

FULL TIME FACULTY
AUGUSTA UNIVERSITY
DENTAL COLLEGE OF GEORGIA

JUNIOR FACULTY SMALL GRANTS PROGRAM*
APPLICATION INSTRUCTIONS

*Note: the intent of this grant mechanism is to develop collaborative research projects for faculty in clinical departments, who are not at terminal rank and who have dental student involvement in the project

Use the Checklist/Routing Sheet as pages 1 and 2 of your application.
Beginning with page 3, give the following information.

I. Title of Research Project:
Effect of Negative Pressure Wound Therapy (NPWT) on post-operative healing of Osseous Surgery (OS): A randomized clinical trial.

II. Applicant's

Name(s):	Mark A. Brunner D.D.S., M.S.
Department:	Periodontics
Office Mailing Address:	GC-1342
AU Ext:	1-5755

III. Amount Request: \$5,000 (\$5,000 Maximum)

IV. Research Plan: (A-D; Limited to eight (8) typewritten pages)

A. Introduction

1. This proposal is offered to study an application of negative pressure wound therapy (NPWT), to the oral environment. This treatment strategy could be a useful adjunct to healing after periodontal osseous surgery (OS), to decrease the residual pocket depths, reduce postoperative pain, and facilitate wound healing. Negative pressure wound therapy has been beneficial in challenging wound healing environments, such as the spine and extremities, where contamination is significant and blood supply is compromised. A similar wound is seen in the chronic inflammatory state in periodontal pockets. After osseous surgery, the wound is cleaner, but the adaptation of the tissue margin is poor. Wounds have incomplete closure when the healing capabilities of the tissues are not adequate to overcome continued bacterial growth. Inadequate ingrowth of healing tissue with this deficit is usually associated with limited ingrowth of new blood vessels (angiogenesis). NPWT has been effective in environments with even more bacterial load and less vascularity than the oral environment. If a more intimate junction can be made between the surgical wound edge and the tooth after surgery, then the junctional epithelium (2-5days) and the connective tissue attachment (7-8days) can form without the ingrowth of bacteria and reformation of a pocket.(Sabag 1984)
Therefore, a treatment that could decrease depth of the pockets and allow for healing of gingival tissue back to the margin of the tooth, to preserve the viability of the soft tissue attachments to the gingival complex would be a valuable instrument for healing after osseous surgery.

NPWT allows for drainage of tissue fluids and edema from the local area, and the negative pressure gradient helps to bring in healing tissues and induce new vascularity to improve healing.

Justification: The study will bring innovative and proven wound healing technology to the dental surgical world by this proof of concept.

Primary objective: To compare the amount of periodontal pocket reduction Osseous Surgery with negative pressure wound therapy Osseous Surgery without negative pressure wound therapy.

Primary Hypothesis: Subjects who receive negative pressure wound therapy will see a statistically superior result (decreased pocket depths) to those who receive do not receive negative pressure wound therapy.

Secondary objective: To compare subject satisfaction and subject morbidity (swelling and pain) when using NPWT after OS and without using NPWT after OS.

Secondary Hypothesis: Subjects who receive NPWT after OS and subject who do not receive NPWT after OS will not report a statistically significant difference with respect to satisfaction and morbidity (pain and swelling).

2. Following any surgery, incisions are closed by sutures, staples, tissue adhesive or clips. These types of wounds heal by primary intention, which is the least traumatic healing. If the wound is not able to be closed completely, wounds left open heal by secondary intention. In a dental surgery like osseous surgery (OS) around teeth, the wounds are rarely closed completely and secondary intention healing does occur.

Currently, there are very few data available on the incidence and prevalence of surgical wounds healing by secondary intention (SWHSI). Two published studies from England (Vowden 2009), (Srinivasaiah 2007) estimated that SWHSI constitute approximately 28% of all prevalent acute wounds that receive wound care provision.

The traditional approach to treating SWHSI involves frequent dressing changes. There are a number of different dressing options, from simple dressings, such as non-adherent dressings, to more modern options such as foam, hydrocolloid, and alginate dressings.



Negative pressure wound therapy (NPWT) is a technology that is used in wound care on complex wounds (Guy 2012). NPWT involves the application of a wound dressing through which a vacuum is applied. The intervention was developed in the 1990s, and the uptake of NPWT in the healthcare systems of developed countries has been dramatic. A US Department of Health report estimated that between 2001 and 2007, pumps and associated equipment increased

from \$24 million to \$164 million, an increase of almost 600%. (Department of Health and Human Services 2009) The most recent introduction to the market is a single use, or disposable, negative pressure product.

