

AMERICAN SOCIETY FOR PERIPHERAL NERVE

Newsletter



Spring 2009

President's Message

Dear Colleagues,

I would like to begin by thanking Dr Robert Russell for his hard work on our behalf during the last year. As a direct result of his efforts we now have a permanent seat on the ASPS/PSEF Board of Directors. This position has been filled by Dr William Zamboni for a two year term and we look forward to hearing his reports. In addition, the membership process has been streamlined to make it easier for young surgeons and researchers to become members of the ASPN. The clearer, updated membership application forms are currently available on our website.

The first task before us as an organization this year is the transfer of organizational management services from Medical Association Management (MAM) at the Illinois State Medical Society to the ASPS' (American Society for Plastic Surgeons) Specialty Association Management Services (SAMS) team. This was a very difficult decision for the society since we have been looked after so wonderfully by Alice Romano and Krista Greco before her at MAM. The move was made as a consequence of the shift in management services undertaken by the AAHS which provided us with an opportunity to consider a change for ourselves. The principle advantages which we hope to obtain from the move to SAMS include immediate access to many of their existing services, use of their in house meeting planning services, better integration into the structure of other subspecialist societies and a number of additional administrative benefits at no cost to the society. I ask the membership to be patient with us as we undergo this period of transition.



Planning for the 2010 meeting in Boca Raton, Florida is already well under way. Our theme will be a European Update on Neural Regeneration. Dr Martijn Malesy has taken charge of the program and has arranged a series of guest speakers from Europe who will bring new insights to our group. We also hope to encourage new registrants from Europe to attend as well as our regular colleagues from North America and beyond. New to the meeting this year will be a planned lecture on the history of neural regeneration which we hope to make an annual feature. I look forward to meeting with all of you in Florida next January.

**Howard M. Clarke, M.D., Ph.D.,
F.R.C.S.(C), F.A.C.S., F.A.A.P.
President**

From The Editor's Desk

Welcome to the first newsletter of 2009. In January we had a very exciting meeting in a fantastic place: Maui. Our next meeting, which will be in Boca Raton, Florida, promises to be a more exciting one under the leadership of our president, Dr. Clarke.

In this newsletter, you will see new additions including a profile of our leadership starting with our president, Dr. Clarke. There will be also a profile of one of our new members. In this edition there is a profile of Dr. Greg Borschel.

I would like to thank everyone who contributed to the newsletter. A special thank you is extended to members of the newsletter committee.

This will be the last newsletter in which Mrs. Alice Romano will be helping us with. Throughout the years, I have enjoyed working with Alice and she has always been professional, competent, punctual, well-organized and delightful to work with. Alice, thank you so much. We will miss you.

Nash Naam, MD

drnaam@handdocs.com

ASPN 2009 Meeting Recap

The President's Perspective

The 18th annual ASPN meeting was a huge success thanks to the hard work of the central office, especially Alice Romano and the terrific program organized by Nash Naam, MD, and the program committee. Attendance at the meeting was at an all time high with 156 registrants. The ASPN posted its largest profit of \$12,891 in 2008, which brings our current assets to \$143,000. Next years meeting in Boca Raton, FL, Jan. 8th-10th, will be run by our new president Howard Clarke, MD, PhD and should be even better. I hope all ASPN members will continue their efforts to recruit new members, which we need to sustain growth and to bring new ideas to our meetings. We now have 188 dues paying



members and should try to increase our membership by 10% a year or 20 new members.

Robert C. Russell, MD, FARCS, FACS
Past President

Report from the Program Chair of the 2009 Annual Meeting

In the midst of a spectacular backdrop of beautiful Maui, the ASPN held its 18th Annual Meeting. The meeting was very successful as judged by the number of attendees and their positive post-meeting comments. The meeting started on Friday. Dr. Allan Belzberg, the first invited speaker, gave an excellent presentation about neuropathic pain from bench to bedside and back again. This was followed by a panel discussion on Chronic Pain Management from Different Points of View. The panel, which was chaired by Dr. Wyndell Merritt, consisted of Dr. Belzberg, Dr. Mike Neumeister, Dr. Andy Koman, President of the American Society for Surgery of the Hand, and Larry Rossi who introduced to the membership the concept of the use of acupuncture in treating chronic pain.

The second invited speaker, Dr. Wyndell Merritt, talked on Saturday on “Where is the Pain in RSD/CPRS Patients: The Heart, The Head, or The Hand?” The third invited speaker was Dr. Rossi who, on Sunday, gave a very

interesting lecture on History of Acupuncture and Its Use in Treatment of Pain.

In addition to the invited speakers, the AAHS/ASPN/ASRM President’s invited lecturer, Dr. Graham Gumley, talked on Saturday on “Helping our Hands Restore Their Own Feeling”.

The meeting also had 8 instructional courses, two combined panels, and 59 paper podium presentations.

The meeting was exciting. It challenged our minds and our thoughts with wide array of topics ranging from the newest peripheral nerve research project to the oldest methods of treating pain.

I would like to thank Dr. Bob Russell, our past president, for his leadership and vision in shaping this meeting. A special thank you is extended to members of the program committee and a heartfelt thank you to Alice Romano, who always does a fabulous job. Thank you, All.

Nash Naam, MD



**Dr. Russell, ASPN President
opens the meeting.**



**Nash Naam, MD
Program Chair**



**Invited speaker
Allan Belzberg, MD, PhD**



**Invited speaker
Wyndell H. Merritt, MD, FACS**



**AAHS-ASPN-ASRM Invited
Speaker Graham Gumley, MD**



**Invited Speaker Lawrence J. Rossi
Jr., MD, FAAP, DABMA**

Congratulations!!

**Best Resident/Fellow
Basic Research Paper**



Elizabeth L. Whitlock, BA
Schwann Cell Migration into the Peripheral
Nerve Allograft: A longitudinal Assessment

**Best Resident/Fellow
Clinical Paper**



Brent M. England, MD
In Vivo Electrophysiologic Properties
of Poly(3,4-ethylenedioxythiophene)
PEDOT in Peripheral Motor Nerves



Dr. Merritt with Dr. and Mrs. Dellon



The meeting hall



Drs. Mackinnon and Merritt



The Three amigos: Presidents of AAHS, ASPN and ASRM



Invited speaker, Dr. Belzberg receives an appreciation plaque



Dr. Naam with an Egyptian Guest, Dr. Massoud, President of the Egyptian Society for Surgery of the Hand



Dr. Rajiv Midha and his lovely wife



ASPN/ASRM Welcome Reception



Dr. Kalliainen with guests



Dr. Russell admires the "Moose" given to him by Dr. Clarke



President Russell with the incoming president, Clarke



Dr. Russell receiving plaque of appreciation from Dr. Clarke

NOW ACCEPTING ABSTRACTS
2010 Annual Scientific Meetings
Boca Raton Resort & Club
Boca Raton, FL



SUBMISSION DEADLINE: JUNE 1, 2009

VISIT WWW.PERIPHERALNERVE.ORG TO SUBMIT YOUR ABSTRACT TODAY!!

DEADLINE FOR SUBMISSION IS **JUNE 1, 2009**. PLEASE SPREAD THE WORD AND ENCOURAGE YOUR COLLEAGUES TO SUBMIT AN ABSTRACT.

