THE AMERICAN SOCIETY FOR RECONSTRUCTIVE MICROSURGERY

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RECONSTRUCTIVE MICROSURGERY

What's New in Reconstructive Microsurgery?

Chris Pederson, MD

Looking back after the conclusion of this year's scientific meeting in Miami, I felt that we had a very good scientific program. We had a number of guests from Europe, as well as members and guests from the United States. There were quite a few new ideas, mingled with reviews of older techniques. There were also a few large series presented by some of our "masters", which gave us insight into their wealth of experience. All in all, I was very happy with the meeting, and will summarize some of the highlights in the following paragraphs.

The meeting started with our combined day with American Association for Hand Surgery on Saturday. The morning began with a very informative panel on the "Management of Brachial Plexus Lesions" chaired by Sal Shenaq. Dr. Alfred Berger, of Hannover, Germany, followed this with his President's Lecture and gave a stimulating talk on his experience in over 800 cases of replantation. After Dr. Berger's lecture, we heard a panel discussion of the hand transplant done in Louisville, Kentucky. This stimulated a lot of discussion and comments, both pro and con. Although this ran a bit later than scheduled, I was sort of glad that the golf match interceded, as we might have had to get a WWF refer-

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Incoming President Saleh Shenaq, MD presents a plaque to outgoing President Daniel Nagle, MD to commemorate his year of service to the Society.

Ever wonder how to...

- ... make a clamp your "assistant" when you're a solo practitioner? (Tip # 9)
- ... eliminate difficult end-to-side anastomosis in very diseased vessels where "soft" spots are hard to find? (Tip #12)
- ... get inside information on techniques other reconstructive microsurgeons are using? (Tip #15)

For answers to these questions and other tips, turn to our "Microsurgical Pearls" column on page 13.

Society Demographics Coming of Age

EDITOR'S MESSAGE

Neil Ford Jones, MD

"Time stands still for no man". As I write this editor's message towards the end of winter, it is daunting to realize that almost three months have quickly passed since the start of the New Year 2000. It is said that time passes more quickly as one gets older, so perhaps this reflects my age!

The demographics of an aging population will begin to have a considerable impact on the membership of the American Society for Reconstructive Microsurgery, just like all other national medical societies. The baby-boomers that were born towards the end of World War II will be approaching retirement from their surgical practice over the next ten to fifteen years and this will have significant repercussions for our Society. We have discussed this concern at the last Council meeting and in order to determine a profile of approximately how many members will be potentially reaching retirement age over the next 10–15 years, you will all soon receive an e-mail or fax asking for verification of your date of birth. If you have not already sent in your reply, you may fill out and fax the form on the back page of this issue. The Council also felt strongly that the experience of retired senior members should not be lost and in fact they should be encouraged to continue to attend our Annual Meetings. Hopefully, the Membership Committee will be able to organize a Senior Membership category with reduced membership dues to encourage continued participation by members who are no longer in active microsurgical practice.

This year 14 young microsurgeons were elected to our membership, but 5 older members resigned, thus leading to an overall increase in membership of 9, but obviously this balance may eventually become negative in the next few years. Consequently, the attraction of new members is the very life-blood of our Society. It is therefore vitally important for those of you who are Directors of Residency Programs, Microsurgery Fellowships, or Hand Surgery Fellowships to encourage those residents and fellows who will become the practicing microsurgeons of the new millennium to apply for membership and play an active role in the American Society of Reconstructive Microsurgery.

The baby-boomers that were born towards the end of WWII will be approaching retirement from their surgical practice over the next ten to fifteen years and this will have significant repercussions for our Society.

To this end, a new category of membership has been created, termed Candidate Membership. This is open to residents completing their training in Plastic Surgery or Orthopaedic Surgery or to fellows in Microsurgery or Hand Surgery fellowships, who eventually foresee having a significant portion of their practice devoted to microsurgical reconstruction. For a nominal annual membership, these candidate members will have many of the benefits of full membership and hopefully after successfully completing their Board Examinations will proceed to full membership and so continue the vitality of the American Society for Reconstructive Microsurgery. RM

RECONSTRUCTIVE MICROSURGERY

The mission of the American Society for Reconstructive Microsurgery is to promote, encourage, foster and advance the art and science of reconstructive micro-neurovascular surgery; and to establish a forum for teaching, research and free discussion of reconstructive microsurgical methods and principles among members.

President
Saleh M. Shenaq, MD

Editor
Neil Ford Jones, MD

Executive Director
Erika Monroe Kane

Managing Editor
Anne B. Behrens

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ASRM *Reconstructive Microsurgery*
20 N. Michigan Avenue
Chicago, IL 60602
512-456-9579

Science and Technology Paramount to Growth

PRESIDENT'S LETTER

Saleh M. Shenaq, MD

It is my great honor to have been elected to serve the American Society for Reconstructive Microsurgery as its President. My thanks and appreciation to the membership and the Council for their confidence and for their support in honoring me to lead this young, dynamic and prestigious organization.

