

Name: William Hamilton Harris, M.D., DSc

Last Updated: 2017

Address: Massachusetts General Hospital, Harris Laboratory, 55 Fruit St, GRJ 1126,
Boston, MA

Date of Birth: November 18, 1927

Place of Birth: Great Falls, Montana

Marital Status: Married

Education:

1947 B.S. Haverford College, with High Honors in Chemistry
1951 M.D. Perelman School of Medicine at the University of Pennsylvania
2000 DSc Haverford College (Honorary)

Postdoctoral Training:

1951 Internship, Hospital of the University of Pennsylvania
1952-3 Assistant Resident, Surgery, Hospital of the University of Pennsylvania
1954-5 Assistant Resident, Surgery, Hospital of the University of Pennsylvania
1955-6 Resident, Orthopaedic Research, Children's Medical Center, Boston
1956-9 Resident, Orthopaedic Surgery, Children's Medical Center and Massachusetts
General Hospital, Boston
1959 Chief Resident, Orthopaedic Surgery, Massachusetts General Hospital, Boston
1959 Fellow, Oak Ridge Institute of Nuclear Studies, Oak Ridge
1959-60 Fellow, Department of Morbid Anatomy, Royal National Orthopedic
Hospital, London, England

Licensure and Certification:

1955 – 2016 Massachusetts License Registration
1962 - American Board of Orthopaedic Surgery

Academic Appointments:

1960 Instructor, Orthopaedic Surgery, Harvard Medical School, Boston, MA
1964 Clinical Associate Orthopaedic Surgery, Harvard Medical School, Boston
1966 Assistant Clinical Professor, Orthopaedic Surgery, Harvard Medical School, Boston
1968 Associate Clinical Professor, Orthopaedic Surgery, Harvard Medical School, Boston
1969 Lecturer, Dept. Mechanical Engineering, Massachusetts Institute of Technology,
Cambridge, MA
1975 Clinical Professor Orthopaedic Surgery, Harvard Medical School, Boston
1975- 2017 Senior Lecturer Mechanical Engineering, Massachusetts Institute of
Technology, Cambridge, MA
1997- 2012 The Alan Gerry Clinical Professor of Orthopaedic Surgery, Harvard Medical
School
.....2012 – 2017 The Alan Gerry Clinical Professor of Orthopaedic Surgery, Harvard Medical

School Emeritus

Hospital Appointments:

1952-4 Captain, U.S.A.F. Medical Corps, 5005th U.S.A.F. Hospital, Anchorage, Alaska
 1960 Assistant in Orthopaedic Surgery, Massachusetts General Hospital, Boston
 1964 Assistant Orthopaedic Surgeon, Massachusetts General Hospital, Boston
 1964 Consultant, Chelsea Naval Hospital
 1966 Associate Orthopaedic Surgeon, Massachusetts General Hospital, Boston
 1969 Visiting Orthopaedic Surgeon, Massachusetts General Hospital, Boston
 1971 Orthopaedic Surgeon, Massachusetts General Hospital, Boston
 1974 -2003 Chief, Adult Reconstructive Unit, Department of Orthopaedic Surgery,
 Massachusetts General Hospital, Boston
 1974 – 2004 Director, Harris Orthopaedic Laboratory, Massachusetts General Hospital,
 Boston
 2004- 2017 Director Emeritus, Harris Orthopaedic Laboratory, Massachusetts General
 Hospital, Boston

Fellowships:

1959-60 Fellow of the National Foundation
 1960-1 Sprague Foundation Fellow
 1961-4 Fellow of the Medical Foundation of Boston
 1965 Traveling Fellow of the American Orthopaedic Association