ASPEN Future Meetings

2010 Annual Meeting
January 8 - 10, 2010
Boca Raton Resort and Spa
Boca Raton, Florida

2011 Annual Meeting
January 14 -16, 2011
Ritz Carlton Cancun
Cancun, Mexico

2012 Annual Meeting
January 13 - 15, 2012
Red Rock Casino Resort &
Spa Las Vegas, Nevada

2013 Annual Meeting
January 11-13, 2012
Naples Grande Resort
Naples, Florida

The ASPN Council and 2009 Annual Meeting Program Committee would like to thank the following companies for their support and participation:

- Acumed
- Accutome
- American Society for Plastic Surgeons
- Aptis Medical
- Ascension Orthopedics **Proud supporter of the Program Book Back Page*
- Assi- Accurate Surgical **Proud supporter of the ASPN/ASRM Welcome Reception*
- Auxilium Pharmaceuticals, Inc.
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- Small Bone Innovations, Inc.
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- Tornier **Proud supporter of the Guest Room Key Cards*
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- ViOptix

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President - Howard M. Clarke, MD
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Vice President - Ivica Ducic, MD, PhD
Secretary - Allan J. Belzberg, M.D.
Treasurer - Robert Spinner, M.D.
Historian - Thomas H.H. Tung, M.D.
Past President - Robert C. Russell, MD
Past President - Gregory R. D. Evans, MD, FACS
Council Member-at-Large - Nash H. Naam, M.D.
Council Member-at-Large - Jonathan M. Winograd, MD
Council Member-at-Large - Renata V. Weber, MD

ASPEN 2009 Committee Roster

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William Kuzon, Jr, MD
Warren Schubert, MD
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Ivica Ducic, MD, PhD
Ida K. Fox, MD
Jonathan M. Winograd, MD
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Randip R. Bindra, MD, FRCS
A. Lee Dellon, MD
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Shimon Rochkind, MD
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Paul S. Cederna, MD
Howard M. Clarke, MD, PhD
Gregory R. D. Evans, MD, FACS
Nash H. Naam, MD
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Robert Spinner, MD
Thomas H.H. Tung, MD
Renata V. Weber, MD
Jonathan M. Winograd, MD

Website & Technical Exhibits Committee

Ranjan Gupta, MD, Chairperson
Gregory Borschel, MD
Bryan J. Michelow, MD
Howard M. Clarke, MD, PhD Ex-Officio

Membership Committee

The American Society for Peripheral Nerve (ASPEN) Membership Committee consists of the following members: Paul S. Cederna, MD, Chairperson; J. Hank Coert, MD; Ivica Ducic, MD, PhD; Ida K. Fox, MD; Jonathan M. Winogard, MD; and Howard M. Clarke, MD.

The membership committee has been hard at work continuing to ensure an active and vibrant membership for the ASPEN. Dr. Robert Russell spent a substantial amount of time during the past 12 months encouraging people to become new members of the ASPEN and also encouraging long standing members of the ASPEN who may have become inactive in the society to once again re-engage with the society. Through the hard work of Dr. Russell and the membership committee, we currently have 177 active members, 11 associate members, 8 candidate members, 9 senior members, and 3 honorary members. This provides a total membership in the ASPEN of 208. During the past twelve months, we have added the following eight active members, one associate member, and three candidate members for an additional increase in membership of twelve. This is the highest

membership total in the history of the ASPEN. In an era where many professional societies have declining membership numbers, the ASPEN has continued to increase in size. The ASPEN has successfully continuing to hold high quality annual meetings and provides its membership with substantial value through scientific collaboration, clinical collaboration, and communication. We will continue to maintain our affiliation with both the American Association of Hand Surgery and the American Society for Reconstructive Microsurgery to provide the premier reconstructive meeting each January. This has provided us with a vibrant, active, and progressive scientific meeting where we can share with each other both basic science and clinical advances in the field of peripheral nerve. We will continue to encourage membership in the ASPEN over the upcoming twelve months and hope to maintain our current membership at its highest level to date. If you have any suggestions to help enhance membership in the ASPEN, please email the committee at cederna@umich.edu

Paul S. Cederna, MD
Chairperson

ASPEN 2009 New Members

ACTIVE

Stephen Colbert, MD
Anthony DeFranzo, MD
Kayvan Khiabani, MD
Jenny Lin, MD
Joseph Molnar, MD, PhD
Srdjan Andrei Ostric, MD, SC
Shai Rozen, MD
Wale Sulaiman, MD, PhD, FRCS(c)

ASSOCIATE

Abdul Shararah, PharmD, MD

CANDIDATE

Richard Baynosa, MD
Brent Egeland, MD
Thomas Scholz, MD

SPONSOR

Susan Mackinnon, MD
A. Lee Dellon, MD
William Zamboni, MD
Howard Clarke, MD, PhD
A. Lee Dellon, MD
Robert Schenek, MD
A. Lee Dellon, MD
Rajiv Midha, MD

Rajiv Midha, MD

William Zamboni, MD
Paul Cederna, MD
Gregory R. D. Evans, MD

2010 Leadership Position Recommendations

The ASPN Nominating Committee is requesting recommendations from the membership for leadership positions within the organization. A response is requested, but not required. If you choose to respond, please email your recommendations to contact@peripheralnerve.org.

For a description of the leadership position duties and charges, please view the bylaws online at www.peripheralnerve.org. Your recommendations will be given to the nominating committee for consideration while assembling the 2010 leadership slate.
RECOMMENDATIONS ARE DUE BY MAY 15, 2009.

American Society for Peripheral Nerve 2010-2011 Council Positions				
Officer Position	Term	2009-2010 Council	Eligible for reappointment?	2010-2011 Council
President	1 year	Howard M. Clarke, MD, PhD	NO	Paul S. Cederna, MD
President-Elect	1 year	Paul S. Cederna, MD	NO	OPEN
Vice President	1 year	Ivica Ducic, MD, PhD	NO	OPEN
Secretary	1 year	Allan Belzberg, MD	YES	OPEN
Treasurer	1 year	Robert Spinner, MD	NO	OPEN
Historian	1 year	Thomas H.H. Tung, MD	NO	OPEN
Past President	2 years	Robert C. Russell, MD	N/A	Robert Russell, MD
Past President	2 years	Gregory R.D. Evans, MD	N/A	Howard Clarke, MD
Member at Large	2 years	Nash Naam, MD	N/A	Nash Naam, MD
Member at Large	2 years	Renata Weber, MD	N/A	Renata Weber, MD
Member at Large	2 years	Jonathan M. Winograd, MD	NO	OPEN

2009 Update from the ASPN Bylaws Committee

This year, the ASPN Bylaws Committee consisted of the following members: Melanie Urbancek, Chairperson; Paul Cederna, Bill Kuzon, Warren Schubert, and Robert C. Russell.

The committee proposed amendments to the Article XII: Membership and Article XVIII: Dues and Fees in the Bylaws portion of the ASPN Constitution and Bylaws. The proposed changes were reviewed by the Executive Council and circulated to the membership one month prior to the annual scientific meeting. The additions and deletions were presented to active members during the ASPN Business Meeting which was held on Saturday, Jan 10th, 2009 during the Annual Business Meeting in the Haleakala Ballrooms of the Grand Wailea Resort in Maui, Hawaii. The proposed amendments to the Bylaws were enacted by a majority vote of active members present.

