



# RECONSTRUCTIVE MICROSURGERY

## Message from the Program Chair

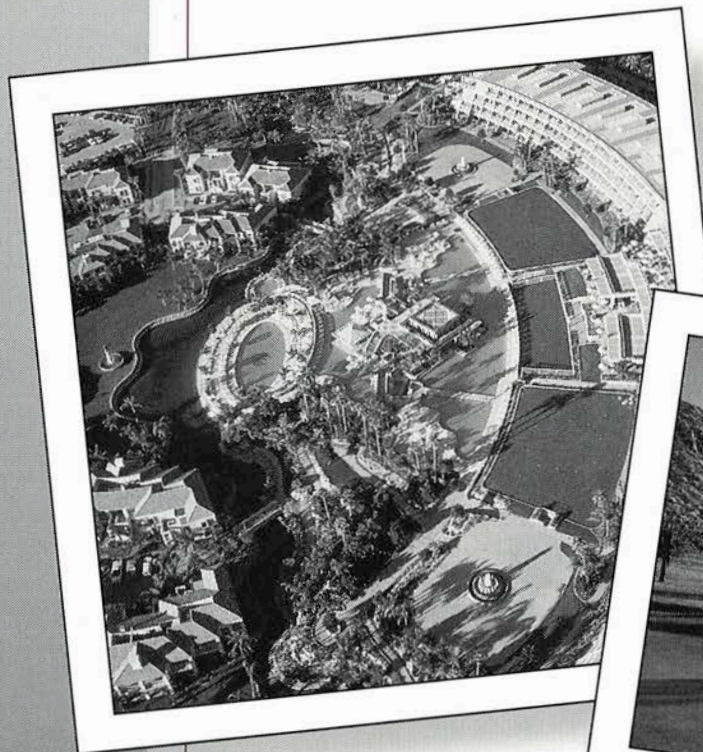
### Annual Meeting Offers Courses, Camaraderie and Recreation for All

**T**hose of you that have participated in the recent meetings of the American Society for Reconstructive Microsurgery at Marco Island, Tucson and Boca Raton, have found those meetings to be extremely beneficial, not only for scientific and didactic experience, but in terms of the social and recreational opportunities as well. While those meetings will be difficult to top, the Program Committee this year has worked hard to try and come up with a scientific program that I think you all will enjoy.

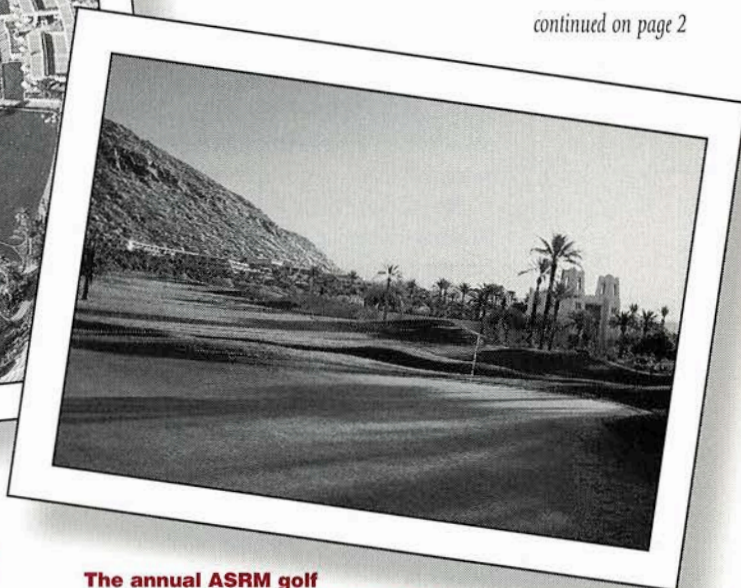
The meeting will be held at the beautiful Phoenician Hotel in Scottsdale, Arizona, from Saturday, January 10 through Tuesday, January 13. The ASRM program will be held in conjunction with the American Association for Hand Surgery's 28th Annual Meeting. Saturday will be the joint day and will include a joint paper session, panel and reception. This will allow those of you who are members of both societies to attend both meetings with a minimal amount of time away from home and practice. Those of you who are not members of the American Association for Hand Surgery, will hopefully make use of this day as a chance for interaction with extremity surgeons with whom you would not otherwise come into contact.

The ASRM program will consist of six paper sessions and fifteen instructional courses. The Program Committee has reviewed the course evaluations from last year and I think we have come up with an

*continued on page 2*



**The Phoenician's expansive poolside facilities are just one of the creature comforts guests will appreciate while attending the meeting.**



**The annual ASRM golf tournament will be held on one of the resort's spectacular courses.**



# ASRM's Tradition of Cutting Edge Surgery Continues

**A**s summer draws to a regrettable close, our focus shifts to the year ahead and how we can upgrade our activities. One method—attend the Annual Meeting of your Society. First, it's in Scottsdale in January. If that's not enough, try the golf tournament or tennis or drive a Hummer! Relax with friends and colleagues and make new friends with those who share our subspecialty. Mark Schusterman has put together a remarkable program that promises to be educational, fun and appropriately paced.

This issue of the ASRM newsletter combines our Young Microsurgeon column with our Microsurgery Overseas column. I am delighted to introduce Dr. Takashi Nakatsuka to you. His activities in the field of head and neck reconstruction are on the cutting edge, as demonstrated in the article featured in this issue on laryngeal preservation. Head and neck reconstruction continues to evolve and enhance the lives of the victims of head and neck cancer. Advances in laryngeal reconstruction, pharyngeal replacement and tongue reconstruction are but a few of the many

## EDITOR'S MESSAGE



Ronald M. Zuker, MD

*The Annual Meeting program promises to be educational, fun and appropriately paced.*

## Annual Meeting Preview

*continued from page 1*

excellent instructional course program. There will again be a Residents and Fellow Symposium on Sunday, January 11, from 2:00 pm–6:00 pm. This is being organized by Dr. Geoffrey Robb and again should prove to be a very helpful endeavor for all trainees.

We will have five panels, with topics including "Microsurgical Treatment of Diabetic Sequelae," "Tissue Engineering" and "Current Status of Prefabricated Flaps". Additionally, there will be interactive panels, including the topics "Free Tram Flap vs Pedicle Tram Flap," "Point/Counterpoint" and a "Challenge the Masters" session led by Anthony Smith, MD. Finally, but not least of which, our Founders Lecture will be given by H. Bruce Williams, MD, Professor of Surgery and Chief of Plastic Surgery at McGill University.

As you can see, the didactic and academic sessions should prove to be of great interest and a worthwhile educational experience. Additionally, the meeting has been designed so that approximately half of each day may be dedicated to recreation. This will include a golf and tennis tournament on Saturday, January 10.