Awards and Honors

Phi Beta Kappa
 Alpha Omega Alpha
 1944-7 Corporation Scholar, Haverford College
 1947 Clementine Cope Fellow, Haverford College
 1970 Kappa Delta Award for Outstanding Orthopaedic Research
 1975 The John Charnley Award of The Hip Society
 1975 The Frank Stinchfield Award of the Hip Society
 1976 Kappa Delta Award for Outstanding Orthopaedic Research
 1977 The Frank Stinchfield Award of The Hip Society
 1986 The Otto Aufranc Award of The Hip Society
 1989 The Frank Stinchfield Award of The Hip Society
 1991 The John Charnley Award of The Hip Society
 1992 The John Charnley Award of The Hip Society
 1996 The Otto E Aufranc Award of the Hip Society
 1999 The Maurice Muller Award for Life-term Achievements in
 Orthopaedic Surgery
 2000 DSc (Hon.) Haverford College
 2003 The John Charnley Award of the Hip Society
 2008 Lifetime Achievement Award from The Hip Society
 2012 The John Charnley Award of the Hip Society
 2012 Lifetime Achievement Award, International Hip Society

2017 Kappa Delta Award for Outstanding Orthopaedic Research

Major Committee Assignments

National

1982 National Institutes of Health Consensus Committee on Total Hip Replacement
 1986-1990 Results Evaluation Committee, The Hip Society
 1994 National Institutes of Health Consensus Committee on Total Hip Replacement

Hospital

1960 - 1979 Resident Rotation Committee, Orthopaedic Department, Massachusetts General Hospital
 1974 - Orthopaedic Residency Selection Committee, Massachusetts General Hospital
 1974-2003 Director, Adult Reconstruction Unit
 1969-2004 Founder and Director, The Harris Orthopaedic Laboratory, Massachusetts General Hospital
 2004 -2017 Director Emeritus, The Harris Orthopaedic Laboratory, Massachusetts General Hospital

Memberships, Offices, and Committee Assignments in Professional Societies:

Boston Orthopedic Club
 Interurban Orthopedic Club
 Massachusetts Medical Society
 American Medical Association
 American Academy of Orthopaedic Surgeons
 American Orthopaedic Association
 SICOT
 The Hip Society, Founding Member and First President, 1968
 The International Hip Society, Founding Member, President 1993-4
 Argentine Medical Association, Honorary Member
 Argentine Association of Orthopedics and Traumatology, Corresponding Member
 Canadian Orthopaedic Association
 Japan Orthopaedic Association
 Society of Biomechanics
 Society of Biomaterials
 Orthopaedic Research Society

Major Research Interests:

1. Total hip replacement surgery.
2. Natural history of periprosthetic osteolysis in total hip replacement surgery.
3. Orthopaedic biomechanics and biomaterials.
4. Deep vein thrombosis prophylaxis.

5. Natural History of Osteoarthritis of the Hip
6. Limb Replantation

Principal Clinical and Hospital Service Responsibilities

- 1965-2000 Residency Selection Committee, Orthopaedic Service,
Massachusetts General Hospital
- 1965-1972 Executive Committee, Orthopaedic Service, Massachusetts General Hospital

Major Current Administrative Responsibilities:

- 2004 – present Director Emeritus, Harris Orthopaedic Biomechanics and Biomaterials Laboratory & Total Joint Outcomes Laboratory, Massachusetts General Hospital
- 2004 – present Director Emeritus, Adult Reconstruction Unit

Self Report of Teaching:

1. Local Contributions

a. Medical School

1970 -2000, Founder and Course Director for thirty-one consecutive years, Total Joint Replacement Surgery Course, Harvard Medical School, average attendance 250 orthopaedic surgeons, CME students, postdoctoral fellows and residents as well as graduate students of allied sciences

2001 – 2012, Emeritus Director, Total Joint Replacement Surgery Course, Harvard Medical School, average attendance 250 orthopaedic surgeons, CME students, postdoctoral fellows and residents as well as graduate students of allied sciences

1991-93, Course Co-director for orthopaedic surgeons, Total Knee Replacement Surgery Course, Harvard Medical School, average attendance 250 CME students, postdoctoral fellows and residents as well as graduate students of allied sciences

b. Hospital Courses and invited teaching presentations

1974 -1990 Course Director for Monthly Conferences in Adult Reconstruction during Academic Years

1986- Participant in Core Clinical Curriculum in Orthopaedic Surgery from its inception

1990- Participant in Orthopaedic Grand Rounds from their inception in current form

1990 Harris WH, Rosenthal DI. Case records of the Massachusetts General Hospital. Weekly clinicopathological exercises. Case 34-1990.