With the beginning of a new millennium, we are witnessing great and rapid advances, especially in the areas of technology, bioinformatics, and the human genome and molecular research. As these advances are important to every aspect of our life, they are also paramount to sustain the survival and the growth of our Society. I can envision the Society taking an active role in incorporating science and technology into its scientific program and, similarly, in nurturing the young and energetic membership to assume a leadership role in these areas as they apply to the field of microsurgery. Reconstructive microsurgery should be advanced from a discipline characterized by finesse of technique to a surgical discipline built on scientific research and advanced technology.

Reconstructive microsurgery should be advanced from a discipline characterized by finesse of technique to a surgical discipline built on scientific research and advanced technology.

To this end, the Society should provide the means to encourage research within its own organization by developing research funding opportunities and endowments. The human genome will undoubtedly be completed by the end of 2001, and perhaps sooner. Our membership must be able to understand the molecular language of gene expression and its clinical significance. Several areas of research in tissue engineering and gene therapy–as they pertain to microsurgery–are yet to be discovered.

We look forward to our 2001 annual meeting at the Loews Coronado Bay Resort, which will be held January 10–13, 2001. Dr. Julian Pribaz, the Scientific Program Chair, and his committee are planning a state-of-the-art scientific program. A new format for 2001 includes our sister organization, the American Society of Peripheral Nerve. The ASPN scientific session, which promises to be a rewarding one with presentations of the six most outstanding nerve papers from all three societies, a joint panel, and an invited speaker, will be held on Saturday of the combined annual program. An additional panel on nerve related topics will be held on Sunday which will be jointly presented by members of the ASRM and ASPN.

We are very excited about having the ASPN join us as this will give the members of all three organizations the benefit of attending the annual meetings in one location without increasing the total costs of registration and travel. In addition, the overall time commitment will remain the same as past annual meetings for the AAHS/ASRM.

During the annual meeting, the ASRM Council formed several new committees, which are the Ad Hoc Endowment Committee, chaired by Dr. Robert Walton, to investigate the Society starting an endowment; the Ad Hoc International Relations Committee chaired by Dr. Scott Levin to encourage participation from surgeons abroad; and the Ad Hoc International Training and Services Committee chaired by Dr. Ronald Zuker for the development of a bank of individuals in our society to consult with non-profit aid/service organizations to recommend microsurgeons who can participate in their programs.

I look forward with enthusiasm to this year of serving the Society, and I thank all of the members for their continued support as our Society continues to advance and flourish in the new millennium. **RM**

The ASRM Council Meetings and Business Meeting, held over the course of the 2000 Annual Meeting, were very productive. Read below for a summary of the activities.

Increased Member Benefits

Founding Member Berish Strauch, MD presented the council with the concept of including a subscription to the *American Journal of Microsurgery* with membership to the ASRM. The journal would offer subscriptions at a 50% reduction to ASRM members, if subscriptions were to be automatically included as a member benefit. To accomplish this the member dues would be increased by $85, the equivalent of 50% of the journal subscription rate. This was put to vote at the Business Meeting and passed unanimously. RM

Visit the ASRM website:
www.microsurg.org

Find information about the 2001 Annual Meeting, submission of abstracts online, other meetings and events, ASRM membership applications, and more!

New Committees

Four new Ad Hoc Committees were created by the ASRM Council over the course of the 2000 Annual Meeting. As the ASRM grows and develops, our committees are our best resource to acquire information and test options to help the society move in the right direction. These committees will enable an increased awareness and relevance of ASRM internationally, while renewing our commitment to education.

Ad Hoc Godina Fellowship Selection Committee - is made up of the ASRM President-Elect, as chair; ASRM President; a Ljubljana Representative; the previous Godina Fellow; and a member nominated from the floor of the Business Meeting. This committee will be responsible for selection of the Godina Traveling Fellow. The Godina Lecture has been transformed into the Godina Traveling Fellowship. This fellowship will involve the following elements: $5,000 from the ASRM for travel expenses, room and board. The fellow must travel to Ljubljana and non-North American fellows will be strongly encouraged to visit institutions there. American applicants must be members of the ASRM. Candidates must meet certain requirements, complete an application, and receive three recommendations from members of the ASRM or the World Microsurgical Society.

Ad Hoc International Training and Services Committee - has been created to create a bank of ASRM members available to participate in non-profit/service organization programs. If you are interested in participating please contact the Central Office.