A number of different healthcare professionals prescribe and apply NPWT, and it is now used both in secondary and primary care, particularly following the introduction of ambulatory systems. The NPWT systems outlined above differ in a number of respects, such as type of pressure (constant or cyclical) applied to the wound, the material in contact with the surface of the wound, and also the type of dressing used. The principle of applying a negative pressure to the wound in a closed environment is the same for all products.

This study uses the proven wound healing principles and applies it to OS. Traditionally these wounds have been exposed to the oral cavity, or have been covered by a dressing that is not sealed to the tissue. The potential of this device is to have the healing time reduced and the tissue approximation to the tooth more intimate than with sutures alone. The result showing more primary closure-type healing and shallower probing depths (PD) at 14 days. Post-operative discomfort may also be reduced.

The negative pressure can be applied through an oral appliance like those commonly made to fabricate a mouth guard or bleaching tray, but with the appliance extending beyond the gingival margin. With the flexible appliance designed to have contact with the naturally moist mucosa, maintaining an airtight seal is possible.

The appliance and negative pressure is to be applied after osseous surgery. The appliance is fashioned so that the negative pressure can be applied to the area(s) of interest, whether the gingival margin, or an intra oral wound site. In a limited series, this application of negative pressure has been shown to be tolerable, and can be worn at night for 14 days. An example of a prototype of an oral appliance is illustrated here.



After OS (Sabag 1981) found that epithelial migration begins on day 2, and after 5 days covered the proliferating cells and fibers of the underlying connective tissue. After 7-8 days new junctional epithelium was seen, with evidence of attachment to the root surface by 12-14 days. A similar study (Novaes 1969) noted re-epithelization complete in 7 days, and normal thickness junctional epithelium restored in 23 days.

B. Research Design and Methods

1. This will be a Randomized, double-blinded, active controlled, parallel group clinical trial. 26 generalized severe periodontitis patients will be treated with osseous surgery (OS). The control cohort will receive traditional post-operative care and the experimental cohort will receive negative pressure wound therapy (NPWT) device to wear 14 nights. Probing depths, morbidity, and inflammation will be assessed at 14 days, 3 and 6 months.
- 2.

Procedures:

Pre-operative procedures for both groups:

1. Maxillary and Mandibular sextant standardized clinical photographs (standard procedure)
2. Full mouth series of radiographs.
3. Measurements of gingival probing depths and clinical attachment loss.
4. Questionnaire for subject assessment

Intraoperative procedure (all standard procedures):

1. All surgical procedures will be performed by Dr Mark Brunner (PI), Residents of the Post-Doctoral Periodontics Department at the Dental College of Georgia supervised by Attending Faculty in the Periodontics clinic.
2. Subjects will be anaesthetized using standard dental infiltration technique (4% Septocaine with 4:100,000 epinephrine)
3. Traditional Osseous Surgery will be performed as described by ((Oschenbein, 1986) and (Tibbits, 1976.))
4. Apically repositioned flaps will be sutured with 4-0 Vicryl continuous sling technique.
5. Maxillary Quadrants will be randomized into one of two experimental groups, where the operator will be informed at the end of the procedure which quadrant will receive the post-operative negative pressure device.

Postoperative procedure (all standard procedures):

1. Medication:
 - i. Analgesic (t.i.d) for 1 week: Ibuprofen, 800mg, TID, 1 week
 - ii. Antiseptic mouthwash: chlorhexidine 1oz for 1min (t.i.d) for 2 weeks
2. Postoperative instructions will be given to the subject. This includes:
 - i. Applying ice packs for the first 24 hours
 - ii. Avoid any mechanical trauma
 - iii. Avoid swishing, spitting, or sucking through a straw.
 - iv. Wear Negative Pressure device 8 hours per night while sleeping for 14 nights.
3. Subjects are instructed to follow up at 14 days to assess wound healing, photographs, and for suture removal.
4. Subjects will be recalled at 12-14 weeks and at 24-26 weeks for photographs and chairside measurements.

b. Describe and explain the study design:

- Randomized, double-blinded, active controlled, parallel group clinical trial.
- Randomization will follow a balanced block strategy using proper statistical software (LIST software)
- The study will consist of two groups:
 1. Intervention: Osseous surgery with negative pressure device.
 2. Control: Osseous surgery without negative pressure device.
- Probing depth (PD) and clinical attachment level (CAL) of the subjects will be measured at baseline, 3 and 6 months postoperatively.

c. Describe the procedures performed to lessen the probability or magnitude of risks:

All patients will undergo thorough pre-operative examination.