This year as in most, none of the Articles of

the Constitution was amended. However the Bylaws Committee and the Council felt the Society would benefit by broadening the definition of our stated membership requirements. We also felt our three year tolerance for retaining members with unpaid dues was unnecessarily generous. In summary, the newly enacted articles of the 2009 Bylaws removes the one published paper requirement for membership, and also includes those with interests in neural regeneration and/or peripheral nerve as meeting the qualification for Candidate Membership and as a quality for Active Members, Associate Members, and Honorary Members. The number of years one may be in arrears without a valid excuse is now two years before one loses his/her membership.

If you have any Bylaw suggestions, please email the Committee at melurban@umich.edu.

Melanie Urbancek, PhD, Chairperson

Leadership Profile



Dr. Howard M. Clarke President ASPN

Howard M. Clarke is a Professor in the Departments of Surgery and Physical Therapy at the University of Toronto where he has been on the faculty since 1987. He has been in practice in the

Division of Plastic Surgery at the Hospital for Sick Children in Toronto since completing his fellowship training. Dr. Clarke is currently the Medical Director of the Burn Unit at the Hospital for Sick Children. As such he coordinates the team which provides burn care for about one hundred admitted burn patients per annum. His other clinical interests beyond hand surgery include cleft lip and palate surgery and congenital hand surgery.

Dr Clarke's major clinical and research focus is in obstetrical brachial plexus palsy. He is responsible for the Brachial Plexus Programme at the Hospital for Sick Children which includes a weekly multidisciplinary clinic for the evaluation of children with obstetrical brachial plexus palsy. He is extensively involved in both primary and secondary reconstructive procedures for these children. This brachial plexus programme is the largest programme in Canada and is recognized at an international level. The brachial plexus team in Toronto has developed the Active Movement Scale, a validated and reliable tool for the assessment of infants and children and the 'Cookie Test' for the assessment of the adequacy of spontaneous recovery in these infants. With these tools, the team has produced a series of clinical studies taking advantage of reliable data collected across treatment to demonstrate statistically the advantages of neuroma resection and grafting.

Howard grew up in Stratford, Ontario where he was first taken to see Julius Caesar in 1964. He has been an avid theatre fan beginning as a dresser at the

Stratford Festival, as an actor at the university and as a theatre goer since. Howard studied medicine at the University of Toronto and entered the plastic surgery training programme there upon graduation. Graduate training in the Institute of Medical Science was integrated into this training programme under the supervision of Ralph Manktelow and Nancy McKee. Howard's Ph.D. thesis entitled 'The Haemodynamics and Viability of Skin and Muscle Flaps' was completed in 1985. Fellowship training followed at Harvard University studying hand surgery with Joe Upton and at the University of Tokyo undertaking microsurgical training with Professor Kiyonori Harii.

Howard has been a member of the ASPN since 1999 and has served on the Program Committee many times acting as its chair for the 2005 meeting. He has served as Secretary, Vice President and President Elect before becoming the current President of the Society. Howard has organized or participated in many panels on obstetrical brachial plexus palsy and pediatric nerve surgery for the ASPN, AASH and ASRM meetings.

For Canadian surgery, Howard serves as a Member of the Examination Board of the Royal College of Physicians and Surgeons of Canada and the Surgery Test Committee of the Medical Council of Canada. Internationally, he was an Associate Editor of Plastic and Reconstructive Surgery from 2002-07 and is currently on the Editorial Board of the Journal of Reconstructive Microsurgery. Howard is a Membro Correspondente of the Associação Brasileiro de Cirurgia da Mão and has served as a Clinical Professor of the College of Medicine at Korea University in Seoul. He has traveled on medical missions to Ecuador, China and Honduras.

At the University of Toronto, Howard is enthusiastic about teaching at the undergraduate, graduate and post-graduate levels. He was the

recipient of the PAIRO (Professional Association of Interns and Residents of Ontario) Excellence in Clinical Teaching Award in 2002. Howard has just been nominated as an Associate Senior Fellow at Massey College, a prestigious residential college for graduate students at the university.

Howard's partner, Christopher Hoile, is head theatre critic for Eye Weekly, opera columnist for The Wholenote and the Toronto correspondent for Opera News. Together they attend the theatre two or three times a week and enjoy traveling to Niagara-on-the-Lake and abroad to see theatre in all of its forms. The 'cottage' is in Stratford, Ontario where, these days, the restaurants are often better than the shows. Howard has been on the Board of

Directors of the Canadian Stage Company and is presently on the board of Touchmark Theatre. Howard's other interests include travel, even if it involves work, and photography. He is an artist member of Gallery 96, an artist-run space in Stratford and has won the Bronze Medal of the Canadian Association for Photographic Art.

Howard is deeply indebted to Christine Curtis, physiotherapist; Emily Ho, occupational therapist and Sevan Hopyan, orthopedic surgeon of the Brachial Plexus Program at the Hospital for Sick Children who have provided so much of the impetus and so many of the great ideas that have driven this program forward.

New Member Profile

Gregory H. Borschel, M.D., F.A.A.P.

Personal: Married (Tina Borschel, Internal Medicine, Barnes Jewish Hospital & Washington University), two children, Anjali (5) and Nikhil (3).

Education: Emory University, BS, Biology and Chemistry, 1993; Johns Hopkins University, MD, 1997; Integrated Plastic and Reconstructive Surgery Residency, University of Michigan, 2005; Pediatric Plastic Surgery Fellowship, The Hospital for Sick Children / University of Toronto, 2006.

Employer: Washington University in St. Louis, Division of Plastic and Reconstructive Surgery / St. Louis Children's Hospital.

ASPN involvement: ASPN Member, Jan 2008; recipient of 2009 ASPN Research Grant; Member, ASPN website committee (Feb 2009 – present).

Best Part(s) of My Job: Mentoring and learning from my students, residents and fellows; drawing upon the experience of my partners; getting occasional "really nice" results.

Major Accomplishments: My kids usually recognize me when I come home, and my wife hasn't left me (yet). Also: starting a new pediatric peripheral nerve injury program at St. Louis Children's Hospital; developing a research program



in peripheral nerve tissue engineering and translational research with my collaborators Susan Mackinnon and Shelly Sakiyama-Elbert. Also: Greatest Professional Challenge: Maintaining work-life balance in the context of reduced external research funding and declining reimbursement, especially for pediatric reconstruction.

Three Words That Describe Me: "Collegial," "flexible," and "only-mildly-overextended."

Congratulations!!

Dr. Shimon Rochkind, Director of division of peripheral nerve reconstruction at Tel Aviv University and the senior editor of Photomedicine and Laser Surgery, has received Clinical Science Award for 30 years of research work and investigation of laser phototherapy on peripheral nerve regeneration during the World Association

for Laser Therapy congress which took place 19-22 October, 2008 in Sun City, South Africa.

A review of his 30 years work research on laser phototherapy has been published in Neurosurgical Focus [*Neurosurg Focus* 26 (2), 2009].

How we Touch our Patients' Lives

Editor's note: Dr. Miguel Pirela-Cruz received this note from the father of one of his patients.