Ad Hoc International Relations Committee - was created to encourage involvement from foreign microsurgeons in the ASRM itself and in the ASRM Annual Meeting. This will be done, in part, by ASRM members promoting the ASRM and Annual Meeting at other international meetings. The Central Office will provide meeting materials, Call for Abstracts/Registration Brochures, to members interested in disseminating these while

Ad Hoc Endowment Committee - was created to investigate the possible creation of an ASRM Endowment. RM

Abstracts Have Gone Digital

The combined ASRM/AAHS/ASPN meeting in Coronado Island, January 11–16, 2001, promises to be a great meeting. Abstracts for this meeting will be accepted from now through May 1, 2000. All three societies will be utilizing online abstract submission for this meeting. ASRM and ASPN members can access the online abstract submission pages by going to www.microsurg.org and clicking on the link that reads "Submit Abstract". There are no "real" paper forms to fill out so share this address with your non-member American and International colleagues who may not be on the society mailing list.

The program committee has changed the scientific sessions this year by adding a category of three minute presentations designed for case reports, surgical techniques etc. Also, all of the authors whose papers are accepted for poster presentation will be given 3 minutes to present their work to the

membership during a special session.

Once you access the abstract submission pages you will be asked to choose your desired form of presentation (6-minute presentation, 3-minute presentation, poster/3-minute presentation, video or instructional course). The next page will ask you to choose a category (Clinical: Head/Neck, Extremity, Breast, Nerve or Research: Muscle, Perfusion, Flaps, Outcomes). You will then be asked to enter information about your paper and the authors. Be sure to include the email addresses of the authors, as notification regarding acceptance will be by email.

ASRM and ASPN members can access the online abstract submission pages by going to **www.microsurg.org** *and clicking on the link that reads "Submit Abstract".*

Submitting the actual paper could not be easier. You may type your abstract directly online or prepare it in a word processing program like Microsoft Word or WordPerfect and then copy and paste it to the abstract submission pages. If you have tables or diagrams we suggest that you prepare your document, save it as an .html document and then upload it to the submission pages. That way your document will be preserved just as you created it. After you submit an abstract you will receive notice by email that your abstract has been received. You will be given an Abstract ID and Password so that you may make changes to your abstract up until May 1, 2000.

Help is just a click away. The control panel on the left-hand side of the abstract submission pages contains helpful hints and contact numbers for technical assistance. Feel free to perform a test abstract anytime during the submission process. If you submit a test abstract include the words "Test Abstract" in the title. The Program Committee looks forward to your abstract submission and we hope to see all of you in Coronado Island. **RM**

Keith Brandt, MD

Invitation to Attend

As Program Chairman for the 2001 ASRM Meeting, I would like to extend an invitation to all members to attend next year's meeting, which will be held at the Loews Coronado Bay Resort in San Diego, CA. This promises to be an exciting meeting and the first in the new millennium which really begins in 2001. This will be an historic meeting because for the first time, the ASRM will be joined by both the American Association for Hand Surgery and the American Society for Peripheral Nerve. We hope to attract many international guests, especially from the Pacific Rim, to participate.

I would urge all members to consider submitting an abstract, and to mark their calendars and plan to come to this historic meeting in sunny California in January 2001!

Julian J. Pribaz, MD
2001 ASRM Meeting Program Chair

American Society for Reconstructive Microsurgery 2000 Council and Committees

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Raymond Dunn, MD
Peter Neligan, MD

Nominating Committee
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Raymond Dunn, MD
Peter Neligan, MD
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Raymond Dunn, MD
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Steve McCabe, MD
David Netscher, MD

Time & Place Committee
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David T.W. Chiu, MD
William Swartz, MD

COMMITTEE REPORT

TRIM: Tracking Results in Microsurgery

Vision

That TRIM will serve as a tool for collecting procedural statistics and outcomes data in support of:

1) the members' need to quantify effectiveness and competence
2) justifying resource utilization as benchmarked against our peers
3) the society's need to monitor academic and private sector activities
4) research and teaching

Guiding Principles

- The use of a web based system will allow real time collection and reporting of data while ensuring confidentiality
- The initial version of the tool will be simple but flexible enough to allow for future expansion
- Each member will have access to all the details of their own data. At the same time, they will be allowed access only to pooled data of other members
- The infrastructure should ensure continuing functionality of the tool despite the anticipated changes in committee structure and leadership.

How many microsurgical cases did you do last year? What is the average length of stay of your microsurgical patients? How does your practice compare with your peers? As a member of ASRM you can now answer all of those questions and more by participating in the society's web based database.

Introducing TRIM: the ASRM Database

What is it? This is a web based database with an intuitive interface which is accessible to all members of the society. Password protection assures privacy. It is hoped that this will provide a useful tool for you, our members as well as providing the society with information which is currently not available and which we hope will be instrumental in promoting and protecting our membership. Knowing what we do, how we do it and how to do it even better is our best protection in the current health care climate.