A 74-year-old man with a failed right-hip replacement, constant pain centered in the right hip and an osteolytic lesion in the right acetabulum. Subsequently published in N. Eng. J. Med.

1990; 323: 534-539.

c. Advisory and supervisory responsibilities

Supervised 1-4 fellows annually from 1964-2003.

d. Account of any leadership (organization of course, preparation of teaching materials, etc.)

1970 - 2000, Founder and Course Director for thirty-one consecutive years, organized the Total Hip Replacement Surgery Course, for Harvard Medical School, chose topics, selected and invited speakers, organized syllabus, supervised the course, lectured and frequently gave live surgical demonstrations via telesurgery.

2001 – 2012, Emeritus Director, Total Joint Replacement Surgery Course, Harvard Medical School, average attendance 250 orthopaedic surgeons, CME students, postdoctoral fellows and residents as well as graduate students of allied sciences

1991-1993, co-director of the Total Knee Replacement Surgery Course for Harvard Medical School. Helped choose topics, select and invite speakers, organize syllabus, supervise the course, and lectured.

2. Regional, National or International Contributions

a. Invited presentations, a representative five years:

- 1989 Albuquerque, N. Mex. Twenty-Second Annual New Mexico Chapter - Arthritis Foundation
- 1989 Vail, CO Third Annual Vail Orthopaedic Meeting
- 1989 New York, NY The 6th Closed Meeting - International Hip Society
- 1989 Phoenix, AZ Bioskills Seminar and Workshop
- 1989 Bristol and Cambridge, England 1965 ABC Traveling Fellows
- 1989 Rhodes, England British Orthopaedic Association - Combined Meeting
- 1989 Forty-Fourth Annual Meeting - Canadian Orthopaedic Association
- 1989 Colorado Springs, CO 102nd Annual Meeting - American Orthopaedic Association
- 1989 Osaka and Tokyo, Japan Bioskills Workshop
- 1989 Burlington, VT 13th Annual American Society of Biomechanics
- 1989 Moscow, USSR United States Surgical/Medical Delegation to U.S.S.R.
- 1989 New Haven, CT Interurban Orthopaedic Society
- 1990 Houston, TX Univ. Texas Health Sciences Center Grand Rounds
- 1990 Ft. Worth, TX The First Annual Dr. Louis J. Levy Lectureship
- 1990 Philadelphia, PA University of Pennsylvania
- 1990 Vail, CO The Fourth Annual Vail Course
- 1990 Tampa, FL International Symposium on Digital Imaging in Orthopaedic Surgery
- 1990 Scottsdale, AZ New Designs in Total Knee & Hip Arthroplasty Conference
- 1990 Chicago, IL AAOS: Common Problems in Reconstructive Surgery of the hip