Dr. M. A. Pirela-Cruz, here is the article that ran this past Friday talking about the All-American Diver Hector Roman, your patient. Hector will be diving at the State Finals in Austin next Friday

Thank you and your staff for all the love and support.

Hector J Roman Sr.

Diving: Roman's recovery leads him back to the pool

After life-threatening car accident wiped out the end of his junior year, Pecos senior shoots for return to state

February 12, 2009 - 5:30 PM

BY WILLIE BANS

PECOS Hector Roman was not asleep at the wheel long enough to dream.

If he had dreamt that night, Jan. 31, 2008, he would have dreamt about the Region I-4A Diving Championships in Lubbock the next week.

He had already won the District 4-4A title a few days before, and Lubbock would be his ticket back to the state finals, where he finished seventh overall as a sophomore in 2007, earning All-American honors based on his score.

If he qualified in Lubbock in the diving and swimming events, he would be the first in Pecos High history to qualify in two events for the state finals, to be held at the University of Texas on his 17th birthday, no less.

Most importantly to Roman,

he would get to dive in front of the flashing lights. Lights that, in Texas high school swimming and diving, only flash in the state finals, a two-day event so unlike the hundreds and hundreds of quiet and calm meets leading up to it.

He woke up for those lights every day at 5:30 a.m., to practice before school, only to hit the water again right after his last class, often practicing from 2:30 p.m. until 8 p.m.

But in the first seconds after waking up from barely drifting off on West F Street, all Roman could see was a porch light.

The light was dull. Not like the bright lights that burst when he dived.

The pain was not dull. His tongue throbbed from biting it when the air bag deployed. However, he did not feel the pain of a 26-foot piece of pipe that tore through his body, impaling him through his upper left armpit and shoulder blade, missing his heart by a half-inch.

"It was like when you're in class and your eyes want to close for a few seconds," he said, "... but mine stayed closed."

He felt nothing in his

shoulder, like a dream.

When he first woke up, he did not realize the pipe was through him.

When he looked down and saw the pipe, he thought he would never dream again.

>> A NATURAL

Maybe if Pecos had a gymnastics team, Roman would have never been a diver.

Hector Roman Sr., who was born in Pecos, returned in 1997 after coaching gymnastics at an elementary school in Odessa.

As his son grew up, Roman Sr. looked for signs that pointed toward the sports he would play. He did not have to look further than around the house. Little Hector saw a chair and had to jump on it, saw a tree and had to climb it, saw a toy and had to run to it.

With no gymnastics squad in Pecos, Roman Sr. thought the swimming and diving team would be the next best thing for his son.

"I saw his ability to be able to do tumbles and flips and stuff like that," he said. "One day it dawned on

me. (Diving) would be excellent for him. That's a way for him to use all his energy."

Roman joined the team in seventh grade and began diving the following year, just to try it out.

After diving for only six weeks, he made the state finals at a junior meet, finishing in sixth. He thought it was a fluke, something to do when it wasn't football or track season. It took phone calls from teammates to get him stay with the swim team for his freshman year.

He had pedestrian scores until a second-place finish midway through the season. Confident, he got third place in both the district and regional meets and garnered honorable mention at state.

It was a glimpse into what he could do, a foreshadowing of something special.

So in the offseason, "I just worked 10 times harder," he said.

The work and the practice paid off. Only a senior at Andrews, Matt Culbertson, was considered better in the area, but Roman was making his stamp as a sophomore. In the district meet, he broke Pecos' all-time mark of 396 points by scoring a 413.50.

He did not think he would break it until his senior year.

He ended up getting seventh at state and vowed to return the following year, to the University of Texas' Lee and Joe Jamail Swimming Center, and make a bigger splash.

He received All-American honors; in his junior year, he dominated every meet. He was only challenged at invitational meets against Class 5A divers.

Roman loved going against the best, and he knew the best were at the state meet.

The district and regional meets were just formalities, really. Even a shoulder strain would not interfere.

It was on a clear track. District. Regionals. State.

He got first at district on Jan. 25.

"I sort of had a bad meet at district, and I missed my record by 13 points, scored a 401," he said. "I was ready for regionals because I was going to try to break it again.

"But it didn't happen."

>> JAN. 31, 2008

At that time, Roman was getting up around 5 a.m. for therapy on his shoulder. So a little after 9 p.m. on the Thursday after the district meet, he told his father he was borrowing the van and taking his buddy home, just a couple of miles down F Street. His father told him to get back as quickly as possible.

West F Street is close to the northwestern tip of Pecos, population 7,898. If you are west bound, like Roman was, and cross Cedar Street, one of the main streets in town, it gets more and more desolate. Houses are here and there, sometimes hundreds of yards apart. Little, if any, traffic.

At night on West F Street, which has no street lights, it gets darker the more you go west.

He made it to his friend's house, hung out for a little, said goodbye. He got into the 1999 Plymouth Voyager, turquoise like the water, and started to drive east, toward home.

The speed limit is 35 mph. It could not have been more than 30 seconds before he dozed off.

The van veered across the road, smashing through two fences, one along the road, another behind a house, before stopping right next to the front porch.

Whether the pipe came in through the front or the back of the van is unclear.

How does a 26-foot stretch of pipe detach from the top of a fence and go through the front windshield like a javelin? Or vice versa?

"What we assume is a piece of the pipe was sticking out and that's where the car crashed," Roman Sr. said. "But it's totally out of whack. We don't know if the pipe came into the front, we don't know if the pipe came into the back. There's no blood at all. There are no skid marks. The pipe never bent, and it can't be bent. It's totally solid. We don't know how it happened."

No blood?

How does such a heavy pipe - a four-foot portion, made from high-pressure gas line, weighs approximately 20 pounds - tear the main artery and nerves that supply blood to an arm and not leave the person bleeding to death?

That is more easily explained. When the pipe went through, it created a tourniquet in his long sleeve T-shirt and stopped the bleeding.

If not, he would have bled to death in three minutes, Roman Sr. said.

"For the moment, I couldn't feel my arm," he said. "I was sitting there, I opened the door, and I tried to get out and I couldn't and I didn't know why. The way my dad's van was, it was like a chair and another chair and an empty spot in the middle. He had all this mail and bills. I was thinking my phone was somewhere in there. I tried to reach to move it around, but I couldn't move. I just sat there for a while thinking, 'What's wrong?'"

"Then that's when the light turned on and I started to - it started to really hurt."

He pleaded with a resident of the house to pull the pipe out, to no avail. Emergency personnel, police officers, doctors, they all arrived shortly thereafter.

They used the Jaws of Life to cut most of the pipe sticking out from behind him and the portion between him and the windshield.

The whole time through the painful process, the question Roman kept repeating to anyone who listened was not, "Will I survive?"

Instead, he wanted to know if he could still dive.

"That's all I could ask," he said. "There was a cop there. Her son was a swimmer. I was asking her, 'Do you think I'll still be able to make regionals?'"

"The firemen who were holding me down, because they were going to cut it with the Jaws of Life, I was asking them, 'Do you think I'll still make it to regionals?'"

No one could answer that. They were more concerned with controlling the bleeding and saving his arm. He lied on his side on the stretcher on the way to Reeves County Hospital - with the pipe, he could not lie on his back - and there, doctors stabilized it and prepped him to be airlifted to Odessa's Medical Center Hospital. The pipe was still too long and the helicopter door could not be shut, so the fire department was called again to cut it with the Jaws of Life.