How Does It Work?

Each member is provided with a password to access the web site (see box). Data entry is quick and easy. Initially the information we collect will be fairly generic but, in time, and with your feedback we hope to eventually expand the database. Each case you enter will have a patient identifier which you will choose. You may use initials, hospital record number or any code you wish which identifies the case to you.

To participate in TRIM, call Erika Schroeder at (888) 526-6700 to get your password and then log on at https://research.outcomesciences.com or www.microsurg.org

Why have a case identifier? We need you to identify each case as we will be collecting data both at the time of surgery as well as post-operatively. You will receive automatic e-mail reminders to update the outcomes on your cases. The identifier is of your choosing and, unless you use the patients name, the patient is identifiable only to you and thus remains confidential.

What sort of reports are generated? Reports are instantaneous and are generated for you, the user as well as for the Society.

Personalized Reports: You can use the database as your personal source of patient information and for your personal research. You can also compare your data to the accumulated data of your peers. If you wish to do more detailed analysis of your data, it can be exported from the website in a delimited format for import into your own database or spreadsheet software.

Society Reports: The information in the database will allow the society to generate reports which will validate the work we, as microsurgeons, do. This information is vital for clinical research and outcomes. In fact, without this information, we are very vulnerable.

A database is only as good as the information enter in it. We hope you will agree that TRIM is a simple and effective way to track your own cases as well as to strengthen and protect our membership.

The ASRM Guidelines and Outcomes Committee welcomes and encourages all suggestions for further refinement and expansion of the database. **RM**

1999 Committee members:
Carolyn L. Kerrigan, MD, Chair
Mark Buehler, MD
Michael Miller, MD
Peter Neligan, MD
Nicholas Vedder, MD

2000 Committee members:
Carolyn L. Kerrigan, MD, Chair
David Chang, MD
Stephen Kroll, MD
William Kuzon, MD
Nicholas Vedder, MD

Annual Meeting

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ee on stage to settle things down if it had gone on.

Sunday morning opened with a panel on Aesthetic Considerations in Free Flap Reconstruction, which was chaired by Dr. Joe Serletti. I felt that this was a very informative session, with panel members showing ways to improve the cosmetic outcome from free flap reconstruction in the head and neck, breast, and extremity. The first scientific paper session followed, and I will cover a few highlights here. The first two papers were from Dr. Fu Chan Wei's unit in Taiwan, and covered their experience and the rationale of utilizing multiple toe transfers for the reconstruction of bilateral metacarpal hands. To minimize donor foot morbidity, they emphasize leaving either the great toe or second toe on each foot. For this reason, they have begun utilizing the combined third and fourth toe transfer to reconstruct adjacent digits. This also spares the second toe if it is needed for thumb reconstruction on one hand. They showed excellent results in terms of hand function and donor site morbidity, and presents a benchmark for other surgeons. Later in the day, Dr. Vanderhult from Leuven, Belgium presented an interesting case where the temporoparietal fascia free flap was utilized to restore wrist motion in a patient with juvenile rheumatoid arthritis. This vascularized fascia was utilized as material for an interposition arthroplasty, and the early results were impressive.

Godina Lecturer Gregory R. D. Evans, MD with ASRM President Daniel Nagle, MD.

Newly elected ASRM President Saleh Shenaq, MD addresses the membership.

The clinical application of the posterior rectus abdominus muscle sheath were discussed in a report on three patients by Dr. Salgado from Rochester, New York. This flap has been utilized to provide coverage and a gliding surface for tendons, and avoided harvest of the rectus muscle. With more experience, this flap may prove useful in areas such as the dorsal hand. Later in the morning, the M.D. Anderson group presented several papers on their experience with free flap reconstruction in the extremities after tumor extirpation. They noted that preoperative intra-arterial chemotherapy had no deleterious effect on flap survival, and did not need vein grafts due to problems with these perfused vessels. Their other work covered flap reconstruction of the foot and elbow, and while there were not significant problems related to this surgery, there is still a significant morbidity related to the underlying tumor.

Following this, Dr. Anastakis from the Toronto group presented their experience with 8 cases of innervated gracilis for anterior deltoid reconstruction. This was largely a group of patients who had suffered resection of the muscle or axillary nerve injury, and the results were quite good. While one muscle failed to function, 6/8 patients presented had shoulder motion in the 90 – 170 degree range. This group of patients also had less shoulder pain, presumably due to less subluxation of the humeral head out of the glenoid. A new technique of clinical monitoring which appears promising was presented by Dr. Hanne Sorenson, from Århus, Denmark. This involved microdialysis applied to 15 free flaps via two small catheters. This Danish group found that a drop in glucose concentration with a corresponding rise in lactate indicated vascular compromise. In their series, three patients fit this biochemical criteria without clinical signs problems. All three were found to have vascular thrombosis (one arterial and two venous), and revision of these anastomosis resulted in flap salvage in all patients.