Surgical procedures will be performed with minimal surgical trauma to the tissues

Postoperative instructions will be given to the patient in detail, and medication to minimize pain and infection will be prescribed.

Patients will be followed up within 14 days of the surgery for 1st post-operative visit to monitor any immediate side effects then again at 3 and 6 months in case of any delayed side effects.

3. Include a tentative timetable of the sequence of experiments and discuss availability of equipment and facilities as appropriate.

Time:	First Action:	Second Action:
February 30/2018	Submit Protocol to IRB	Submit Protocol to IRB
April –July/2018	Amend IRB	Receive Approval
August 1/2018	Approval From IRB	Advertise/Recruit for Trial
August 15/2018-May 15/2019	Run Clinical Trial	Surgery/Post-op/Follow-up
July 15/ 2019- November/ 2019	Statistics/Poster/Presentation	Manuscript and Submission

- a. Special Equipment may be provided by the company, but is in the budget,
- b. Clinical facilities provided by the Department of Periodontics.

4. Clinical studies should include descriptions of planned dental supervision, patient selection and care as needed.

- a. Supervision will be by attending doctor in the same way any surgery in the graduate clinic would be done.
- b. A total of 26 participants will be recruited for the study, and randomly assigned to one of two experimental groups with 13 subjects each.

Inclusion criteria:

1. Subjects who have been diagnosed with generalized severe chronic periodontitis
2. Subjects with four or more pocket depths ≥ 5 mm with BOP per quadrant
3. Subjects with a minimum of 20 residual teeth
4. Subjects who are 18 years old or older
5. Subjects who can speak English

Exclusion criteria:

1. Subjects with uncontrolled diabetes (defined as an HbA1c $> 7.5\%$).
2. Subjects who have been diagnosed with aggressive periodontitis.
3. Subjects who have had periodontal treatment during the last three months.
4. Subjects who are on blood thinners.

C. Significance:

1. Briefly explain the scholarly and/or scientific merit of the proposed project.
2. Wound healing has been a focus of conventional medicine continuously throughout the last century. In dentistry, we have focused more on reducing inflammation, and have been satisfied with the wound healing of our traditional techniques. This approach takes advantage of the advances in medicine and applies it to the most basic surgery in Periodontics. If found useful, more studies could be initiated toward other surgical and non-surgical interventions to speed wound healing, improve results, and reduce the patient's pain experience.
3. Residents and Dental students could be directly involved in this project by:
 - a. Recruiting subjects
 - b. Participating in the procedures and follow-ups
 - c. Recording data
 - d. Analyzing data
 - e. Writing/Submitting publication
4. Possible sources for funding could come from the companies that make the NWP devices. There would be a lot of money to be made if this product could be made to market to dentistry. The dental supply companies would also want to get behind the research. I have already applied for the Colgate CARE grant for Dental Innovation.

D. Current and Previous Research Grant Applications

1. 2017 CDM Faculty Research Awards Program
 Title: Evaluating lip repositioning technique with and without myotomy for the treatment of excess gingival display: Randomized Clinical Trial
 Investigators: PI- Mark Brunner, DDS, MS; Omnia Tawfik, BDS, PhD; Kyle Garrett, DDS.
 Funded: \$5000
 Date: 03/06/2017
 Ongoing Clinical Trial, Publication of interest in the Word of Mouth (Dec.)
2. No other funded grants at this time.
 - a. I have applied for one industry grant Allergan: which was turned down for 1st quarter 2018, but will receive further review 2nd quarter. (\$80,000)
 - b. I have applied for Colgate CARE grant, which is still under review and results should be coming any day. (\$30,000)

3. Estimated Time Line

Time:	First Action:	Second Action:
Marh 30/2018	Submit Protocol to IRB	Submit Protocol to IRB
March –July/2018	Amend IRB	Receive Approval
August 1/2018	Approval From IRB	Advertise/Recruit for Trial
August 15/2018-May 15/2019	Run Clinical Trial	Surgery/Post-op/Follow-up
May 15/ 2019- October/ 2019	Statistics/Poster/Presentation	Manuscript and Submission