With no painkiller, he could feel the pipe moving.

"He was yelling at me, 'Dad pull the pipe out! Pull the pipe out!'" Roman Sr. said.

After Roman arrived in Odessa, a team of five surgeons removed the pipe. He was in the intensive care unit for three days, as family members and teammates and swimmers and divers from across the region visited him for weeks after.

He thought he would never dive again.

>> THE COMEBACK

Essentially, his arm was paralyzed.

Roman would have surgery to replace the main artery in his arm with a vein from his thigh, and that regenerated blood flow.

Six weeks after the collision, he was sent to Dr. Miguel Pirela-Cruz, an orthopedic surgeon in El Paso. Pirela-Cruz, a former captain of his high school swim team in Brooklyn, N.Y., first thought it would take a year for Roman to be able to fully rotate his left arm. He had so much scar tissue that he could not move his arm away from his chest.

"But a lot of times," Pirela-Cruz said, "patients' time frames are not the same as yours."

They began with basic physical therapy, but Pirela-Cruz soon realized it was too slow. This was an All-American athlete here, and he was aiming to get back for his senior year.

So Pirela-Cruz told him to hit the pool. The best rehabilitation for Roman, it turned out, was swimming.

Slowly, he gained movement back in his arm. A cast was used to hold new boundaries that he was pushing with his arm, and every week they removed the cast to create more distance away from his chest.

He was able to lift his arm after three months into rehabilitation.

This was late May, and the swim team began two-a-days in August.

With the motion of his arm back, Roman saw diving as a possibility. In the summer, he would take food to his sister at the pool where she was a lifeguard and he once was, and on one rainy day they were hanging out in the concession stand

when he got a once-common request.

"I was used to diving every single day," he said. "I did it literally so much before I wrecked that when I was lifeguard, my friends would say, 'Let's jump off the diving boards!' and I'd say, 'Naw, I do it so many times. I'm tired of it.'"

"This time I was like, 'Hell yeah, I get to do it.'"

He did it, in his basketball shorts, momentarily ecstatic to plunge into the pool the same way he had for so many years.

"He's made a spectacular recovery," Pirela-Cruz said. "I attribute it to him. Sometimes losing that ability to compete makes you that much hungrier."

Past that barrier, Roman made it to practice in August. On one of the first days, he tried only the most basic dives. Diving coach Joan Capshaw's approach was that of a mother holding a 5-month old baby's arms in the first guided little steps of life.

But to Roman, diving was so much a part of his life. Capshaw knew this, so she let go.

"I said, 'Hector, do a forward two and-a-half,'" Capshaw recounted.

Two-and-half summersaults, facing the water and rotating toward it. Nailed it.

"I never thought that he would not dive again," Capshaw said. "I just refused to believe it."

>> THE NEW GOAL

If his father or the doctors or Capshaw or his teammates are reading this today, the first day of the Region I-4A Championship meet in Andrews, and Roman has already competed in the diving finals, it will be an accomplishment regardless of his finish. He made it to where he could not last year.

But he wants state, and he wants it badly.

The top two from today make it to Austin, and going into it, he has the top mark from a district meet: 398.95.

If he gets first today, he will earn the Regional Diver of the Year award that eluded him last season, the award Andrews diver Colton Taff wanted to give him after he won it in Roman's absence.

"The only reason I got it was because Hector wasn't there," said Taff, who graduated last year. "I told the Pecos coaches, 'Give this to him.' They said, 'No, no, no.' I told them I didn't feel like I deserved it, and they suggested we split it. So we did."

Roman has that award, among many others, hanging on his bedroom wall, along with get-well-soon posters. There is a poster hanging behind the Pecos diving board in the natatorium that says, "The region is behind you." It was signed by every team in the region while he was in the hospital.

The time away from the pool did hurt, though. He is not as strong as he was at this point last year, and that is important in jumping off the board. The more hang time, the bigger chance for a better score. He doesn't have motion on his left index finger and thumb. He tapes his index and middle fingers to try to get more grip on his tucks, critical on many dives, which have little room for error.

"I don't have a lot of strength in my left arm to hold my legs and I lose control sometimes and bust in practice," he said.

Still, he manages to keep going. He broke his school record in the Pecos Invitational earlier this season, notching a 415. Just like he knew he could last year.

And before each dive, he approaches the board a little slower than others. He closes his eyes for a few seconds and takes a deep breath before walking to the edge of the board.

He has been to the edge of life, and he has not forgotten.

"A lot of times, still to this day, I think I'm not really supposed to be here, but I got that second chance," he said. "That pushes me a lot. I tell myself, 'It could have been worse. Even though I didn't die, I could have had my arm amputated, so it makes me work harder.'"

Toward today. Toward state. Toward the lights and the noise and the stage.

"I like that, the loudness," he said. "It makes me relax more. When it's quiet, I feel like all eyes are on me. At state, all I can see is flashes and people yelling and I feel nobody's watching me and I can do whatever I want."

What's New in Peripheral Nerve Surgery and Research

Broadening Applications for Tacrolimus (FK506)

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Introduction

Tacrolimus (Prograf, FK506) is a hydrophobic macrolide isolated from *Streptomyces tsukubaensis* and has well established immunomodulatory and anti-inflammatory properties. It is approved for the prophylaxis of transplant allograft rejection and is a standard component of immunosuppressive regimens currently in use for organ and reconstructive tissue transplants. It primarily affects T cell function by binding to FK binding proteins (FKBP), and mediates immunosuppression by inhibiting calcineurin, a calcium- and calmodulin-dependent phosphatase. The receptors for FK506 belong to the family of FKBP, and are designated according to their molecular weight.¹ The immunosuppressive effects are mediated largely through FKBP12 which is involved in intracellular calcium flux and cell cycle regulation.² The literature has demonstrated potential efficacy as well in the management of other inflammatory and autoimmune diseases for which transplantation does not play a role such as rheumatoid arthritis and myasthenia gravis. Tacrolimus also has well established neuro-enhancing properties that have been extensively demonstrated in both small and large animal models and are related to its receptor FKBP52, a heat-shock protein (HSP-59) and a component of

mature steroid receptor complexes, as well as FKBP 12.³

Enhancement of Nerve and Muscle Recovery

Tacrolimus has been shown to have numerous neuroprotective and neuroregenerative effects in multiple experimental models of nerve injury,^{4,5} including models of 1) spinal cord trauma,⁶⁻¹⁰ 2) Parkinson's disease,¹¹⁻¹⁵ 3) nerve crush,¹⁶⁻¹⁹ and 4) nerve transection.²⁰⁻²² Its neuroregenerative effects upon binding to FKBP-12 include 1) activating growth associated protein-43 (GAP-43) via the inhibition of the phosphatase activity of calcineurin, 2) stimulation of the TGF- β_1 pathway,²³ and 3) enhancing Schwann cell proliferation.^{23,24} Its effects associated with FKBP-52 binding include 1) increasing the expression of c-jun and GAP-43, 2) stimulating the MAP kinase pathway, and 3) interacting with cytoskeletal components.^{8,15} The benefits of tacrolimus therapy after peripheral nerve injury have been shown to include 1) faster onset of functional recovery, 2) enhancing regeneration in rodent models of axonotmetic^{25,26} and neurotmetic injury,^{22,27} 3) reducing the time period of denervation and its associated negative effects (muscle atrophy and loss of motor endplates), and 4) accelerating collateral axonal sprouting.²⁸