Further work on end-to-side nerve anastomosis was presented by Dr. Barbara Lutz, from work done in Taiwan. Her study in rats showed that end-to-side anasto-

mosis to an agonistic motor nerve would result in function in the target muscle, albeit with co-contraction of the primarily innervated muscle groups. This study noted a delay in reinnervation compared with end-to-end repairs, with some weakness in the donor nerve innervated muscle groups. In keeping with the millennium theme, Dr. Krapohl from Cleveland presented the use of a robot-assisted workstation for certain microsurgical tasks. The Cleveland group noted that this workstation could potentially be used to replace the surgeon's second hand or act as an assistant, with the added benefits of precision and lack of tremor. After the morning session, some retired to the Resident's and Fellow's Symposium, which was ably organized by Dr. Tony Smith, while some of us retired to a beautiful Miami Sunday afternoon!

Monday morning started with a panel organized by Joe Rosen on Technology and its Application to Microsurgery. Dr. Rosen presented work being done on developing a virtual microsurgery training lab with the help of NASA. This was a very interesting presentation and we hope this project can be brought to fruition in the foreseeable future. The paper sessions on Monday were divided into two concurrent sessions, covering extremity and nerve papers and research. The use of an intercostal to phrenic nerve anastomosis to allow pacing of the diaphragm in patients with C3-C5 level spinal cord injuries was presented by Dr. Lloyd Krieger. 8/10 nerve transfers had achieved successful diaphragmatic pacing in this series, which allowed these patients to discontinue mechanical ventilation. From the Mayo Clinic, Dr. Srdan Babovic reported on their experience with donor site morbidity in free fibula transfers. While this donor site is generally felt to have low morbidity, the Mayo group found that 21% of 100 patients had problems. These were primarily related to donor site healing problems, but 15 patients had difficulty in walking distances less than 1000 meters.

Dr. Daniel Haynes presented experience in four patients with endoscopic omental harvest. In three quarters of the patients, nearly the entire omentum was harvested with this technique, with no intra-abdominal complications and survival of all flaps. They noted that the harmonic scalpel facilitated harvest, and found it easier to dissect the omentum from an inferior to superior approach. This technique was shown on video and should certainly decrease the morbidity from open omental harvest. The problem of deficient nasal lining in large nasal defects was addressed by Dr. Bob Walton and his Chicago group in his paper on free flaps in these patients. While they noted a 100% success rate in their transfers, there were still problems due to the complexity of

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AAHS President William Swartz, MD (left) and ASRM President Daniel Nagle, MD (right) present Alfred C. Berger, MD with the President's Lecturer Award.

Scientific Program Chair Chris Pederson, MD welcomes attendees.

Annual Meeting

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the reconstruction. There were several thrombotic episodes, but these were all successfully managed. They also noted a correlation between nasal airway obstruction and the number of prior non-free flap procedures.

Founder's Lecturer Alan Van Beek, MD (left) is congratulated on his presentation by ASRM President Daniel Nagle, MD.

Tuesday finished off the meeting, and it was appropriately begun with a panel on Management of Microsurgical Failures. Following this, there was a paper session on head & neck and breast reconstruction. Dr. Hung-Chi Chen presented the Taiwanese experience with prefabrication of a skin tube in the face of difficult esophageal reconstructions. They utilized this technique in patients who could not have colon or jejunum harvested. The skin paddle was tubed in-situ, and transferred at a later date. While there was one flap failure, there were no esophageal leaks in the other 9 patients. They recognize that a skin flap is not the first choice for esophageal reconstruction, but suggest this technique in difficult cases to allow healing of the tube prior to transfer. Dr. Julia Terzis presented three papers on facial animation, discussing post-traumatic cases, reconstruction in children, and an analysis of unfavorable results. Her vast experience shows in her careful evaluation and presentation of both good and bad results.

The meeting finished up with several reports of TRAM flaps in high-risk patients. These groups included patients who are smokers, obese, and diabetic. Complication rates in obese patients were significantly higher, and were noted in these studies in up to 39% of individuals. From a small series, it would appear that diabetes is not a contraindication to free TRAM flap breast reconstruction.

These papers are merely highlights of our 2000 Annual Meeting, as many other excellent papers were presented. My thanks to all authors and presenters, as well as those who brought poster presentations. I look forward to seeing you in San Diego next year. **RM**

(Left to right) Drs. Bruce Shack, Gunter Germann, William Swartz and Ronald Barton make up a foursome in the AAHS/ASRM 4th Annual Day at the Links.