This year's meeting should prove to be every bit as fulfilling as the past meetings. The dress for the meeting is casual, no ties allowed. I encourage you all to attend and look forward to seeing all of you at the Phoenixian! **RM**

Mark A. Schusterman, MD  
Scientific Program Chairman

areas receiving microsurgical attention. Great strides have been made and even greater advances lie ahead.

Speaking of advances, ASRM Outcomes Committee member Greg Evans, MD attended the ASPRS meeting in San Francisco last September and gives us an overview of the latest in plastic and reconstructive surgery, especially in high technology, in our "Report From the Field" column.

Another must read in this issue is a fascinating history of the evolution of our microsurgical subspecialty, as recounted by Berish Strauch, MD, the first President of ASRM. Included in the article are archival photos of ASRM's first meeting in Las Vegas from Dr. Strauch's personal collection, which really brings the reality of that heady and exciting time to life for all of us.

See you in Scottsdale. **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.

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*Reconstructive Microsurgery* is published three times yearly for members of ASRM, a non-profit organization. The subscription price is included in the annual membership dues. All correspondence and address changes should be addressed to:

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The views expressed in articles, editorials, letters and or publications published by ASRM are those of the authors and do not necessarily reflect the society's point of view.





**American Society for Reconstructive Surgery  
13th Annual Meeting  
Scottsdale, Arizona**

**Program at a Glance**

**Saturday, January 10, 1998**

6:30-7:00 am	Continental Breakfast
7:00-7:15 am	AAHS/ASRM Welcome
7:15-9:15 am	Joint Scientific Paper Session
9:15-10:00 am	Break
10:00-11:00 am	Panel: A New Look at Replantation
11:00 am-12:00 pm	Instructional Courses
1:00-5:00 pm	Golf & Tennis Tournament
7:00-8:30 pm	An Evening at Jojake Inn

**Sunday, January 11, 1998**

6:30-7:30 am	Continental Breakfast
7:00-7:15 am	Opening Ceremonies
7:15-8:00 am	Panel: Tissue Engineering
8:00-10:15 am	Scientific Paper Session I
9:30 am-2:30 pm	Exhibit Hall Open
10:15-11:00 am	Coffee Break
11:00 am-12:30 pm	Scientific Paper Session II
12:30-1:15 pm	Panel: Point/Counterpoint - Free Tram vs Pedicle TRAM
2:00-6:00 pm	Residents and Fellows' Symposium

**Monday, January 12, 1998**

6:30-7:30 am	Continental Breakfast
7:00-7:45 am	Instructional Courses
8:00-10:00 am	Scientific Paper Session III
10:00-10:30 am	Coffee Break
10:30-11:15 am	Godina Lecture
11:15 am-12:00 pm	Panel: Microsurgical Treatment of Diabetic Sequelae
12:00-1:00 pm	Annual Business Meeting
1:00-2:00 pm	Committee Meetings
7:00 pm	Dine Around

**Tuesday, January 13, 1998**

7:30-11:00 am	Sunrise Jeep Tour
11:00 am-12:00 pm	Founders Lecture H. Bruce Williams, MD
12:00-12:45 pm	Panel: Current Status of Prefabricated Flaps
12:45-2:15 pm	Scientific Paper Session IV
2:15-2:45 pm	Break
2:45-4:25 pm	Scientific Paper Session V
4:30-5:15 pm	Panel: Challenge the Masters
7:00-10:00 pm	Reception/Dinner

American  
Association for Hand Surgery

and  
the

American Society  
for Reconstructive Microsurgery

invite you to the

## 2nd Annual Day at the Links

**Date**  
Saturday, January 10, 1998  
The Phoenician Resort

**Cost**  
\$150.00

**Registration Deadline**  
December 8, 1997

**Cost includes**  
Greens fees  
Box Lunch  
Refreshments  
Sleeve of Golf Balls  
Commemorative Photo

**Prizes**  
Mercury Mountaineer for first Hole-in-One  
4 \$150 American Express gift certificates for  
lowest net score (team)  
4 \$150 American Express gift certificates for  
lowest gross score (team)  
3 \$100 American Express gift certificates  
for longest drive, longest putt and  
closest to the pin

being held in conjunction  
with the ASRM and AAHS  
Annual Meetings

To sign up, please fill out  
the attached form and fax it back  
to the AAHS/ASRM Central Offices  
at 847-228-6509, or for more  
information, call 847-228-9758.

## 2nd Annual Day at the Links Registration Form

NAME

ADDRESS

CITY

STATE

ZIP

PHONE

FAX

HANDICAP

(If HC is not known, please indicate scores from  
the last three rounds of golf played)

**Payment Method**

☐

VISA

☐

MASTERCARD

☐

CHECK

CARD NUMBER

EXP. DATE

SIGNATURE

Please fax the form back to the AAHS/ASRM Central Offices at  
847-228-6509 or mail to, AAHS/ASRM, Golf Registration,  
444 E. Algonquin Rd., Arlington Hts., IL 60005.



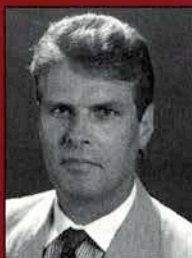
# Considering the Patient in Donor Site Selection

**S**election of donor tissues in reconstructive microsurgery is often a decision based on the comfort and experience of the surgeon, rather than on what may be best for the patient. How many times is a latissimus flap chosen for a small to moderate size lower extremity wound when another muscle, e.g. lower rectus or gracilis, would provide a less complicated donor scar? The radial forearm flap—great choice in the elderly—is a significant donor site deformity in younger patients, yet it is often chosen for its ease of dissection. The forearm cannot be hidden when one shakes hands or wears short sleeves.

While it is true that certain flaps are more "reliable" than others, in my opinion, the best donor site scars are those that can be hidden in the axilla or groin. Using a transverse lower abdominal scan, lower rectus abdominus muscle flaps of moderate size can be dissected with the large deep inferior epigastric artery and vein. For very small wounds requiring vascularized muscle, the lower-most portion of the rectus is available based on the first branch of the DIEA. Extending the groin scar laterally provides a variety of flaps including the iliac crest, inferior oblique muscle, and conventional groin flaps. Large skin flaps based on the superficial inferior epigastric artery or superficial circumflex iliac artery can be transferred with primary donor site closure. All of these flaps' donor site scars can be hidden in conservative underwear. My flap of choice for reconstructing mandibular defects of 10 cm or less is the iliac crest with or without internal oblique muscle. Use of the fibula for its "reliability" condemns a patient to significant donor site morbidity that can be avoided using the groin. Critics of the groin flap and its variations cite the risk of hernia and painful ambulation. With appropriate attention to the dissection and closure, donor site morbidity has been low. Painful early ambulation is often resolved within several weeks.