The nerve graft model has shown greater nerve regeneration with use of a calcineurin inhibitor (cyclosporine A (CsA), tacrolimus) by multiple histomorphometric parameters including total axon number and percent neural tissue, as well as the regeneration of a significantly greater percentage of large myelinated fibers >3.0 µm compared to control animals. Tacrolimus has also been shown to double the number of axons that regenerate following a nerve injury, increase the number of myelinated axons by 40%, and significantly increase myelin thickness in a model of chronic axotomy.²⁹ In addition, it reduces by half the time to neurological recovery following a nerve lesion, and also enhances collateral sprouting of peripheral nerve fibers.³⁰ Other documented effects have also included increasing the caliber of regenerating axons and the rate with which they are remyelinated,^{26,31} and the ability to ameliorate other factors that may inhibit nerve regeneration and counteract the effect of agents that are detrimental to functional recovery after peripheral nerve injury.³² These results have been confirmed in numerous *in vitro* and *in vivo* studies.^{8,33-38} In the setting of nerve and hand transplantation, and in the only reported case of its use after replantation of an upper arm, tacrolimus improves nerve regeneration and recovery.³⁹⁻⁴⁷

Adverse Effects of Tacrolimus

The adverse sequelae of immunosuppression is a cumulative result of its long-term use and the current literature is based on organ transplant recipients who require lifelong treatment with high doses of immunosuppressive multiple-drug therapy to prevent allograft rejection. When the complications are considered collectively, lifelong immunosuppression can be considered a chronic disease characterized by its own set of risks. Much as chronic hypertension increases one's risk of stroke or heart attack, permanent immunosuppression increases the risk of infection, fracture, neoplasia, drug toxicity including hypertension and nephrotoxicity, and

metabolic derangement such as hyperlipidemia and diabetes mellitus.⁴⁸ However, there is a growing literature base on the temporary use of tacrolimus for reconstructive allografts that are ultimately incorporated by host tissue, and its more recent application for diseases whose treatment do not require transplantation. These collectively have helped to define the actual incidence of adverse events when used in a more elective manner based on a lower range of pharmacologic dosing and treatment duration.

Temporary Tacrolimus Therapy in Reconstructive Transplantation

There have been several reported series of reconstructive tissue transplants which act as a 'scaffold' for the ingrowth of host tissue and for which immunosuppression can be stopped once regeneration or incorporation of the allograft is completed. Mackinnon has reported a series of nerve transplants for the reconstruction of major nerve injuries with long segmental gaps and demonstrated no morbidity from temporary immunosuppression.^{43,49} No induction therapy was used and the treatment regimen included either CsA or tacrolimus, azathioprine, and prednisone at standard therapeutic doses for approximately 1.5-2 years. There has also been a small series of allogeneic vascularized human femoral diaphyses and total knee joint transplants reported in 1998.^{50,51} Immunosuppression began with quadruple-drug induction therapy with CsA, azathioprine, anti-T-lymphocyte globuline (ALG), and methylprednisolone, followed by oral maintenance therapy with CsA and azathioprine which were stopped after 2 years in recipients of femoral diaphyseal allografts, but was indefinite for the knee joint allografts. With follow-up of at least 2 years, no adverse effects related to the immunosuppression were reported nor was there any interference with bony healing. In 1992, 2 cases of human vascularized digital flexor tendon and pulley system transplantation were reported.⁵² CsA immunosuppression was discontinued after 6 months during which renal, cardiac and

hepatic function was monitored and noted to be stable and unchanged. Satisfactory healing and successful recovery of function were achieved in both cases. In the only reported case of tacrolimus therapy after upper arm replantation, the authors noted "exceptional" results with clinical and electromyographic evidence of reinnervation of intrinsic hand muscles without medication-related morbidity.⁴⁷ Although small in numbers, these series support the safety of the short-term and monitored use of standard maintenance immunosuppressive therapy, especially when employed as single-drug monotherapy.

Clinical Application of Tacrolimus in Non-transplant Patients

To date there is a substantial and accumulating literature base on the use of tacrolimus for diseases that do not involve transplantation. The most extensive and informative data come from its application for the treatment of rheumatoid arthritis (RA). Since 2002 there have been 2 phase II clinical trials (USA and Japan), one phase III clinical trial (USA), at least 2 open-label studies (USA and Japan) and other small and large series (n>200) evaluating efficacy compared to or in combination with other disease modifying antirheumatic drugs.⁵³⁻⁶³ Other systemic applications have also included the treatment of myasthenia gravis, ulcerative colitis, Crohn's disease, juvenile dermatomyositis, systemic lupus erythematosus, and ocular disease.⁶⁴⁻⁷⁷ Collectively these have involved study enrollment in the range of 2000 patients or more for indications other than transplantation and have included reports focused on the correlation of drug safety with pharmacologic dosing. Dose-ranging and safety studies have included tolerated with a low incidence of serious or irreversible adverse events. The literature on its application for the management of severe and refractory ulcerative colitis and Crohn's disease has led to similar conclusions regarding safety and efficacy but is less definitive based on much smaller patient numbers and the relative lack of randomized controlled

randomized, double-blind, placebo-controlled clinical trials enrolling hundreds of patients.^{53,55,57,61} Overall, the incidence of adverse events was a little higher or not statistically different than placebo controls. In general, the most common adverse events were gastrointestinal (GI) including nausea and diarrhea, neurologic (headache, tremor), respiratory, musculoskeletal, urologic (urinary tract infection (UTI), dysuria), and renal abnormalities. Renal effects were usually creatinine bumps which were only transient despite continued therapy and in all patients who discontinued treatment, the creatinine levels normalized within 4 weeks of stopping medication. The incidence of adverse events previously identified as safety concerns in transplant studies were notably lower in the study patients that received 3 mg/day for up to 18 mths than transplant patients, including hypertension (9.2% vs. 38-50%), tremor (10.5% vs. 48-56%), diabetes (<5% vs. 24%), and increased creatinine (7.4% vs. 24-45%).⁷⁸ Furthermore, multiple other side effects such as insomnia, paresthesias, oliguria, hyper or hypokalemia, hyperglycemia, hypomagnesemia, hypophosphatemia, anemia, and peripheral edema that have a reported incidence of at least 15% in liver and/or kidney transplant patients, occurred in less than 5% of these patients. This has been attributed to the lower dose used to treat rheumatoid arthritis (3 mg/day) as compared to the prevention of transplant rejection (0.1-0.2 mg/kg/day). In addition, no increase but an actual decrease in the initial incidence of adverse effects was seen with longer duration of treatment in RA patients.

The general consensus collectively reached based on these trials has been that tacrolimus is safe and generally well

trials.^{77,79-83} However, initial trials have shown promise for the improvement of symptoms and the prevention of colectomy in the short term. Taken together, the collective opinion has been consistent, that further trials are warranted, do not place patients at prohibitive risk, and should be forthcoming.