MICROSURGERY OVERSEAS

Canadian Microsurgery

By Peter C. Neligan, MB, BCh, FRCS(I), FRCSC, FACS

This issue's column would more aptly be called "Microsurgery across the lakes" or cross-border microsurgery rather than Microsurgery Overseas since the history and practice of microsurgery are so similar between Canada and the US. Nevertheless it is worth looking at the two countries and comparing the practice of microsurgery across the longest undefended border in the world.

The history of microsurgery is peppered with firsts ... the first successful microvascular anastomosis; the first replant; the first free flap etc. Many of the pioneers who performed these "firsts" have significant Canadian connections: Harry Buncke is Canadian. He was born and bred in Ontario and moved to the US when he went to Medical School. Rollin Daniel, who, with Ian Taylor, performed the first successful clinical free flap, trained and practiced in McGill University in Montreal. Julia Terzis and Susan Mackinnon, two of the most influential figures in peripheral nerve surgery trained and practiced in Montreal and Toronto respectively before moving to the US. Canadian microsurgeons continue to be active in the North American microsurgical scene and this association has been served by two Canadian past-presidents: Bruce Williams and Ralph Manktelow. We also have our own microsurgical society, GAM Canada, which was established 20 years ago. Its annual meeting is held in conjunction with the Canadian Society of Plastic Surgeons. It has an active membership of 50, which makes for a very collegial environment.

Toronto and Montreal have been the pioneering centers for microsurgery in this country. In Toronto, Ralph Manktelow introduced clinical microsurgery and subsequently developed the Toronto Microsurgical group with Ron Zuker and Nancy Mckee. The Microsurgical Laboratory at the Royal Victoria Hospital in Montreal was a leader in the field of flap research. Carolyn Kerrigan and Rollin Daniel published extensively in this area and stimulated interest in flap physiology. Both of these centers were responsible for the bulk of microsurgical training in this country and helped propel the subspecialty into the mainstream of practice.

What is the difference between microsurgical practice in Canada and the US? From a medical viewpoint, very little. The main difference... is probably remuneration.

Today microsurgery is widely practiced across the country. Ralph Manktelow and Ron Zuker have continued their collaboration and are well-recognized leaders in the area of facial re-animation to the extent that this small area of microsurgery has become the major focus of their clinical and research practice. In the early days of the Toronto Microsurgical Group, head and neck reconstruction became a significant activity. The involvement of microsurgery became more formalized in the late 80's when Brian Boyd became a member of the newly formed Head and Neck Program at Toronto General Hospital. Today, though Brian has since moved to Florida, that program has expanded to become a multidisciplinary endowed Head and Neck Center, of which microsurgery is an integral part, with a volume of approximately 120 free flaps a year. Lucie Lessard in Montreal and Steve Morris in Halifax have developed similar relationships with their Head and Neck ablative surgeons. In London, Ontario, under the leadership of Larry Hurst, the Division of Plastic Surgery runs an active microsurgical unit and Brian Evans has helped bring microsurgery into the transplant arena with his involvement in the living related liver transplant program.

Transfer of these liver sub-units requires microsurgical expertise to optimize vessel patency. Microsurgery continues to be dominated by Plastic Surgery in this country but in recent years Orthopedic Surgeons and Otolaryngologists have adopted microsurgical techniques in their practices and in many cases work side by side with their plastic surgery colleagues.

So what is the difference between microsurgical practice in Canada and the US? From a medical viewpoint, very little. The main difference in practice between the two countries is probably in the area of remuneration. Under the Canada Health Act all Canadians are entitled to free health care. There is therefore a single payor ... the provincial government. Most physicians are paid

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ASRM Microsurgery Calendar

June 2 - 4, 2000
43rd Annual Meeting
Ohio Valley Society for Plastic and Reconstructive Surgery
Renaissance Cleveland Hotel
Cleveland, OH

October 31 - November 3, 2000
World Society for Reconstructive Microsurgery
Taipei, Taiwan

November 3 - 7
ASPRS/PSEF Annual Meeting
Orlando, FL

January 11 - 13, 2000
AAHS Annual Meeting
Loews Coronado Island
Coronado, CA

January 13 - 16
ASRM 17th Annual Meeting
Loews Coronado Island
Coronado, CA

January 13 - 14, 2000
ASPN Annual Meeting
Loews Coronado Island
Coronado, CA

Canadian Microsurgery

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on a fee-for-service basis and each province in the country has a fee schedule which covers physician reimbursement. While there is some variability between the provincial reimbursement rates, they are generally fairly similar. Reconstructive procedures

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do not require prior approval and billing is relatively straightforward. This, I think, represents the greatest difference between the two countries. Most of my American colleagues have several people in their offices dealing with insurance companies and issues of reimbursement. This is unnecessary in Canada and somewhat compensates for the lower levels of payment. While income for a particular procedure is less, so is overhead. Also the percentage of paid claims is higher. We can expect to be paid for 95% of what we claim. So, we do more for less but it costs us less to do it.