The axilla is somewhat analogous to the groin for the variety of flaps that can be based on the sub-scapular artery system. By placing the access scar under the arm in the dependent position instead of across the back, a more cosmetically

## PRESIDENT'S LETTER



**William M. Swartz, MD, FACS**

*By placing the [axilla] access scar under the arm in the dependent position instead of across the back, a more cosmetically acceptable donor site scar can be achieved.*

acceptable donor site scar can be achieved. The plexus of vessels emanating through the triangular space permits large scapular or latissimus-based flaps to be oriented towards the axilla. Using endoscopic instruments, a very large latissimus muscle flap can be dissected through a small axillary incision. For smaller defects, the serratus muscle similarly can be approached. The length of vascular pedicle is maximal. While I still use the scapular osteo-cutaneous flap for composite mandibular and wrist/hand reconstruction, the donor scar must be more or less transverse for exposure. Donor site morbidity is still less than the fibula.

In summary, give consideration to donor site morbidity and scar visibility—particularly in younger patients—when selecting donor tissues. While no donor site is ideal, flaps based on groin or axillary systems offer reliability, versatility, and the least donor site morbidity when compared to extremity based flaps. **RM**



## ASRM Microsurgery Calendar

**January 7-10, 1998**

**AAHS 28th**

**Annual Meeting**

Scottsdale, Arizona

Contact: AAHS

(847) 228-9758

**January 10-13, 1998**

**ASRM 13th**

**Annual Meeting**

Scottsdale, Arizona

Contact: ASRM

(847) 228-9717

**May 24-28, 1998**

**7th Congress of the**

**International Federation of Societies for Surgery of the Hand**

Vancouver, British Columbia, Canada

Contact: Events By Design

(604) 669-7175

**June 18-21, 1998**

**PSEF Advanced**

**Reconstructive Surgery Symposium**

Durham, North Carolina

Contact: PSEF

(800) 766-4955

**September 9-12, 1998**

**53rd Annual Meeting of the**

**American Society for Surgery of the Hand**

Minneapolis, Minnesota

Contact: ASSH

(303) 771-9236



## Arrival of High Tech Evident at Recent ASPRS Meeting

By Gregory R. D. Evans, MD, FACS

“Looking to the Future” was the theme of the recently concluded American Society of Plastic and Reconstructive Surgery meeting in San Francisco. At the meeting, held from September 20-24, 1997, a variety of papers and panels were presented to encourage and carry the plastic surgical practice into the 21st century. This is an overview of “what’s new” and what we have to look forward to.

One broad aspect of future trends in plastic surgery is technology. Technology is advancing well beyond our expectations and the truisms of what you buy today will be obsolete tomorrow has come to pass. Technologies rapid rise must shape and mold our own practices with equal rapidity. During the committee meetings prior to the scientific sessions, Brian Kenney, MD, who is the current Chair of the Education and Technology Committee,

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is working on the ability to demonstrate virtual reality surgery at the meeting in Boston. The concept is to allow plastic surgeons, fellows, and residents to experience the world of virtual reality in performing of surgical procedures. It is our hope that

this can be accomplished through a booth in the exhibit hall where this technology can be tried. Further, although viewed by some as a novelty, this technology may allow us to train residents and fellows without the requirements of animal laboratories.

On a similar topic, Michael Stephanides, MD discussed virtual reality in plastic and reconstructive surgery and surgical planning. They have developed custom software to download CT and MRI images into a computer with 3 dimensional bone and soft tissue capabilities. These images are then incorporated into a virtual environment consisting of a new 3-D display and subsequently a virtual reality surgical environment was developed. This would allow the surgeon to use these images to better understand and communicate problems as well as to perform virtual surgery prior to the operating theatre.

In Chul Song, MD from Seoul, Korea presented a paper entitled “A New Integrated Imaging and Information System for Plastic Surgery.” They have computerized their medical offices with a digital imaging system that encompasses medical records, radiographic images, patient images, and chart records which can be accessed from any computer station within their hospital system. The hospital communication system includes, not only pictures and history, but a laboratory automation, clinical research and study systems, pharmaceutical automation systems, medical library systems and the ability to order medications and further tests. The PC terminals are interlinked by Local Area Network software which displays both data input and output. The ability to access this system through any terminal, enhances and expands professional capabilities and certainly has a significant role and potential for the 21st century.

William Shaw, MD presented “Is Digital Photography Practical in Reconstructive Plastic Surgery.” They examined over 10,000 digital photographs which were taken of 470 subjects over a twenty month period to determine the different digital photography components. They concluded

that digital photography is practical and efficient for perioperative planning and archival purposes. They also determined that it was economical and versatile for advanced applications. However digital imaging technology is currently limited by the requirement for moderate computer literacy. It is also limited by the unavailability of software packages specific to plastic

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surgery. They believe that digital imaging will supplant most of the photography that is currently being employed. Over the next several years improved design and chip requirements will decrease the cost of this digital equipment making it more practical to the practice of plastic surgeons.

Drs. Paul Lorenc and Sherrell Aston evaluated various methods for brow fixation. These included external taping, the use of external bolsters, suture, absorbable PDS K-wire fixation and titanium screw fixation. There current method of choice is the development of a 1.5 mm outer cortex bony tunnel in the frontal bone. The technique allows for vector manipulation, eliminates the use of metal hardware and has decreased hair loss. Continued modes of fixation must be evaluated for long-term results.



Bryant Toth, MD discussed the role of distraction osteogenesis and its vital role in the management of complex problems of the craniomaxillofacial skeleton through a video presentation. In combination with LeFort III osteotomies, distraction osteogenesis has significantly improved the overall results in the treatment of severe midface hypoplasia. They have been able to double their advancement distance when compared to predistracted LeFort III surgery.

Mutaz Habal, MD discussed the use of a depth control unit in cranial, iliac and sternal bone graft harvest. This unit combined with a high power cutter, reduces the incidence of bone fractures and shattering. It can also be used for in situ split cranial grafts. The nosepiece has an rpm of 100,000 and generates over 140 psi of pressure. Habal also discussed the application of absorbable plating systems. The young patient undergoing craniofacial surgery is faced with several problems related to growth disturbances, metallic deposits and the potential requirements for hardware removal. The use of polylactic acid 82% and polyglycolic acid 18% produces a plating system that is "easily used." Currently he has used this hardware 589 times without complications. He believes that this plating system will add a new demonstration for the future of craniofacial surgery.