Summary

There is accumulating literature that supports the notion that the morbidity of a limited course of appropriately monitored monotherapy with tacrolimus at low maintenance doses is acceptably low, reversible, and safe, and that it is the cumulative effect over years and decades of high-dose multiple-drug immunotherapy that leads to the serious and irreversible complications seen in the organ transplant literature. Tacrolimus appears to have more to offer in the management of autoimmune diseases. Potential application to the treatment of nerve disorders and injury remains speculative but compelling. It is

clear that the use of tacrolimus in the clinical setting requires a high level of caution and careful consideration of risks versus potential benefits in addition to close follow-up and monitoring for adverse sequelae. Future trials need to be optimally designed with a high degree of scientific rigor for statistical validation and should use validated disease activity and outcome scores including quality of life assessment to permit definitive conclusions as broader applications are defined.

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The Effect of Fixation Technique on Assessment of Nerve Regeneration

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Introduction

As peripheral nerve research advances, rigorous and quantitative assessments of nerve regeneration have become increasingly important. Computer-based nerve histomorphometry provides quantitative characterizations of both pathological and uninjured nerve samples. Accurate analysis, however, depends on high-quality fixation of peripheral nerve tissue.

Transcardial perfusion, which achieves systemic delivery of fixative in the living animal, is the accepted gold standard for tissue fixation. In this technique, a thoracotomy is performed and fixative is pumped into the vasculature via the heart. The tissue of interest is then harvested and placed into a fixative bath. However, this method has several disadvantages including being time intensive, technically cumbersome, requiring high volumes of fixative, and necessitating animal sacrifice at time of harvest. Immersion fixation, in contrast, is easily performed, requires less fixative, and minimizes operative time. In this technique, the animal is simply anesthetized and the tissue of interest is harvested and placed into fixative.

We investigated the validity of immersion fixation versus transcardial perfusion for assessment of peripheral nerve regeneration based on assessment of histological, histomorphometric, and ultrastructural parameters. We hypothesized that immersion fixation would be an equivalent alternative to transcardial perfusion.

Methods

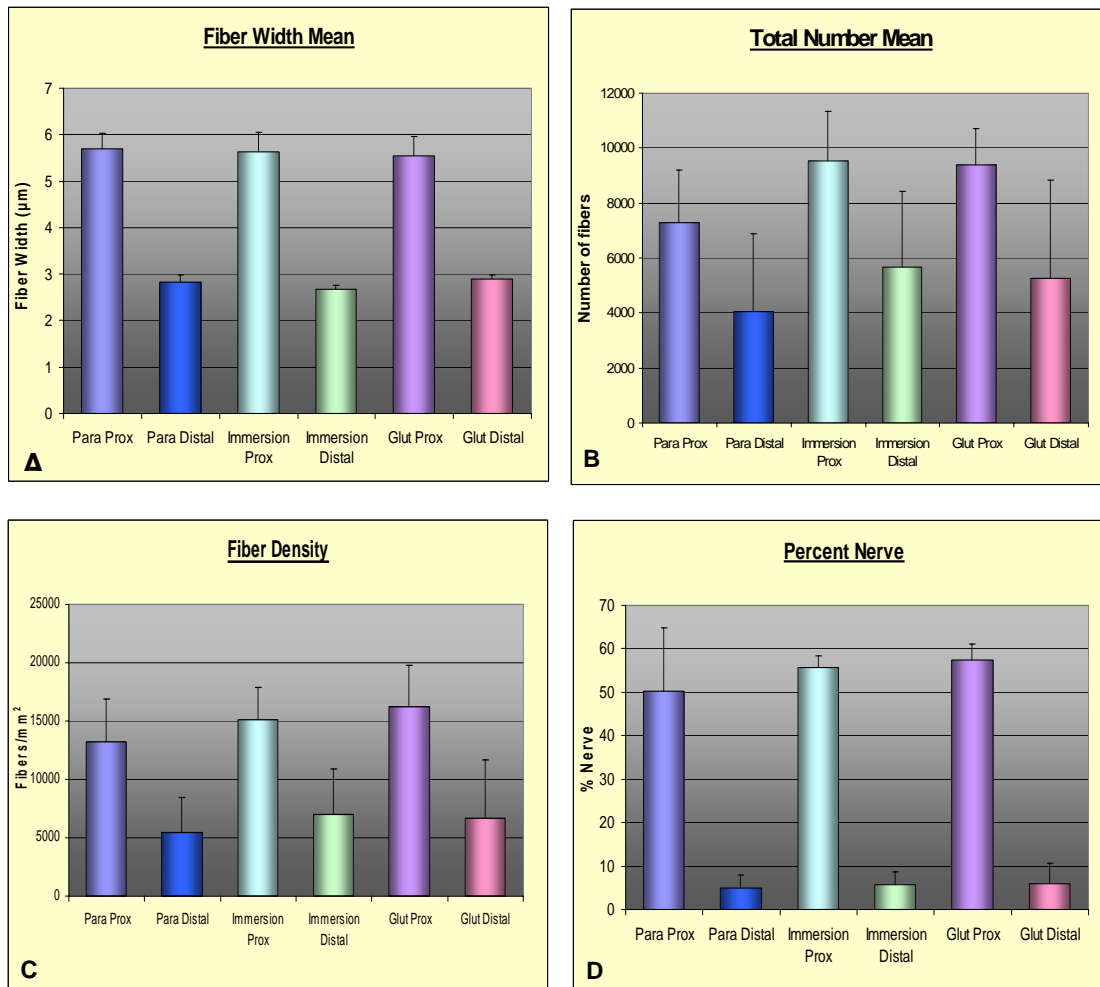
Lewis rats underwent sciatic nerve transection and immediate suture repair. Animals were randomized into three groups (n=6 per group) corresponding to eventual sciatic nerve fixation by one of 3 techniques:

- 1) Immersion: No transcardial perfusion was performed.
- 2) Paraformaldehyde: Animals transcardially perfused with 4% paraformaldehyde.
- 3) Glutaraldehyde: Identical to Group 2, except glutaraldehyde substituted for paraformaldehyde.

At 3 weeks, sciatic nerves were harvested according to the assigned fixation technique, preserved in glutaraldehyde, and postfixated. Nerves underwent qualitative assessment, electron microscopy, and were digitized and assessed for histomorphometric outcome measures.

Results – Histomorphometry

Key: Para = paraformaldehyde cardiac perfusion, Glut = glutaraldehyde cardiac perfusion, Prox = proximal section



Histomorphometry results from nerves fixed by immersion were similar to nerves fixed by paraformaldehyde or glutaraldehyde transcardial perfusion. There are no statistically significant differences between any of the histomorphometric outcome measures from proximal or distal nerve sections regardless of perfusion technique (Student's t-test). Qualitative assessment showed similar nerve histology in terms of nerve architecture, vascularity, and restoration of perineurium.