E. Literature Cited:

1. Sabag, N., et al.: Ultrastructure of the normal human epithelial attachment to the cementum root surface. *J Periodontol* 52:94-95, 1981.
2. Vowden KR, Vowden P. The prevalence, management and outcome for acute wounds identified in a wound care survey within one English health care district. *Journal of Tissue Viability* 2009;**18**:7-12.
3. Guy H, Grothier I. Using negative pressure therapy in wound healing. *Nursing Times* 2012;**108**:18, 20.
4. Department of Health and Human Services, Office of Inspector General. Comparison of prices for negative pressure wound therapy pumps (Edition: OEI-02-07-00660). oig.hhs.gov/oei/reports/oei-02-07-00660.pdf (accessed Dec 2012) 2009.
5. Srinivasaiah N, Dugdall H, Barrett S, Drew PJ. A point prevalence survey of wounds in north-east England. *Journal of Wound Care* 2007;**16**:413-6.
6. Ochsenbein, C. (1986). "A primer for osseous surgery." *Int J Periodontics Restorative Dent* **6**(1): 8-47.
7. Armstrong DG, Lavery LA. Negative pressure wound therapy after partial diabetic foot amputation: a multicentre, randomised controlled trial. *The Lancet*. 2005;366:1704–1710. [[PubMed](#)]
8. Tibbets, L, Loughlin D, Ochsenbein C. Rationale for the lingual approach to mandibular osseous surgery. *Dent Clin North Am* 20:61-78, 1976.
9. Novaes, A.B., et al.: Visualization of microcirculation of the healing periodontal wound. III. Gingivectomy. *J Peridontol* 40:359-370, 1969.
10. Borgquist O, Gustafsson L, Ingemansson R, Malmso M. Micro- and Macromechanical Effects on the Wound Bed of Negative Pressure Wound Therapy Using Gauze and Foam. *Ann Plast Surg*. 2010;64:789–793. [[PubMed](#)]
11. Morykwas MJ, Argenta LC, Shelton-Brown EI, McGuirt W. Vacuum-assisted closure: a new method for wound control and treatment: animal studies and basic foundation. *Ann Plast Surg*. 1997;38:553–562.[[PubMed](#)]
12. Grobmyer SR, Graham D, Brennan MF, Coit D. High-pressure gradients generated by closed-suction surgical drainage systems. *Surg Infect (Larchmt)*. 2002 Fall;3(3):245-9. (Online ref <https://www.ncbi.nlm.nih.gov/pubmed/12542925>)
13. <https://www.perio.org/consumer/cdc-study.htm>

VI. Approval Certifications

I accept full responsibility for conducting the research described herein. This project will require 5% effort on my part.

Applicant ('s) Signature(s): _____

Departmental Chairman's Signature: _____

VII. Curriculum Vitae (C.V.) Biosketch

Each principal applicant and co-application should provide a C.V. limited to 2 pages.

See Below

CURRICULUM VITAE

01/05/2018

Mark Alexander Brunner DDS, MS

GRU Rank: 1.0 FTE

GRU Title: Assistant Professor, Former Graduate Program Director

Office Address: Augusta University Dental College of Georgia
1120 15th Street, GC-1342
Augusta, GA 30912

Office Telephone: 706-721-2442



EDUCATION:

<u>Institution:</u>	<u>Attended:</u>	<u>Major:</u>	<u>Degree:</u>	<u>Date</u>	
Virginia Commonwealth University College of Dentistry	Periodontics	Periodontics	Certificate of Periodontics	2000-2003	
Medical College of Virginia College Of Dentistry			M.S.	2000-2003	Periodontics
Ohio State University College of Dentistry			D.D.S.	1996-2000	Dentistry
Grace College			B.S.	1992-1996	Biology

PROFESSIONAL:

2016-Present	Assistant Clinical Professor of Periodontics, Augusta University Dental College of Georgia
2017-2017	Director of Post-Doctoral Periodontics, Augusta University Dental College of Georgia
2003-2015	Private Clinical Practice with Sugarman, Brunner & Langston Periodontics and Implant Dentistry
2003-2015	Visiting Assistant Professor at Medical College of Georgia for Graduate Periodontics