- and Knee
- 1990 Wintergreen VA 43rd Annual Virginia Orthopaedic Society, Guest Lecturer
 - 1990 Pebble Beach, CA State-of-The-Art: Total Hips, Total Knees
 - 1990 Montreal, Canada International Hip Society
 - 1990 Scottsdale, AZ The Hip Society - Summer Meeting
 - 1990 Baltimore, MD 84th Annual Interurban Orthopaedic Society
 - 1990 Philadelphia, PA First Scientific Meeting - Academic Orthopaedic Society
 - 1990 Winnipeg, Canada Advanced Concepts in Total Hip Arthroplasty
 - 1990 Pittsburgh, PA Third Annual Albert B. Ferguson, Jr., M.D. Visiting Professor
 - 1991 Vail, CO the Fifth Annual Vail Course
 - 1991 Stratford-on-Avon, England Second British Course on Revision Surgery
 - 1991 Monterey, CA, State-of-the-Art: Total Hips Bioskills Workshops
 - 1991 Memphis, TN Total Hip Arthroplasty, the University of Tennessee
 - 1991 Toronto, Canada AAOS: Total Hip Arthroplasties
 - 1991 Kauai, Hawaii Total Joint Reconstructive Surgery, 1991
 - 1991 Detroit, MI Herbert E. Pedersen, M.D. Memorial Lectureship
 - 1991 Sydney and Melbourne, Australia, Auckland, N. Zealand. Total Hip Replacement
 - 1992 Vail, CO 6th Annual Vail Course
 - 1992 Boston, MA Osteotomy of the Hip and Knee
 - 1992 Sapporo, Fukuoka, Nagasaki, Chiba, Japan
 - 1992 Japan Orthopaedic Society
 - 1992 Berne, Switzerland Closed Meeting of the International Hip Society
 - 1992 Toronto, Ont. Canada 9th Combined Meeting, American AOA & Canadian Orthop. Assn
 - 1992 Indianapolis, IN 1992 Hip Society Summer Meeting
 - 1992 Iowa Johnston Lectureship
 - 1992 New York, NY 86th Annual Interurban Orthopaedic Society
 - 1992 San Antonio, TX Bristol-Myers Squibb Orthopaedic Research Symposium
 - 1992 Scottsdale, AZ 9th Annual State of the Art in Total Joint Replacement
 - 1993 Vail, CO 7th Annual Vail Course
 - 1993 Baltimore, MD Johns Hopkins Conference, the 1993 Lee Riley Lecture
 - 1993 Hamilton, Bermuda 1993 Pennsylvania Orthopaedic Society
 - 1993 Houston, TX 1993 - Total Hip Replacement
 - 1993 Boston, MA Boston Orthopaedic Club
 - 1993 France, Italy and Belgium 1993 European International Hip Course
 - 1993 New Orleans, LA Ray J. Haddad, Jr. Memorial Lectureship
 - 1993 Rochester, MN Mark B. Coventry Award Visiting Professorship
 - 1993 San Diego, CA American Orthopaedic Association
 - 1993 Middlesex, England Third Annual Meeting, Seddon Society
 - 1993 Osaka, Tokyo Japan and Seoul Korea International Hip Society and SICOT
 - 1993 Madison, WI 1993 Fall Visiting Professor Lectureship
 - 1993 London, Ont. Canada 1993 Interurban
 - 1993 Dartmouth, NH 5th Annual Conference on Techniques and Science for Successful Joint Arthroplasty
 - 1993 Chicago, IL Current Concepts in Total Hip Revision Surgery
 - 1993 Riyadh, Saudi Arabia 1993 International Symposium on Current Trends in Orthopaedics

- 1994 Vail, CO 8th Annual Vail Course
- 1994 Oklahoma City and Tulsa, OK 1994 Oklahoma Univ. Health Science Center Grand Rounds
- 1994 Toronto, Ont. Canada Toronto Total Hip Arthroplasty - Controversies in THR
- 1994 San Francisco, CA Total Hip Replacement Current Issues
- 1994 Dallas, TX 1994 Baylor Orthopaedic Visiting Professorship
- 1994 Danville, PA Geisinger Medical Center
- 1994 Hilton Head Island, SC Total Hip and Total Knee Replacement Symposium
- 1994 Boston, MA International Hip Society
- 1994 Boston, MA Osteotomy of the Hip and Knee
- 1994 Montreal, Canada Ultra High Molecular Polyethylene Symposium
- 1994 Florence, Perugia, Montecatini, Pistraligie, Italy International Course on Problems of Fixation and Wear in Joint Replacement
- 1994 Little Rock, AR Total Hip Replacement Symposium
- 1994 New York, NY Hip Society Meeting
- 1994 Washington, D. C. National Institutes of Health THR Consensus Meeting
- 1994 Portland, ME Maine Medical Center Grand Rounds
- 1994 Chicago, IL AAOS Academy Course
- 1994 Brooklyn, NY Brooklyn Orthopaedic Society
- 1994 Orlando, FL 10th Annual Current Concepts in Joint Replacement
- 1995 Vail, CO 9th Annual Vail Course