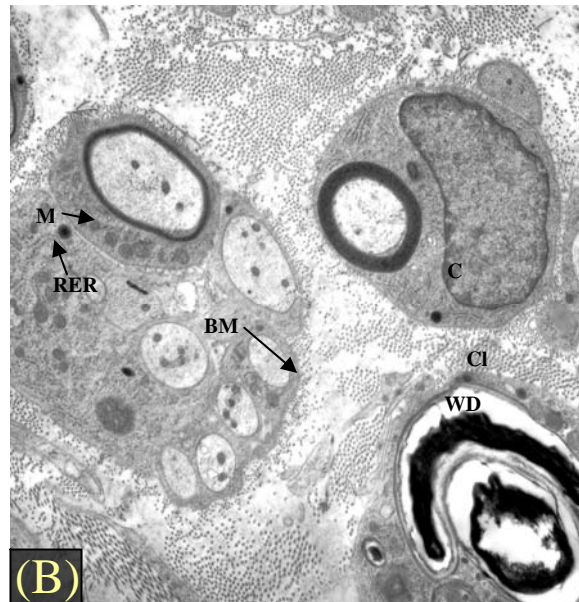
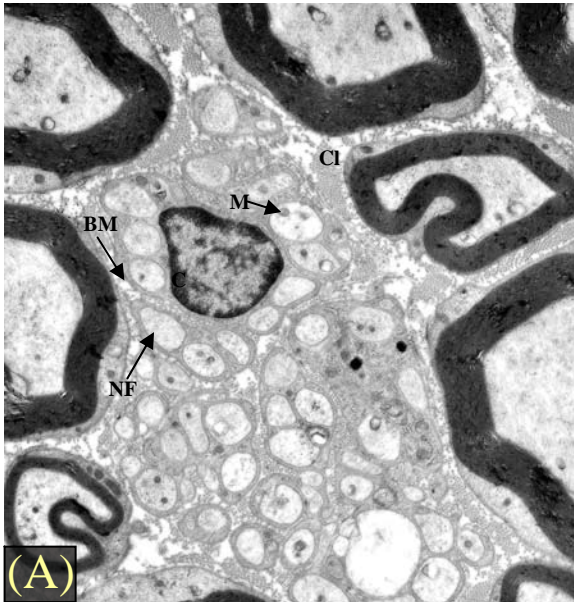
Electron Microscopy

Key: BM = double layer basement membrane, Cl = collagen fibrils, NF = neurofilament, M = mitochondria, C= chromatin, RER = rough endoplasmic reticulum, My = myelin

Immersion

Proximal

Distal

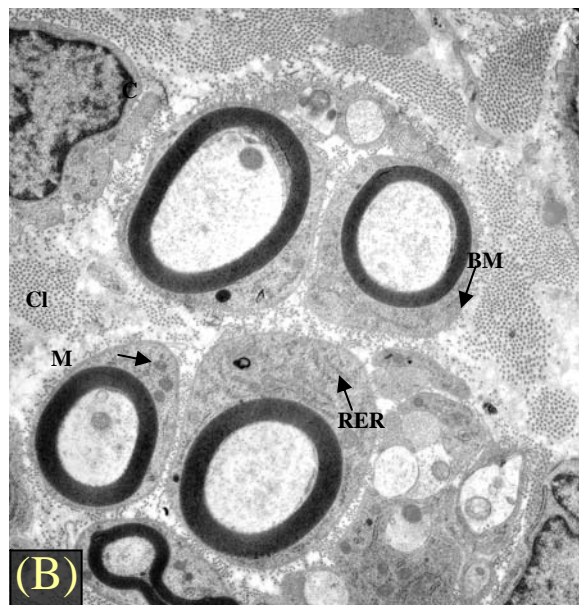


(A) Ultrastructural detail is preserved in this proximal section, with a wide variety of structures easily visualized. (B) Distal segment: immersion technique yields preserved ultrastructural detail. Various phases of injury are visible, with mature nerve in upper right, and another undergoing Wallerian degeneration (WD).

Paraformaldehyde

Proximal

Distal



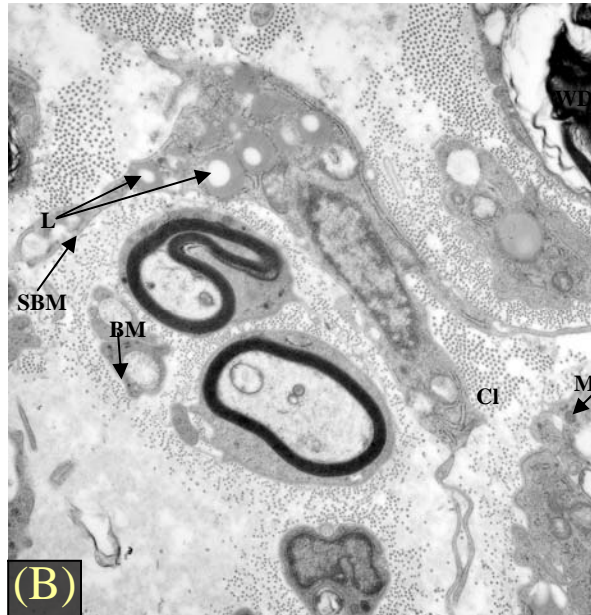
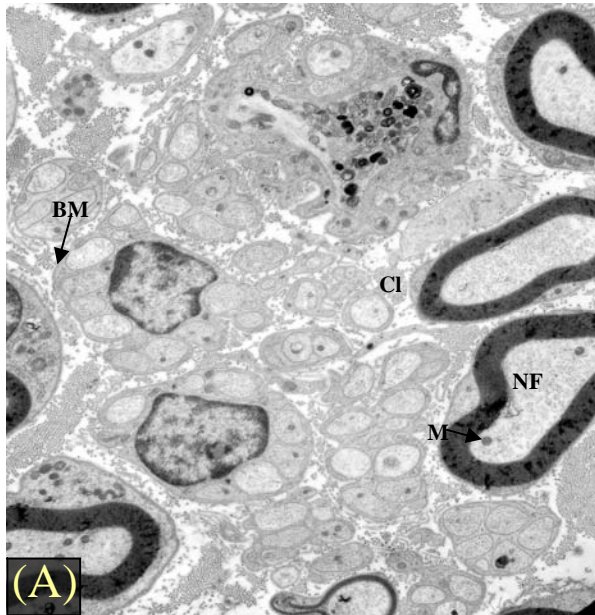
(A) Overall good quality is seen, with chromatin, myelin, and BM clearly visible with minimal artifact. Structures seen with the “gold standard” paraformaldehyde technique are all visible in the immersion sections as well.

(B) Distal sections show similar detail to distal immersion sections (above).

Glutaraldehyde

Proximal

Distal



(A) Neurofilaments, chromatin, and BM are all easily visible and identifiable. (B) Lipid (L) is present from final end-products of Wallerian degeneration (WD) of myelin. Single BM (SBM) is seen in the degenerating axon.

Conclusion

No quantitative differences were associated with immersion fixation when compared to paraformaldehyde or glutaraldehyde cardiac perfusion techniques for fixation. Electron microscopy yielded a high degree of ultrastructural detail in all perfusion groups, with few qualitative differences between groups. Computer-based histomorphometric analysis is very sensitive to variations in shape and fixation distortions; therefore, the need for a high-quality, standardized fixation technique is more important than ever. Our study demonstrates that immersion fixation of peripheral nerve specimens is a valid alternative to transcardial perfusion fixation for the assessment of nerve regeneration in a small animal model.

In Appreciation



This is the last issue of the newsletter that Alice Romano would be helping us with. As our president mentioned in his remarks, ASPN is going with a new management company. Throughout the years that I have worked with Alice she has always been the perfect example of professionalism, competence and punctuality. It was always very delightful to work with her. Alice: thank you my lady... You will be greatly missed.