AWARDS/HONORS

June, 2000	Northeastern Society of Periodontists, Inc.	Award for Excellence in Undergraduate Periodontics.
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SCIENTIFIC AND PROFESSIONAL SOCIETIES:

<u>Year</u>	<u>Description</u>
2016-Present	American Dental Education Association
2015-Present	Georgia Eastern District Dental Society
1996-Present	American Dental Association
2004-Present	Diplomate of the American Board of Periodontology
2000-Present	American Academy of Periodontology
2000-Present	Southern Academy of Periodontics
2011-2016	Executive Counsel of the Southern Academy of Periodontics
2018-Present	Executive Counsel of the Southern Academy of Periodontics
2003-Present	Georgia Society of Periodontists (President 2010-2012)
2003-2015	Georgia Northern District Dental Society
2010-Present	Pierre Fauchard Academy
2003-Present	Academy of Osseointegration
2003-Present	Hinman Dental Association
2000- Present	Ohio State University College of Dentistry Alumni Society
1997-Present	Christian Medical and Dental Society
1996-2000	Psi-Omega Dental Fraternity
1992-1996	Collegiate Republican Society (President 1994-1996) (Vice-President 1993)

COMMUNITY ACTIVITIES:

2017-Present	Dental Associates Board, Dental College of Georgia
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2016-2017 Dental College of Georgia Admissions Committee
 2016- Present Dental College of Georgia Patient/Family Services Committee
 2016-Present Augusta University Faculty Development Committee
 2016- Present True North Church North Augusta, SC
 2003-2016 Buckhead Church (Campus of North Point Ministries) Protestant/ Nondenominational
 2015 Georgia Mission of Mercy
 2003-2014 Altius Sports Medicine Cycling (Road cycling team)
 2001-2003 Spin Doctors (Road cycling team in Richmond, VA)

PRESENTATIONS AT INTERNATIONAL, NATIONAL, REGIONAL AND STATE MEETINGS:

2018 New England AGD Masters Implant Course (4-Hours) Peri-Implant Diseases, Diagnosis and Treatment
 Hartford, Connecticut
 2017 DCG AEGD/GPR Pocket Reduction Surgery, Biologic Width, Functional Crown Lengthening, Esthetic Crown
 Lengthening, Lip Repositioning. (4-Hours)
 2017 Maxi-Course Short Implant Benefits and Pitfalls (2 Hours)
 2017 Maxi-Course Peri-implant Disease (2 Hours)
 2017 Continuing Medical/Dental Education (Thailand, Cheng Mai 2/17-2/27) (10-Hours)
 2017 Symposium on General Dentistry Conference (St. Simons Island, GA 7/3/17) (4-Hours)
 2016 DCG AEGD/GPR Success versus Significance. (1-Hour)
 2016 DCG AEGD/GPR What to expect from your Specialist. (2-Hours)
 2016 DCG AEGD/GPR Peri-implant Diseases (4-Hours)
 2016 Georgia Public Healthcare Symposium (Atlanta, GA) (2-Hours)
 2015 Ohio State University Pearls of Private Practice Periodontics (Columbus, OH) (2-Hours)
 2011 CIDS Lecture: Using Cone Beam technology for correct placement of dental implants. (Atlanta, GA) (4-Hours)
 2010 CIDS Lecture: Periodontal Disease and Systemic Links (Atlanta, GA) (4-Hours)
 2009 CIDS Lecture: Implant Placement in the Aesthetic Zone (Atlanta, GA) (4-Hours)

MEETINGS, VISITING PROFESSORSHIPS, etc.:

2003-2016 Visiting Professor at Medical College of Georgia for Graduate Periodontics
 2003-13, 2016-17 American Academy of Periodontology Annual meetings
 2004-2015 All GDA Summer Meetings
 2003-Present All Southern Academy of Periodontology meetings Summer/Winter
 2003-Present All Georgia Society of Periodontics meetings Summer/Winter
 2003-Present All Hinman Society meetings and membership meetings
 2003-Present Almost all Northern district GDA meetings
 2013-Present Pierre Fauchard Winter Meetings

PUBLICATIONS:

2017 Tawfik OK, El-Nahass HE, Shipman P, Looney SW, Cutler CW, Brunner M. Lip repositioning for the treatment
 of excess gingival display: A systematic review. J Esthet Restor Dent. 2017;00:1–12.
 2003 Serum Cotinine levels and Periodontal Attachment Loss: Findings from NHANES III (VCU Library)