As technology advances, we have been able to utilize new methods for the treatment of old problems. Chen Lee, MD discussed the use of the endoscope for zygomatic arch fractures. By using a 4 mm endoscope, access to the arch is obtained through a preauricular incision at the anterior margin of the helical crus extending 2 cm superior into the scalp. Zygomaticomaxillary and infraorbital rim fractures are repaired through an upper buccal sulcus incision. They conclude that accurate rigid plate and screw repair of a fractured arch can be performed safely with endoscopic visual enhancement.

Maxillary distraction osteogenesis can be a highly efficient and powerful technique for the treatment of patients with severe cleft maxillary deformities. Rigid external distraction is superior to face

mask elastic distraction and allows for complete control and versatility throughout the distraction period. The use of distraction offers an ability to modulate defects without the traditional forms of osteotomies.

William Lineweaver, MD also has evaluated the role of the plastic surgeon in the management of 139 patients with 140 surgical infections. The mean follow up time was 14 months and 27% of the patients had significant complications, however, 92% of the surgical infections were resolved. There was an 8% failure rate. They concluded that plastic surgery can attract a diverse population of surgical infections and can successfully be managed with a combination of ablation along and with reconstructive procedures. The coordination of these techniques must be optimal and should be conducted by the plastic surgeon. Surgical infections can be

*In a questionnaire regarding the perception of the plastic surgeon in society, a significant number of respondents associated cosmetic surgeons rather than plastic surgeons for aesthetic procedures.*

a specifically defined aspect of a plastic surgeons clinical practice.

David Kim, MD discussed the perception of the plastic surgeon in society. 1,129 individuals from various ages, educational levels, and ethnic backgrounds were interviewed with a questionnaire. The group included physicians and non physicians as

well as medical students with varying levels of clinical training. Although plastic surgeons are associated with reconstructive surgery, they were not necessarily identified as primary surgeons for hand, craniofacial, head and neck cancer, or microsurgery. Further, a significant number of respondents associated cosmetic surgeons rather than plastic surgeons for aesthetic procedures. They concluded that general plastic surgeons spend approximately one third of their practice on general reconstruction, one third on hand surgery, and one third on cosmetic surgery. The Institution of Plastic Surgery seems to be more directed toward cosmetic surgery. Thus one of the goals for plastic surgeons in the 21st century is to increase our public focus by the dissemination of more information to insurance companies and hospital administrators in an overall effort to educate people on the essence of plastic and reconstructive surgery. This currently coincides with the recent efforts by ASPRS/PSEF to educate the lay public.

Ronald Rosso, MD et al., presented the largest consecutive series of primary Furlow palatoplasties reported to date. They concluded that the rate of fistula formation in Furlow palatoplasties is lower than the postoperative fistula rates reported in the literature. Sex and age did not correlate with the rate of fistula formation. As expected the experience of the operative surgeon correlates strongly with fistula rates. When a fistula occurs, it does so at the junction of the hard and soft palate. Extensive skeletonization of the greater palatine artery has demonstrated less fistula formation and may be a useful technique to reduce tension on the repair.

Daniel Laydon, MD discussed chronic wounds versus managed care and a wound care product formulary. They have created a wound care product formulary which allows for control of product dispensation system wide. The formulary allowed providers to access non-formulary products through an appeal mechanism and the entire process helped patients to receive better care with superior products at a reduced cost. What is more important

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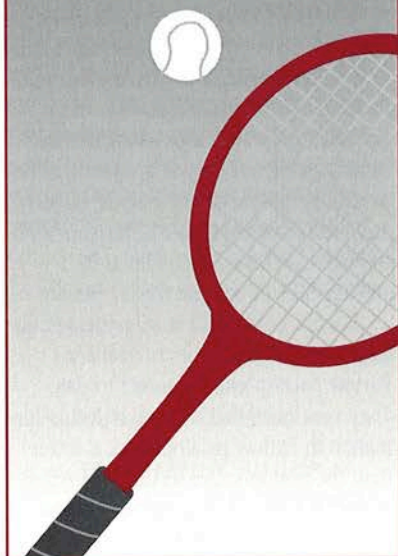


## ASRM Tennis Tournament

Saturday, January 10, 1998  
1:00-5:00 pm  
The Phoenician Resort

\$90 per person

Prizes Awarded for First and  
Second Place



## Report From the Field

*continued from page 8*

is that the experience illustrated how administrative forces can work in conjunction rather than conflict with clinicians for a common goal, i.e. that providing better care as well as cost reduction. A large health care system that negotiates preferred physician and purchasing contracts without clinical input are certainly placing cost issues before quality and maybe compromising health care. This, again, is a future issue for plastic surgeons.

Michael Margiotta, MD discussed the routine use of angiography for mandibular reconstruction with the free fibula flap.

*Urokinase appears to assist with the salvage of free tissue transfer for venous and arterial thrombosis and may be useful in treating complications in the head and neck.*

They concluded that routine angiography for free fibula transfer is associated with the change in the desired operative plan in one out of six patients. Half of these patients presented without ischemic symptoms or with a normal pulse examination. Thus they would recommend routine angiography. This certainly is a contradiction to the other authors.

Greg Orlando, MD presented some data as it relates to Urokinase administration following prolonged thrombosis in free flaps. He looked at over 600 free tissue transfers, of which 8 patients returned to the operating room for thrombosis, three for arterial and five for venous occlusion. The thromboses were clinically apparent on postoperative days 1-6. They were able to salvage all 100% of the patients that were taken back to the operating room and they advocated the use of Urokinase in the following protocol. A 25 gauge butterfly needle is inserted in the recipient artery proximal to the anastomosis. A solution of 250,000 units of Urokinase and 50 cc of saline was prepared and infused over 30 minutes in small, intermittent doses. In conclusion, Urokinase appears to assist with the salvage of free tissue transfer for venous and arterial thrombosis and may be useful in treating complications in the head and neck.

Finally Vivian Ting, MD et al. has described a method for the development of cartilage in vitro from fibrin glue. Human cartilaginous shapes can be obtained and are retained after fabrication. Tissue engineering holds great promise in plastic surgery. The 21st century offers and exciting era in this ever expanding field.

To sum up, the future is now. The papers reported on within this article are but a few of the future trends in microvascular and plastic surgery. Plastic surgeons have always been innovators as demonstrated by Joseph Murry, Paul Tessier, and Joseph Converse. To approach the 21st century we need to continue to be innovative as it relates to outcomes and surgical technique. It is this innovation that will carry us into the new millennium. **RM**

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## **The Dog Days of Research to the Dawn of a New Age**

*By Berish Strauch, MD*

**M**y earliest interest in microsurgery started as a Resident in Plastic and Reconstructive Surgery at Stanford University. On arriving there in 1966, I found that Bob Chase had the foresight to place in his laboratory, one of the few (perhaps the second of its kind in the country), Zeiss Diplosopes. He made no demands of the residents, but it was there for people to use.