Invited Teaching Presentations at National Organizations, Subsequently Published

- 1976 Harris WH, Chapin Oration: Detection and prevention of thromboembolic disease. Subsequently published in Rhode Island Medical Journal 1976; 59: 452-3, 466-70.
- 1979 Harris WH, Moyon B, Lahey P, Weinberg E, [The influence of direct electric current on bone formation (author's transl)]. *Revue De Chirurgie Orthopedique Et Reparatrice De L Appareil Moteur* 1979; 65: 311-316.
- 1978 Moyon B, Lahey P, Weinberg E, Harris WH. [Time study of the reaction of non-fractured bone under osteosynthesis plates. Effect on bone of removal of the material]. *Acta Orthopaedica Belgica* 1978;44: 757-766.
- 1980 Moyon BJ, Lahey PJ, Weinberg EH, Rumelhart C, Harris WH, Effects of application of metal plates to bone. Comparison of a rigid with a flexible plate. *Acta Orthopaedica Belgica* 1980; 46: 806-815.
- 1993 Harris WH. Keynote address: Clinical considerations. Subsequently published in Chapter 1. In: Morrey BF Ed. Biological, material, and mechanical considerations of joint replacement. Bristol-Myers Squibb/Zimmer Orthopaedic Symposium Series. New York: Raven Press, 1993: 1-11.
- 1995 Harris WH. Improved long-term results of femoral fixation in revision surgery using modern cementing. In: Galante JO, Rosenberg SAG, Callaghan JJ, eds. Total Hip Revision Surgery. Bristol-Myers-Squibb/Zimmer Orthopaedic Symposium Series. New York: Raven Press, 1995:289-294.
- 1995 Harris WH, Rubash, HE. Discussion of acetabular revision. In: Galante JO, Rosenberg SAG, Callaghan JJ, eds. Total Hip Revision Surgery. Bristol-Myers-Squibb/Zimmer Orthopaedic Symposium Series. New York: Raven Press, 1995:347-

350.

b. Professional Leadership Roles Related to Teaching

Year Name of organization

1970 - 2000, thirty consecutive years, organized the Total Hip Replacement Surgery Course, for Harvard Medical School, chose topics, selected and invited speakers, organized syllabus, supervised the course, lectured and frequently gave live surgical demonstrations via telesurgery.

Synopsis of the Academic Contributions to Orthopaedic Surgery by William Harris

In addition to the conventional CV and bibliography, it may be of value to present a synopsis of the major areas of Dr. Harris's work. In association with many, very creative colleagues and collaborators he has been fortunate to make major contributions to Orthopaedic Science in the following areas:

The first successful human limb replantation

The reduction of fatal pulmonary emboli following hip surgery

Many technical advances in total hip arthroplasty

The development of techniques to solve the problem of adult osteoarthritis secondary to developmental dislocation of the hip

The instrumented hip prosthesis which measured directly, for the first time, pressures in human articular cartilage in vivo

The unraveling of the mystery of the mechanism of periprosthetic osteolysis

The creation of a leading solution to periprosthetic osteolysis with the development of a highly crosslinked polyethylene

The new understanding of the etiology of osteoarthritis of the hip, namely that all or nearly all cases are secondary to developmental abnormalities.

And in conjunction with that hypothesis and the insights of Ganz and his followers come the possibility that in the future, many cases which now lead to total hip arthroplasty may never reach that state of deterioration of the joint

Helping to shape the minds and practices of 100 bright younger leaders in hip surgery worldwide.

Publications:

Refereed Articles

1. Horst, J.R. and Harris, W.H.: Patellectomy and Fascial Grafting in Certain Cases of Long Standing Disruption of the Quadriceps Mechanism. J. Bone Joint Surg., 39-A: 403-407, 1957.