Under our fee schedule microsurgical cases are broken down into their component parts. There is a separate fee for flap elevation, donor vessel preparation and flap transfer and revascularization. This makes billing very straightforward when these component parts are performed by different surgeons. These fees are separate from the ablative fee so that, for example, the general surgeon doing a mastectomy will bill a fee which is quite independent of the fee which the plastic surgeon will bill for the reconstruction. Similarly in hand surgery, the component parts of the procedure will be billed separately. Fees for each of the three component parts are generally in the $700-$900 range so that the total fee for a free flap procedure will be in the region of $2000-$2500. A digital replant pays $1500 per digit. Premiums may also be payable on these fees if they are done after hours or on weekends. As I mentioned at the outset, prior approval from the provincial health insurance plan is not required for these procedures. There is no private practice in Canada except for non-insured services such as cosmetic surgery or e.g. when surgery is performed on non-residents.

I anticipate a bright future for microsurgery in this country. It will be important to maintain cohesion between microsurgeons regardless of their specialty origin so that we can work together to refine our techniques in the next millennium. **RM**

Peter C. Neligan, MB, BCh, FRCS(I), FRCSC, FACS is the Wharton Chair in Reconstructive Plastic Surgery, and Head of the Division of Plastic Surgery at the University Health Network. Dr. Neligan is also Chairman of the Division of Plastic Surgery at the University of Toronto.

MICROSURGICAL PEARLS

Real Solutions for Real Situations

TIP #8

It is often easier to suture the back wall of an anastomosis first. In performing free tissue transfers in extremities, where only one artery is present and when that one artery may be arthrosclerotic, to avoid a risky end-to-side anastomosis, I trace the latissimus muscle pedicle on the thoracodorsal artery to the subscapular artery and remove a segment of that providing an interposition arterial graft as the subscapular vessel with its own "built-in" end-to-side anastomosis for the thoracodorsal. This probably provides a better chance for patency. Graham Lister taught me this technique.

– John D. Lubahn, MD

TIP #9

When I made the transition from academic practice to solo private practice a number of years ago, I found the lack of adequately trained assistants made the microrepair of nerves and vessels more difficult. In order to improvise, I simply began using the Acland type approximating clamps with the tying frames and cleats as my "assistant". With a little adaptation, I found them useful in performing nerve repairs. In these situations, I lay the two ends of the nerve over the frame without actually applying the clamps. I place the initial sutures 180° apart from each other, anchoring these to the tying cleats to stabilize the ends of the nerve. After that it is a simple matter to apply the remaining sutures both anteriorly and posteriorly. Since the clamps are not actually applied to the nerve no compression is exerted on the nerve and no damage is incurred.

– Stephen L. Cash, MD

TIP #10

Many feel that the results of peripheral repairs have plateaued with the use of the operating microscope. Although this may be true to some extent, I believe that technique still plays a large role in the ultimate outcome of nerve repair. It has been well established that accurate end-to-end approximation of the nerve fascicles is necessary to allow as many nerve axons to cross the nerve repair site as possible. To achieve this, great attention must be paid to the actual nerve approximation. A "trick" that I have found useful both in my own repairs and in teaching residents is to place one or two epineural sutures followed by trimming of the nerve fascicles to prevent their folding over. Trimming of the nerve fascicles prior to placement of the sutures will frequently still not allow an accurate end-to-end repair. Therefore, some final adjustments on the trimming of the nerve fascicles after placement of one or two epineural sutures usually allows better end-to-end approximation.

– Richard E. Brown, MD

TIP #11

With a large tumor service we are encountering an increasing number of large, difficult wounds remote from any vascular access. To solve these problems in very selected cases we have elected to do two-stage procedures, first using very long vein grafts and establishing an A-V fistula. This concept is well known but staging them we find is beneficial if the graft is extremely long. We are talking about wounds where vein grafts are in the range of 30 to 40 cm. If long saphenous grafts are not available even patchwork vein grafts have proven satisfactory if they are allowed to "mature" by establishing a temporary A-V fistula. How "temporary" this should be is a matter of debate. There are, of course, problems with A-V fistulas such as intimal hyperplasia and vessel dilatation which create secondary technical problems. We feel that if an extremely long vein graft is required that the rate of thrombosis increases in the venous side particularly if the flap is dependent. Our concept of establishing an A-V fistula is to allow a period of time for re-endothelialization and prevent early thrombosis on the venous side.