Additionally, he did at least one other brilliant thing: he invited Harry Buncke to work in his laboratory. Prior to this time, Harry was working in his garage with Werner Schultz, doing microsurgical procedures. I wandered into the plastic surgery laboratory to watch Harry do

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animals, and I was  
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about the prospects of  
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microsurgery on animals, and I was immediately excited about the prospects of this new technique as I watched him transplant toes to hands in monkeys and replant legs in rats. Another one of our colleagues, Avron Daniller, was also a Fellow in the laboratory at that time, and he was busy transplanting kidneys in rats.

The general demeanor in the laboratory was one of excitement with this new technique. With a junior resident, Donald Murray, we devised a protocol that would allow the transfer of the lower abdominal quadrant in a rat on the femoral vessels.

The thought of being able to transfer a block of composite tissue, other than a toe or a leg, was very exciting. We transferred the lower abdomen to other rats with the same genetic makeup, both to the groin location, as well as to the neck, attaching the femoral arteries to the carotid vessels.

It was fascinating to see the tissues heal completely and to watch the hair regrow. We could all feel that a new era was beginning. It was thrilling to present this work at the plastic surgery Chief Residents' meeting in 1967, and the paper was finally published in PRS that same year. It was only upon writing this paper that I learned not only that Bob Goldwyn had attempted, unsuccessfully, to transplant a lower abdominal quadrant in a dog, but that Tom Krizek had successfully accomplished this in a canine model one year previously, while he was a Resident at the University of Pittsburgh.

Fresh from my experience in free flap surgery in the rat, I suggested to Dave Dibbell that one of Don Laub's patients

over at the VA with a TE fistula might be treated with a free transfer of a piece of small bowel. The procedure was set up but never accomplished, as everybody chickened out before we could actually perform the operation. As Chief Resident in plastic surgery, I searched for a suitable replant in 1968, but was unsuccessful in finding a candidate at the Stanford University Hospital.

I went back to New York to join the faculty at the Albert Einstein College of Medicine and Montefiore Medical Center. There, I started the first replantation center in the Northeast. I believe it was the only replant center north of Louisville, Kentucky.

In our research laboratory, I started to work out a free flap in dogs, allowing for transfer of composite tissue, including bone. As we utilized the internal mammary vessel in the dog, it

*continued on page 10*



**Berish  
Strauch, MD**



**Young microsurgeons at the founding of the ASRM. Pictured from left to right, in the foreground: Marko Godina, Harry Buncke, Toyomi Fujino, Susumu Tamai and Avron Daniller. In the background, in profile: G. Ian Taylor and Allen Van Beek.**



## History of Microsurgery

*continued from page 10*

became evident that the vessel could be traced to a sufficient length so that a composite rib and muscle flap could be transferred on an intact pedicle up to the mandible of the dog. In the published article, we did not present the work we did with the free transfer of this flap, but only with the pedicle transfer, although free transfer was discussed in the paper. Nevertheless, this was the first composite tissue island flap to include the rib.

Our replantation center started to attract patients, and we were beginning to attempt replants with some regularity. Early successes were few and far between, but the volume of material increased. Michael Lewin, who was the Chief of the

Bronx, and several of today's leading microvascular surgeons were present at that course, which had perhaps 10 to 15 people in it. Out of that course came the idea of having a major course in microvascular surgery with a laboratory workshop. The invited speakers included almost all of the major people from around the world who were involved in microvascular surgery. That workshop was a significant accomplishment all by itself.

We assembled a total of 100 microscopes from at least five or six manufacturers, with instruments and suture material, so that anywhere from three to four people per microscope could practice microvascular and microneuro repairs. The

During the meeting, Kiyonori Harii and Bernie O'Brien discussed their techniques of the dorsal approach to toe transplants, using the dorsalis pedis artery, and extended an invitation to me to come work in

*Avron [Daniller] and I organized a laboratory course early in 1972... which had perhaps 10 to 15 people in it. Out of that course came the idea of having a major course in microvascular surgery with a laboratory workshop.*



**Some members of the newly formed ASRM, pictured from left to right: Edgar Biemer, Joseph Kutz, Mary Jane Kutz, G. Ian Taylor, Harry Buncke, Rena Strauch, Berish Strauch, Marcus Castro-Ferreira, Hanno Millesi and Jacques Baudet.**

Plastic Surgery Division at our institution, had the foresight to bring on additional help and, in 1970 or 1971, he asked Avron Daniller to join the faculty. We then had a complete replantation team of two microvascular surgeons. Avron and I organized a laboratory course early in 1972 at the Montefiore Medical Center in the

rats had to be brought through the kitchen of the hotel. This was a deep, dark secret revealed only today. The course was hugely successful, with somewhere between 350 and 400 students attending in New York City, and a faculty of almost 35 people from around the world.

their clinics. Approximately two to three weeks after the course, I got on an airplane and flew to Japan, where I did one or two free flaps a day at the Tokyo Metropolitan Police Hospital and then, at the end of the week, flew down to Melbourne and did another six or seven free flaps, including one or two toe transplants with Dr. O'Brien. This was all in preparation for a clinical free flap program that we were starting back at Montefiore Hospital.

The early practice of free flap surgery was in toe transplants which were very successful and groin flap transfers which enjoyed only intermittent success, with some very heart-breaking disasters. As new free flaps were described, we introduced them into our unit. Avron Daniller and I published the proceedings of the 1973 Roosevelt Hotel Symposium and, apparently, this was quite successful. Over 5,000 copies of the book were sold by the Mosby Company under the auspices of the Educational Foundation of ASPRS.

In 1973, Hanno Millesi invited a group of 10 or 15 surgeons involved in microvascular surgery to a round table





**Attendees at the first annual meeting of the ASRM, pictured left to right. Front row: Harry Buncke, Jane Petro, Berish Strauch, Bernard McC. O'Brien, Leonard Sharzer, Avron Daniller. Second row: Ralph Manktelow, Susumu Tamai, Algis Narakas, Leonard Rubin, Kiyonori Harii, Alain Gilbert, Julia Terzis, Zhong Wei Chen, Michael Jabalay, James Urbaniak, Guy Foucher. Third row: Andrew Weiland, James Steichen, Joseph Kutz, Toyomi Fujino, Edgar Biemer, G. Ian Taylor, Allen Van Beek, Glen Carwell, James May, G. Patrick Maxwell, E. F. Shaw Wilgis. Fourth row: Marko Godina, Wayne Morrison, A. Lee Dellon, Marcus Castro-Ferreira, James Smith.**

symposium in Vienna. This was the very beginning of the International Society of Reconstructive Microsurgery. Two meetings were held in Vienna, followed by a meeting in East Grinstead, England, and finally in San Francisco under the auspices of Harry Buncke. Until that meeting in San Francisco, no formal society was contemplated or desired, but at the end of the San Francisco meeting, Hanno Millesi suggested that the International Society be formally convened. Millesi was elected the first President and I was elected Secretary-Treasurer for the International Society of Reconstructive Microsurgery.