Research:

2017 Systematic Review investigating the treatment and success of excessive Gingival Display. . J Esthet Restor Dent.
 2017;00:1–12
 2017 Multicenter Clinical Trial for surgical treatment of Excessive Gingival Display: With and Without Myotomy. (IRB
 Approved and in Patients in Treatment Phase, 12 of 20 patients treated in US, 20 of 20 patients treated and 1-year
 follow-up done in Egypt)
 2017 Clinical Trial for Treatment of Excess Gingival Display with Lip Repositioning Surgery or BOTOX. (Grant
 submitted awaiting approval.)
 2017 Negative Pressure Wound Therapy to expedite healing after periodontal surgery. (Grant submitted and pending
 IRB approval)
 2016 CITI Group 1, 2, and 4

MARK A. WOLGIN, M.D.

Orthopaedic Associates
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CURRENT POSITION

June 2006 to present, Orthopaedic Surgeon, Orthopaedic Associates, practice with emphasis on spinal disorders, but also seeing foot/ankle and general orthopaedic problems. Also, functioning as Chief, Division of Orthopaedics, Phoebe Putney Memorial Hospital, January '16 through Dec '17.

EDUCATION

September 1982 to June 1986: School of Medicine, University of California, Los Angeles (UCLA). M.D. degree.

September 1978 to June 1982: College of Letters and Science, UCLA. B.S., Biology.

TRAINING

August 2002 to July 2003: Fellowship, Institute for Spinal Disorders, Cedars Sinai Medical Center, Los Angeles, CA 90048.

August 1992 to July 1993: Fellowship, Foot and Ankle Surgery, University of Texas Southwestern Medical Center, Dallas, TX.

July 1988 to June 1992: Residency, Orthopedic Surgery, Harbor/UCLA Medical Center, Torrance, CA.

July 1987 to June 1988: Fellowship, Institute for Spinal Disorders, Harbor/UCLA Medical Center.

July 1986 to June 1987: Transitional Internship, Harbor/UCLA Medical Center.

PREVIOUS PRACTICE

January 2004 to June 2006, Girard Orthopedic Surgeons, general orthopedics with emphasis on spine and foot/ankle disorders.

August 2003 to January 2004, Practice coverage for Dr. Nick Alapour, Beverly Hills, CA, neurosurgeon.

January 1996 to July 2002: Private practice, Greenville Orthopedics and Sports Medicine Center, Greenville, MS.

August 23, 1999 to December 15, 1999: Private practice, Advanced Orthopedic Care Associates, Las Vegas, NV.

September 1993 to October 1995: Private practice, South Bay Orthopaedic and Sports Medicine Center, Torrance, CA.

BOARD CERTIFICATION

American Board of Orthopaedic Surgery, July 13, 1995.

Recertified, April 2004, good through 2015.

Recertified, July 2013, good through 2025.

LICENSES

California State License G 61020 (exp. June 30, 2019).

Georgia State License 057862 (exp. June 30, 2018).

Mississippi State License 14676 (exp. June 2018).

Nevada State License 9019 (renewed with Inactive status through June 2009, then allowed to expire).

Texas State License J1434 (exp. May 2018).

DEA # BW1155147 (exp. May 2020).

BLS/ACLS/PALS Certification, expires Sept '18.

California X-Ray Supervisor and Operator Permit, certificate # RHD 129510 (exp. Dec. 2018).

MEMBERSHIPS

Fellow, American Academy of Orthopaedic Surgeons

American Orthopaedic Foot and Ankle Society

North American Spine Society

American Medical Association

Medical Association of Georgia

Dougherty County Medical Society

HONORS

Resident Research Award (co-winner), Dana Street Society, for presentation of "Intramedullary Fixation of Forearm Fractures in Adults with the Street Square Forearm Nail", Long Beach Memorial Hospital, June 1990.

Phi Beta Kappa, Magna Cum Laude, Dean's Honor List, June 1982.

Best Scholarship Award, Zeta Beta Tau Fraternity, March, 1981.

Student Volunteer Scholarship, UCLA Hospital and Clinics, June 1981.

PERSONAL

Born: June 21, 1960, Los Angeles, CA. Languages: English, Spanish.

Updated December '17.