging for daredevils, daydreamers or those seeking a little adventure. The natural beauty that surrounds the hotel has effortlessly been incorporated into the charm and elegance of its European Chateau feel.

Submit abstracts online from
May 1 - August 1, 2010

Registration begins Summer 2010
Visit www.somos.org for details.

2009 Award Winning Abstracts

Founders Award

Disease And Non-Battle Injuries Sustained By A U.S. Army Brigade Combat Team During Operation Iraqi Freedom

CPT Gens P. Goodman, DO

Objective: To date, a longitudinal cohort analysis of disease and non-battle injuries sustained by a large combat-deployed maneuver unit has not been performed. Our objective was to assess the impact of disease and non-battle injuries on a Brigade Combat Team during a wartime environment.

Methods: A descriptive analysis was undertaken to evaluate for disease and non-battle injuries incurred by members of a US Army Brigade Combat Team (n=4122) during the counterinsurgency campaign of Operation Iraqi Freedom utilizing a centralized casualty database and an electronic medical record system. Documented clinical visits for disease and non-battle injuries with subsequent casualty deaths, medical evacuations, or those returned to duty were used as main functional measurements.

Results: A total of 1,324 disease and non-battle injuries were identified with 5 (0.38%) deaths, 208 (15.7%) medical evacuations, and 1,111 (83.9%) returned to duty. The disease and non-battle injury casualty rate for the Brigade Combat Team was 257.0/1,000 soldier combat-years. Females, compared with males, had a significantly increased incidence rate ratio for becoming a disease and non-battle injury casualty 1.67 (95% CI 1.43, 1.99). Of 47 female soldiers who were medically evacuated, 35 (74%) were for pregnancy-related issues. Musculoskeletal injuries (50.4%) and psychiatric disorders (23.4%) were the most common body systems involved. The psychiatric casualty rate and suicide rate were 59.8 and 0.58 per 1,000 soldier combat-years, respectively. The Brigade Combat Team cohort incidence rates for common musculoskeletal injuries per 1,000 combat-years were as follows: ankle sprain 15.3, anterior cruciate ligament rupture 3.3 and shoulder dislocation 1.2.

Conclusions: Musculoskeletal injuries and psychiatric disorders accounted for 74% of all disease and non-battle injury casualties and 43% of the disease and non-battle injury casualties requiring subsequent medical evacuation. The Brigade Combat Team cohort had a suicide rate nearly four times greater than previously reported, and selected musculoskeletal injury incidence rates were five-fold greater than in the general population.

Norman T. Kirk Award

Progenitor Cells Derived From Traumatized Muscle As Trophic Mediators In A Novel Peripheral Nerve Graft

MAJ Jamie D. Bulken-Hoover, MD

Background: Peripheral nerve injury frequently accompanies musculoskeletal trauma, which lengthens the recovery time and can lead to significant functional disability. Currently available treatments include nerve autografts, the use of which are limited by the availability of autologous tissue, and axonal guidance tubes, although functional nerve regeneration using these synthetic devices leaves substantial room for improvement. The success of nerve repair depends primarily on the speed of axonal growth and myelination to bridge the damaged region and decrease the time to end organ re-innervation. The rate that these processes occur can be enhanced by neurotrophic factors that are normally secreted by glial cells in the nerve following injury. Specifically, brain derived neurotrophic factor (BDNF), nerve growth factor (NGF), and ciliary neurotrophic factor (CNTF) have been shown to significantly increase the rate of axonal growth. Neurotrophic factors can also be produced by mesenchymal stem cells (MSCs) that have been differentiated into a cell type with properties of glial cells, which provide support to peripheral neurons. Re-innervation of muscle tissue after injury is necessary for functional recovery to occur, and injured muscle tissue expresses high levels of neurotrophic factors to encourage axonal growth into the tissue. Our laboratory has recently identified a population of mesenchymal progenitor cells (MPCs) in traumatized tissue with trophic characteristic that are similar to MSCs. These progenitor cells also generate neurotrophic factors, and may be used in a biosynthetic nerve tube to enhance axonal growth and neuronal repair by improving the rate and quality of nerve regeneration. Our specific aims were (1) to assess the neurotrophic potential of traumatized muscle-derived progenitor cells, (2) to determine the effect of secreted factors on axon growth, (3) to evaluate their biological performance in a novel synthetic nerve graft.

Materials and methods: Traumatized human muscle debridements were obtained at our institution with IRB approval. Progenitor cells were harvested from the muscle tissue using a previously established procedure. In 2-D culture, the cells were exposed to growth medium (GM) or defined neuroglial-induction media (NM). The neurotrophic potential of the muscle-derived progenitor cells was determined using enzyme-linked immunosorbent assays (ELISAs) to measure the concentration of secreted neurotrophic factors (i.e., BDNF, CNTF, NGF: Nerve Growth Factor, GDNF: Glial Derived Neurotrophic Factor, etc.) and by real-time PCR to determine the gene expression of the neurotrophic factors. The effect of neurotrophic factors secreted by the MPCs was assayed by measuring the rate of neurite growth and branching of axons extending from an E9 chick dorsal root ganglion (DRG).