In 1980, Avron Daniller and I held the second major microsurgery course in the United States, again at the Roosevelt Hotel, with a large laboratory workshop attached

to the meeting. The list of the invited faculty had grown considerably, as more and more outstanding microvascular surgeons were becoming known. This course, too, was tremendously subscribed to and very successful.

The next meeting of ISRM was held under the auspices of Marcus Castro Ferreira in Guarujá, which is a suburb of São Paulo, Brazil. At that meeting, I was elected President of ISRM and Chairman for the next meeting in New York City. By this time, the Hyatt Hotel had opened, and we invited all of the members of ISRM to the meeting in New York. Almost 250 members of the Society attended the meeting at the Hyatt Hotel.

These meetings were electrifying, with new procedures and techniques being

described almost continuously. A dinner dance at the Hyatt meeting had a leading society dance band, with Peter Duchin as the band leader. One of the highlights of that evening was a puppet show by Fabio and Faustus from Giorgio Brunelli's program. Fabio, a resident in Giorgio's unit, came from a long line of famous puppeteers in Italy. They constructed the stage and puppets in New York City, and one of their highlights in the show was a Bernard O'Brien puppet. As Bernie was unable to make the New York meeting, he was represented by a puppet.

Immediately following the meeting in New York, I convened a small group of American microsurgeons, including James

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## History of Microsurgery

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Urbaniak, Jim Steichen, Julia Terzis, and Alan Van Beek. I explained to the assembled group that I thought organized microsurgery would be leaving the United States, not to return for quite a few years, and that it was imperative to start an American society, so that we could meet more frequently on our own shores. The founding council of ASRM was formed, and I was chosen as the founding President. The American Society for Reconstructive Microsurgery was subsequently formulated and the first meeting was planned for 1983 in Las Vegas, immediately after the meeting of the American Society for Surgery of the Hand. The thought was to keep the microsurgical society associated with ASSH, so that people could attend both meetings consecutively.

*This fledgling American society had a very successful first meeting at the MGM Grand in Las Vegas, with approximately 25 exhibitors and almost 300 attendees.*



**Founding Council of the ASRM. Pictured left to right, front row: James Urbaniak, Berish Strauch and Joseph Kutz. Back row: Julia Terzis, Allen Van Beek and James Steichen.**

This fledgling American society had a very successful first meeting at the MGM Grand in Las Vegas, with approximately 25 exhibitors and almost 300 attendees. The Society has matured and grown to its present size, and I feel great warmth and satisfaction at its increasing maturity.

In 1983, the International Journal of Microsurgery, edited by Alain Gilbert, discontinued publication. With the field of reconstructive microsurgery growing by leaps and bounds, I felt that a journal devoted to this subject was imperative. With the help of Thieme publishers, I started the *Journal of Reconstructive Microsurgery*. With the aid of Dr. R. D. (Lee) Landres and an outstanding editorial board, we truly have an international journal devoted to our field. It is now entering its fourteenth year of publication with eight issues a year, and is the official publication of the American Society for Reconstructive Microsurgery (ASRM), the International Society of Reconstructive Microsurgery (ISRM), and the American Society for the Peripheral Nerve (ASPN).

Clinically, at present, I continue to be involved with all aspects of reconstructive microsurgery. I had, as well, a special interest in innervated free flaps, and reported our experiences with first web-space transfers with especially good innervation densities. My interests in the field of microneurovascular surgery have continued, both in the clinical and research areas. Our facial paralysis center is growing rapidly. I have published a text, with Dr. Han-Liang Yu, entitled "Atlas of Microvascular Surgery: Anatomy and Operative Approaches". This won the Doody's Index Award for books in clinical medicine published in 1993.

I look forward to continued involvement in the field of microneurovascular surgery for many years to come. **RM**

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*Dr. Berish Strauch is Professor and Chair of the Department of Plastic and Reconstructive Surgery at Albert Einstein College of Medicine and Montefiore Medical Center, Bronx, New York.*



## **Head and Neck Surgery On the Cutting Edge in Japan**

### **Preservation of the Larynx after Resection of a Carcinoma of the Posterior Wall of the Hypopharynx; Versatility of a Free Flap Patch Graft**

By Takashi Nakatsuka, MD\*,  
Kiyonori Harii, MD\*, Kazuki Ueda, MD\*, Satoshi  
Ebihara, MD\*\*, Masao Asai, MD\*\*, Kouichi  
Hirano, MD\*\*, Takashi Yoshizumi, MD\*\*, and  
Tadashi Sugawara, MD\*\*\*

**M**icrosurgical free tissue transfers have facilitated progress in head and neck reconstruction. After radical ablation of advanced cancer, a large and complex tissue defect can be repaired in one stage using this technique.

Regarding a case with localized cancer, the treatment goal is to resect the minimal amount of tissue that will not compromise the tumor extirpation but will result in the least functional morbidity. Preservation of the larynx after resection of a pharyngeal tumor is therefore a challenging problem for the head and neck surgeon.

Although there have been some reports regarding laryngeal preservation surgery for the treatment of hypopharyngeal carcinomas, there have been few collected series focusing on the subject of reconstruction of carcinoma of the posterior wall of the hypopharynx. During the ten year period from 1984 to 1994, we performed free flap patch grafts to reconstruct the posterior hypopharyngeal wall in 9 patients with T1 or T2 carcinomas who had partial pharyngectomy with laryngeal preservation (UICC 1987).

This paper presents our clinical results with the surgical procedure and evaluates the versatility of a free flap patch graft

after resection of a posterior wall carcinoma of the hypopharynx.

#### **Patients and Methods**

Nine patients underwent partial pharyngectomy for treatment of a T1 or T2 carcinoma of the posterior wall of the hypopharynx. Reconstruction was achieved with a free flap patch graft.

There were 6 males and 3 females ranging in age from 52 to 68 years old with a mean of 63 years old. All patients had a squamous cell carcinoma in the posterior hypopharyngeal wall. One patient received radiation therapy as initial treatment but this was not curative. Two patients received two courses of preoperative chemotherapy and one patient received two courses of postoperative chemotherapy with cisplatin and 5-Fluorouracil. Patient 4 had unilateral radical neck dissection, two patients had bilateral modified neck dissections and the

### *Preservation of the larynx after resection of a pharyngeal tumor is therefore a challenging problem for the head and neck surgeon.*

remaining 6 patients had unilateral modified neck dissections.