2. Cohen, J. and Harris, W.H.: The Three-Dimensional Anatomy of Haversian Systems. *J. Bone Joint Surg.*, 40-A: 419-434, 1958.
3. Harris, William H.: A Microscopic Method of Determining Rates of Bone Growth. *Nature* 188: 1038-1039, 1960.
4. Harris, W.H., Dudley, H.R., Jr., and Barry, R.J.: The Natural History of Fibrous Dysplasia. *J. Bone Joint Surg.*, 44-A: 207-233, 1962.
5. Harris, W.H., Jackson, R.H., and Jowsey, J.: The in vivo Distribution of Tetracyclines in Canine Bone. *J. Bone Joint Surg.*, 44-A: 1308-1320, 1962.
6. Bell, H.M., Slater, E.M. and Harris W.H.: Regional Anesthesia with Intravenous Lidocaine. *JAMA* 186: 544-549, 1963.
7. Jacobs, R., Harris, W.H., Katz, E.P. and Glimcher, M.J.: The Interaction Between Tetracycline and Reconstituted Guinea-Pig-Skin Collagen In Vitro. *Biochim Biophys Acta* 86:579-587, 1964.
8. Harris, W.H., Travis, D.F., Friberg, U., Radin, E.: The In Vivo Inhibition of Bone Formation by Alizarin Red S. *J. Bone Joint Surg.*, 46-A: 493-508, 1964.
9. Harris, W.H. and Nagant de Deuxchaisnes, C.: Controlled In Vivo Inhibition of Bone Formation. In: *Proceedings of the Second European Symposium on Calcified Tissues*, University of Liege, Ed. L.J. Richelle and M.J. Dallegmagne, pp. 193-197, 1965.
10. Harris, W.H. and Aufranc, O.E.: Mold Arthroplasty in the Treatment of Hip Fractures Complicated by Sepsis. *J. Bone Joint Surg.*, 47-A:31-41, 1965.
11. Harris, W.H., Slater, E.M., Bell, H.M.: Regional Anesthesia by the Intravenous Route. *JAMA*, 194:1273-1276, 1965.
12. Harris, W.H., Jones, W.N., Aufranc, O.E.: *Fracture Problems*. St. Louis: C.V. Mosby Co., 1965.
13. Malt, R.A. and Harris, W.H.: *Replantation of Limbs*. Somerville, NJ, Ethicon, Inc., 1965.
14. Salzman, E.W., Harris, W.H., DeSanctis, R.W.: Anticoagulation for Prevention Thromboembolism Following Fractures of the Hip. *N. Engl. J. Med.*, 275:122-130, 1966.
15. Harris, W.H. Sinking Prostheses. *Surg. Gynecol. Obstet.*, 123: 1297-1302, 1966.
16. Harris, W.H., Salzman, E.W., DeSanctis, R.W.: The Prevention of Thromboembolic Disease by Prophylactic Anticoagulation. *J. Bone Joint Surg.*, 49-A: 81-89, 1967.

17. Harris, W.H.: A New Lateral Approach to the Hip Joint. *J. Bone Joint Surg.* 49-A: 891-898, 1967.
18. Harris, W.H., Haywood, E.A., Hamblen, D.L. Lavorgna, J.: Analysis of Covariance of Bone Formation Rates by Specific Skeletal Sites and Over Time. In: *Proceedings of the Fifth European Symposium on Calcified Tissues, Bordeaux, Societe d'Edition d'Enseignement Superieur*, Editors: G. Milhaud, M. Owen and J.J. Blackwood. Pp. 415-421, 1968.
19. Harris, W.H., Cole, D.W., Mital, M. Laver, M.B.: Methemoglobin Formation and Oxygen Transport Following Intravenous Regional Anesthesia Using Prilocaine. *Anesthesiology*, 29:65-69, 1968.
20. Harris, W.H., Haywood, E.A., Lavorgna, J., Hamblen, D.L.: Spatial and Temporal Variations in Cortical Bone Formation in Dogs. *J. Bone Joint Surg.*, 50-A: 1118-1128, 1968.
21. Harris, W.H., Hamblen, D.L., Ojemann, R.G.: Traumatic Disruption of Cervical Intervertebral Disk from Hyperextension Injury. *Clin. Orthop.*, 60:163-167, 1968.
22. Harris, W.H., Lavorgna, J., Hamblen, D.L., Haywood, E.A.: The Inhibition of Ossification In Vivo. *Clin. Orthop.*, 61:52-60, 1968.
23. Harris, W.H., Heaney, R.P.: Skeletal Renewal and Metabolic Bone Disease. A Medical Progress Report. *N Engl. J. Med.*, 280:193-202, 253-259, 303-311, 1969.
24. Harris, W.H.: Traumatic Arthritis of the Hip after Dislocation and Acetabular Fractures: Treatment by Mold Arthroplasty. An End-Result Study Using a New Method of Result Evaluation. *J Bone Joint Surg.*, 51-A:737-755, 1969.
25. Harris, W.H.: Surgical Approach and Technique of Cup Arthroplasty. *Surg. Clin. No. Am.*, 763-774, 1969.
26. Harris, W.H.: Role of Interochanteric Osteotomy in the Treatment of Arthritis of the Hip. *Surg. Clin. No. Am.*, 49A: 775-778, 1969.
27. Harris, W.H.: Managing Degenerative Arthritis of the Hip. *Postgrad. Med.*, 45: 242-244, 1969.
28. Harris, W.H. and Heaney, R.P.: Effect of Growth Hormone on Skeletal Mass in Adult Dogs. *Nature* 223:403-404, 1969.
29. Hamblen, D.L. and Harris, W.H.: Mould Arthroplasty in the Treatment of Septic Arthritis of the Hip. In: *Proceedings of the Royal Society of Medicine*, 62:14, 1969.
30. Harris, W.H.: Choice of Anesthetic Agents for Intravenous Regional Anesthesia. *Acta Anesth Scandinav.*, Suppl. XXXVI, pp.47-52, 1969.