Continued on p. 8

2009 Award Winning Abstracts continued.....

A biosynthetic nerve graft was fabricated by electrospinning poly(μ) caprolactone into nanometer-scale fibers. To promote axonal growth through the graft, the nanofibers were aligned in the interior of the construct and were surrounded by nearly anisotropic nanofibers, which could be seeded with the progenitor cells. Viability of the cells in the nerve tube was assessed using calcein/ethidium bromide fluorescence assay. After one week in culture, the biosynthetic nerve tube was fixed and prepared for immunohistochemical evaluation of the neurotrophic factor distribution in the construct. Neurotrophic enrichment of the graft by the MPCs was assayed using a "Cryoculture" assay, whereby grafts seeded with MPCs were cultured for 7 days, flash frozen, cryosectioned at 20 μ m thickness and seeded with a DRG. The rate of axonal growth was measured to determine the effect of neurotrophic enrichment on the axon conductivity of the fibers in the graft. All the experiments were repeated using bone marrow-derived MSCs.

Results: After 7 days in culture, the progenitor cells had produced neurotrophic factors, and neurotrophic induction appeared to promote preferential proliferation of a neurogenic sub-population. The media conditioned by the MPCs increased the density and rate of neurite extension from the DRGs. Although branching occurred along the neurites, the average number of branches per neurite appeared to be fewer in MPC conditioned medium compared to MSC conditioned medium. The progenitor cells maintained viability after seeding onto the nanofibrous nerve tube and proliferated in the 3-D scaffold. Immunohistochemistry performed on cross-sections of the nerve tube localized the progenitor cells and secreted neurotrophic factors within the biosynthetic construct. Based on preliminary studies, the grafts seeded with MPCs and enriched by their secreted factors appear to have greater axon conductivity compared to unseeded controls.

Conclusions: The MPCs derived from traumatized muscle exhibit trophic behaviors (i.e., immunosuppression and pro-angiogenesis) that are comparable to MSCs. Here we have demonstrated that the MPCs are also capable of producing substantial amounts of neurotrophic factors, even without neurotrophic induction. Furthermore, the factors secreted by the progenitor cells enhanced the rate of axon growth and enriched a 3-D nanofibrous nerve graft to improve the axon conductivity. In future studies, we will use an in vivo rat model of sciatic nerve injury to assess the ability of these progenitor cells to enhance axonal sprouting, guidance, remyelination and functional nerve repair. Based on the results of this investigation, we propose that the traumatized muscle-derived MPCs, harvested from surgically debrided muscle, might eventually be used as a clinical, autologous cell source to promote nerve regeneration.

Louise House Award

Comparison Of Negative Pressure Dressings In A Contaminated Open Fracture Model

MAJ Scott M. Waterman, MD

Purpose: The purpose of this study is to determine if the use of different negative pressure wound therapy (NPWT) units results in a difference in bacterial quantity following treatment of a standardized contaminated open fracture model.

Methods: Complex orthopaedic wounds were created on the proximal left leg of twenty-four anesthetized goats. The wounds were inoculated with a strain of *Pseudomonas aeruginosa* (lux), genetically modified to emit photons, thereby allowing quantification of bacterial concentration with a photon-counting camera system. The wounds were debrided and irrigated with 9 liters of saline 6 hours after inoculation, and the animals were assigned to one of two NPWT groups, Kinetics Concepts Inc. VAC® or Smith & Nephew EZCare™. Both groups received repeat débridements every 48 hours for 6 days. Imaging was performed both immediately prior to and after each débridement.

Results: There was no significant difference in bacterial quantity in both NPWT groups at all imaging sessions, except 96 hour post-debridement, after the initial débridement and irrigation. At the 144-hour time point, the wounds in the EZCare™, VAC® NPWT groups contained 43% \pm 14% and 68% \pm 6% respectively.

Conclusion: This is the first study comparing different NPWT units. This study revealed no difference between these NPWT units with regards to bacterial quantity. This study documents that it is wound treatment modality, not the company providing it, which is significant.

A Message from the Editor

John Paul Rue, MD
CDR USN

Dear SOMOS Membership,

After reading this newsletter, you can see that 2010 is going to be an outstanding year and that SOMOS is strong and purpose driven. We thank you for your dedication to the mission and encourage your active participation within the Society and with future editions of *The Sentinel*. Please forward any comments or article ideas, especially updates from OIF/OEF and Haiti, to info@somos.org.

Best regards,

John Paul Rue, MD
Communications Committee Chair