– A. Lawrence Cervino, MD

TIP #12

A problem that we frequently encounter is the patient with very difficult vascular access (particularly diabetics) with one of two vessels that are severely involved with atherosclerosis. A free flap with an end-to-side repair is often times hazardous. We have all encountered the end-to-side anastomosis into a difficult artherosclerotic small vessel that begins to fall apart before the anastomosis is completed. In these situations before we even encounter this state we found it better to electively divide the vessel and interpose a small vein graft and then do a free flap end-to-side to the vein graft. This has averted a number of technical problems and certainly helped us in numerous situations. We now almost routinely use this approach and have eliminated the difficult end-to-side anastomosis in very diseased vessels where "soft" spots are hard to find.

– A. Lawrence Cervino, MD

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Pearls

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TIP #13

Like most microsurgeons, the majority of the anastomoses that I choose to use are done in an end-to-side fashion and what we have elected to use instead of the traditional microvascular or larger vascular clamps are soft silastic tapes. A double loop is placed proximally and distally on the vessel and two skin staples placed either in the muscle or on the skin. In this fashion one can obtain excellent vascular occlusion, and also literally "lift" the vessels out of the depths of the wound making the anastomosis much easier.

– Thomas J. Arganese, MD

TIP #14

A second technical trick that has been most useful in our practice has to do with treatment of the amputated parts in replantation surgery. While one team is working on the stump the amputated digits are usually prepared on a back table. For the back table we take a standard ring stand with a basin. We then fill the basin with ice, which is usually non-sterile. Following that we place a sterile large op site which occludes the entire basin of ice sitting in the ring stand. We may or may not place a towel over this, and in fact usually work on the vessels sitting on the iced basin with the sterile op site over the top. This keeps the amputated digit cool while the dissection progresses, further extending our ischemia time. This is most useful, especially when one has a four or five digit amputation. Additionally, the small size of the ring stand allows the surgeon and his assistant to literally put their knees around the ring stand, holding it firmly fixed between them, and keeps the ring stand stable. It is also quite comfortable.

We have adopted a rather simplistic but uniform code tagging all of the vessels, the nerves on both the donor and the recipient. Prolene is used on arteries only, while black Nylon is used on the veins. Silk is the suture used on the nerves. All radial-sided structures are tagged with two long ties, while all ulnar structures are tagged with one. In these prolonged procedures where edema becomes a problem, these long, uniform ties make identification of edematous structures towards the end of the procedure far more reliable in those waning moments when your physical limits have reached their tolerance.

– Thomas J. Arganese, MD

TIP #15

With improvements in instruments, suture material , and experience, vascular complications of microvascular replants and transplants are becoming quire rare. Survival rates in the 98th percentile are being reported with increasing frequency in respectable series. However, unexplained vascular spasm still is an ever-present threat. Everyone's usual approach is to apply topical vasodilators such as papaverine or Xylocaine, local heat, intravenous medications and so forth. We always stress the importance of "segmental branch spasm" where an unsatisfied branch will throw the whole segment of the vessel into spasm. This often happens with incompletely coagulated branches or branches that have even been tied improperly. Once closed, the segment of the artery opens up under your eyes. An unusual case of vascular spasm can be caused by a twist in the vessel, particularly those tissues with long pedicles such as a serratus and latissimus, in toe transplants on the superficial system, and interpositional vascular grafts. The twist spirals distally in the artery and proximally in the vein and stops at the first branch. Even on direct inspection, the twist may be difficult to appreciate. The anastomosis is usually patent and the vessel may open up again if untwisted. One is tempted to try to prevent the twist by tracking the vessel, but this is fraught with danger. The only solution is to redo the anastomosis, untwist the vessel, or in some cases do a segmental resection at the level of the twist and do a second repair. The best approach is to prevent twisting by careful inspection of the pedicle before the anastomosis. Vessel orientation can be marked with a series of dots on the upper surface of the vessels in-situ before they are clamped and removed. Twists can also be picked up by pulling on the end of the vascular pedicle. If it rotates, a twist is present and the pedicle must be de-rotated. Twists in the pedicle can also be troublesome when passing pedicles through a tunnel or under another structure. If possible, the passage should be done under direct vision and the carefully oriented pedicle pulled through the tunnel with a long clamp.

– Harry J. Buncke, MD

What Do You Know About Microsurgery?

We're betting you know a lot. This column of clinical microsurgery tips, pearls, and anecdotes is sponsored by the Education Committee of the Society, but is comprised of the knowledge and experience of surgeons just like you. We strongly encourage all the Microsurgery fellows and members of the Society to forward their "pearls" or suggestions for this column to Dr. Geoffrey Robb directly or to Anne Behrens at visorient@home.com.

You just might have the answer someone else is looking for.

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