Mucosal defects after resection of the tumor ranged 8 x 6 cm to 5 x 4 cm in size, with a mean of 6.4 x 4.8 cm. The first 4 patients underwent transfer of a forearm free flap and the next five underwent transfer of a free jejunal patch graft.

Due to involvement within the surgical margin of the lesion or the metastatic lymph node, the recurrent nerve on the affected side was locally excised in 2 cases and the superior laryngeal nerve was locally excised in 5 cases. Both nerves were left intact in 4 cases. A tracheostomy was not performed in these 4 patients.

#### **Surgical Procedure**

A multidisciplinary team approach was utilized. The Head and Neck Surgeons began with the neck dissection and tumor resection. The magnitude of the neck dissection depended on the extent of tumor spread into the adjacent neck lymph nodes. Thereafter, the pharynx was opened through a lateral pharyngotomy incision. If resection of a wider area or removal of the lateral pharyngeal wall was required, a suprahyoid pharyngotomy approach was used. This should not cross the midline so as to avoid postoperative sagging of the larynx. The pharyngotomy incision was extended superiorly and/or inferiorly depending on the tumor size and its location.

The tumor was resected under direct vision and included a margin of at least 2 cm. Resection of the lateral wall of the thyroid cartilage was often necessary to avoid compromising graft perfusion by compression. In order to preserve laryngeal function, both the recurrent nerve and the superior laryngeal nerve were preserved unless they were involved in the lesion. Reconstruction and microvascular surgery were performed by Plastic Surgeons. When using a free jejunum, Abdominal Surgeons harvested the graft.

Any redundant flap tissue bulges into the reconstructed pharyngeal lumen and impedes swallowing. Therefore, when a forearm free flap was used, the flap was designed 10% larger than the defect to compensate for primary contraction of the flap. In case of a free jejunal graft, the harvested jejunum was opened along its antimesenteric border to create a patch and trimmed to cover the defect under slight tension.

Suturing the graft to the mucosal defect preceded the microvascular anastomosis, in order to accurately position the graft. During inset of the graft, a good view of the defect was obtained by retracting the larynx anteriorly. It was also necessary to retract gently the recurrent nerve, the superior laryngeal nerve and occasionally the hypoglossal nerve which crossed the operative field. The microvascular anastomosis was performed with the aid of ami-

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## Microsurgery Overseas

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roscope. After revascularizing the graft, suction drains or penrose drains were placed and the skin flaps were closed.

When tracheostomy was performed, the endotracheal tube was removed and

*Establishment of  
a safe and reliable  
reconstructive procedure  
has been long awaited,  
particularly for the  
management of  
localized cancer.*

replaced by a tracheostomy tube. When tracheostomy was not performed, the endotracheal tube was removed under endoscopic examination the morning after surgery.

### Results

Total flap necrosis occurred in one case due to venous thrombosis, in which a deltopectoral flap was used to resurface the posterior pharyngeal wall without laryngectomy. This case was excluded from the functional assessment at follow up. One case developed an infection which resulted from exposure of the hyoid bone. The other patients had uneventful postoperative course and there were no pulmonary complications.

One patient had difficulty in swallowing due to aspiration in the early postoperative period and took 61 days after surgery to start oral feeding. Another patient required a delay in resumption of oral intake due to a wound infection. The remaining 6 patients began their oral intake within 3 weeks of surgery. Some patients had episodes of mild aspiration at first and needed simultaneous tube feeding to supplement alimentation for several days. Within a week after resumption of oral intake, all eight patients achieved adequate oral intake without tube feeding. Six

of eight patients managed a regular diet and two patients a soft diet. A tracheostomy was performed in five patients and in all but one patient with flap loss, the ostia were closed within a few weeks after surgery.

Three patients died. Distant metastasis was the cause of death in one, local recurrence in the second and lymph node metastasis in the third. The remaining 6 patients had no evidence of disease during a follow up period of 8 months to 9 years and 2 months.

### Discussion

Although squamous cell carcinoma of the posterior pharyngeal wall is rare, the prognosis is poor because of a delay in diagnosis, a tendency to early nodal involvement, early distant metastasis and a high incidence of secondary cancers. There are two basic treatment modalities currently employed for the treatment of posterior pharyngeal carcinoma. One is primary curative radiation therapy with surgery as a salvage procedure. The other is primary surgery, often with postoperative radiation. Although radiation therapy, either alone or combined with chemotherapy, is a good choice for preserving laryngeal function, carcinoma originating in the posterior pharyngeal wall is frequently resistant to radiation and satisfactory results have not been reported. Several authors recommended surgery rather than radiation therapy for curative treatment of cancer in this region. Surgical treatment often necessitates sacrificing the larynx because of the risk of postreconstruction aspiration or airway compromise, even if it is not involved with the tumor. Therefore, establishment of a safe and reliable reconstructive procedure has been long awaited, particularly for the management of localized cancer. Several surgical procedures to reconstruct partial pharyngectomy defects have been reported. For a very small cancer, primary closure may be possible, but such a case is extremely rare. In some reports, a split-thickness skin graft was applied. This usually sloughed and took time to re-epithelialize, resulting in fistula formation and late scar formation with contracture. Pedicled flaps such as a del-

topectoral flap or a pectoralis major musculocutaneous flap have been used. A deltopectoral flap is thin and pliable, but it usually requires creation of a temporary salivary fistula to ensure uncomplicated wound healing. A multi-staged operation is necessary to complete reconstruction. The pectoralis major musculocutaneous flap facilitates one stage reconstruction but is often so bulky that it narrows the reconstructed pathway and stenosis or aspiration may occur. One stage reconstruction using a pedicled flap is at risk for downward traction due to scar contracture postoperatively. This inhibits physiological elevation of the larynx when swallowing, leading to possible aspiration. In contrast, both the forearm free flap and the jejunal graft are thin and pliable and are therefore suitable for reconstruction of mucosal defects of the pharyngeal wall. These flaps are well vascularized and provide good wound healing. There is less scarring and less contracture allowing the remaining pharynx and larynx to move physiologically during swallowing.

*We now consider a  
free jejunal graft the  
first choice for  
reconstruction of partial  
pharyngectomy defects  
when the larynx is  
preserved.*

In our series, we used two sources of free patch grafts; namely a forearm free flap or a free jejunal patch. In the early stages, we used the forearm free flap because of its reliability and easy access. Later, free jejunal grafts were used. Comparison of postoperative function between these two reconstruction groups is not possible because there was a difference in preservation of the motor and sensory nerves of the larynx. However,



## Clinical Guidelines and Outcomes Committee News

By Raymond M. Dunn, MD

### September 1997 Update

**"D**octor, what will that micro-surgery you're doing for this patient do for him? How long will it take? How long will he be in the hospital? Is there a simpler procedure that will work just as effectively?"

These are the questions that each of us are being asked—now on a nearly daily basis—by insurers as well as by patients. Although we can talk fluently about our own experiences as well as the general experiences of others, we have very little objective information on the "outcomes" of microsurgical reconstruction to fully support our knowledge of the dramatic value

that our efforts may provide in the lives of many of our patients.

#### What Are Outcomes Anyway?

We have all heard this new watchword of clinical care coming off the lips of every other presenter or article that we read but what does it mean to Reconstructive Microsurgery?

Simply said, "outcomes" emphasizes the effectiveness of aspects of medical care, and more significantly looks at this effectiveness in "real life" terms, rather than some of the more traditional surgical measures such as whether the wound healed or whether the flap survived. Did the patient's pain or infection get better? Did the tibial fracture heal? Ed Wilkins, et al., as well as others have recently published a very simple review of the field which is extremely valuable in orienting each of us to the issues we face.

**Mark Schusterman, Bruce Cunningham, Ed Luce and others, PSEF Sponsors Outcomes Meeting. ASRM Tags Along...**

A major effort has been put forth in the last several years by the ASPRS/PSEF to develop an outcomes study instrument for plastic surgery. The critical first step to any attempt to measure the outcome of clinical care is to have clinical guidelines for the disease/problem or treatment that is proposed to be measured. The ASPRS/PSEF as well as ASMS have all worked diligently for a number of years to develop such guidelines for anything from wound care to rhinoplasty to scar management.

#### ASRM Clinical Guidelines and Outcomes Committee Begins to Take First Step to Develop Guidelines

In the last nine months the ASRM Clinical Guidelines and Outcomes Committee has begun the process of Guideline development. The Committee has held conference calls, met at the annual ASPRS meeting in San Francisco and focused on the Lower Extremity as the most important initial area in which to attempt this work. Randy Culp and Mike Miller are "chairing" the draft statements being developed along the lines of the work done by the PSEF. Pat Farrell of the PSEF is providing invaluable assistance, experience and guidance to the committee as we take this first step toward demonstrating that reconstructive microsurgery is invaluable and EFFECTIVE and necessary for the general well being of the patients who are candidates for such procedures. The Committee hopes to have draft statements of Guidelines for the management of lower extremity trauma and for the management of lower extremity osteomyelitis for review by the membership of the ASRM at the Annual Meeting in Scottsdale in January 1998. **RM**

1. Wilkins, E.G., Lowery, J.C., Smith, D.J. Outcomes Research: a Primer for Plastic Surgeons. *Annals Plast. Surg* 1996;37:1-11

### Microsurgery Overseas

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patients who were reconstructed with a forearm free flap complained of swallowing difficulties for a few months but did not aspirate. They often need the aid of liquids to swallow foods smoothly. Endoscopic and roentgen examination of our clinical cases showed that swelling of the forearm flap persisted for a few months. Postoperative flap swelling and crusting of the skin surface are postulated to be the cause of the swallowing problem. A free jejunal graft, on the other hand, has a smooth mucosal surface and postoperative swelling subsides within a few weeks. Mucous secretion is often observed for several days after operation and has not caused any problems in our cases. In addition, if both the recurrent and superior laryngeal nerves were left intact, tracheostomy was not necessary. Avoiding a tracheostomy facilitates early recovery and early resumption of oral intake. Based on these experiences, we now consider a free jejunal graft the first choice for reconstruction of partial pharyngectomy defects

when the larynx is preserved. In cancer management, two principals of organ preservation surgery exist. The first is to preserve organ function and the second relates to prognosis. Prognosis should compare favorably with that of traditional methods. With respect to the former, we achieved successful laryngeal preservation in 8 of 9 patients. Regarding the latter, we had 3 patients with disease free survivals of 5 or more years. Three patients died of their disease within a year of surgery, but local recurrence occurred in only one case. Although we need further follow up of the remaining patients, these results are encouraging.

In conclusion, laryngeal preservation surgery using a free flap patch graft has proven beneficial in cases with T1 or T2 carcinoma of the posterior wall of the hypopharynx. With the availability of the free flap patch graft, we are confident that the indications for laryngeal preservation surgery will be widened. **RM**



## VIDEO REVIEWS

# Videos for the Forearm and Upper Extremity

By Phyllis Chang, MD



### Functioning Muscle Transplantation to Replace Forearm Musculature

**Author:** Ralph T. Manktelow, MD

**Intended Audience:** Hand and microvascular surgeons (orthopaedic and plastic surgeons)

**Length:** 24 minutes

**Rating:** 4 fingers

**Summary:** This video presents indications, detailed techniques, and several cases of gracilis muscle and pectoralis muscle free tissue transfer as functioning muscle in the forearm. The patient selection, presentation of technical details, and outcomes are excellent. Minor drawbacks were difficulty in visualizing details of the vascular pedicle, and slightly prolonged footage of surgical outcomes, for which the author should be suitably proud of, but might have edited. Overall, details of performing this functional innervated free muscle transfer to provide forearm muscle flexion or extension are presented with great clarity.



### Vascularized Fibular Bone Graft in Reconstructive Surgery of the Upper Limb

**Authors:** R. J. Asse, MD,

R. Mattar, MD, E. J. L. Paula, MD, R. Starck, MD, and A. C. Canedo, MD

**Intended Audience:** Hand and microvascular surgeons (orthopaedic and plastic surgeons)

**Length:** 18 minutes

**Rating:** 4 fingers

**Summary:** This video presented from the University of Sao Paulo School of Medicine appears targeted for the individual with some microvascular flap experience. Indications for vascularized fibular grafts include extensive bone loss, severe bone infection, en bloc tumor resections, congenital pseudoarthrosis, and devascularized bone in the upper extremity. A modest amount of time is spent on technical details of flap elevation, but several clinical cases are nicely documented. Examples are given illustrating each of the aforementioned indications, with very reasonable clinical outcomes.

The majority of bone grafts were used for segmental loss averaging 9 cm (range 6-10 cm), in conjunction with bone dis-

traction provided by a Wagner device, and fixation by intramedullary rodding. Details on donor and flap morbidity in this 20-patient series are not provided, but were reported as minimal. The audiovisual presentations are succinct, and well done. This video is recommended for the practitioner interested in viewing practical applications of the vascularized fibular graft in cases of upper extremity bone loss. **RM**

### Video Rating Scale



5 Finger Replant  
Excellent



4 Finger Replant  
Good



3 Finger Replant  
Fair



1 Finger Replant  
Poor

## RECONSTRUCTIVE MICROSURGERY

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