31. Harris, W.H.: Unusual Application of Compression. SICOT XI Congress, Mexico, pp. 521-523, 1969.
32. Harris, W.H. and Heaney, R.P.: Skeletal Renewal and Metabolic Bone Disease, Boston: Little, Brown and Co., 1970.
33. Harris, W.H. and Aufranc, O.E.: A New Splint for Balanced Suspension. Clin. Orthop., 72:216-218, 1970.
34. Harris, W.H.: Power Instrumentation for Cup Arthroplasty. Clin. Orthop., 72:219-223, 1970.
35. Harris, W.H.: The Incidence and Prevention of Thromboembolic Disease. In: AAOS Instructional Course Lectures, St. Louis: C.V. Mosby Co., pp. 36-40, 1970.
36. Salzman, E.W., Harris, W.H., De Sanctis, R.W.: Reduction in Venous Thromboembolism by Agents Affecting Platelet Function. N. Engl. J. Med., 284:1287-1292, 1971.
37. Harris, W.H.: Surgical Management of Arthritis of the Hip. Seminars in Arthritis and Rheumatism. 1:35-57, 1971.
38. Harris, W.H.: Use of Cup Arthroplasty in Treatment of Severe Osteoarthritis of the Hip. In: AAOS Instructional Course Lectures, St. Louis: C.V. Mosby Co. XX: 160-167, 1971.
39. Graham, J. and Harris, W.H.: Paget's Disease Involving the Hip Joint. J. Bone and Joint Surg., 53-B:650-659, 1971.
40. Harris, W.H.: A New Total Hip Implant. Clin. Orthop., 81:105-113, 1971.
41. Harris, W.H. and Weinberg, E.H.: Microscopic Method of Measuring Increases in Cortical Bone Volume and Mass. Calcif. Tissue Res., 8:190-196, 1972.
42. Harris, W.H.: Clinical Results Using the Mueller-Charnley Total Hip Prosthesis. Clin. Orthop., 86:95-101, 1972.
43. Harris, W.H., Salzman, E.W., DeSanctis, R.W., Coutts, R.D.: Prevention of Venous Thromboembolism Following Total Hip Replacement. JAMA 220: 1319-1322, 1972.
44. Malt, R.W. and Harris, W.H.: Replantation of Limbs. In: Transplantation. Philadelphia: Lea and Febiger, Ed. J.S. Najarian and R.L. Simmons, pp. 711-719, 1972.
45. Coutts, R.D., Schiller, A.L., Harris, W.H.: Subclinical Osteomyelitis of the Femoral Head. Clin. Orthop., 86:68-72, 1972.

46. Harris, W.H., Heaney, R.P., Jowsey, J., Cockin, J., Akins, C., Graham, J., Weinberg, E.H.: Growth Hormone: The Effect on Skeletal Renewal in the Adult Dog. Part I. Morphometric Studies. *Calcif. Tiss. Res.*, 10:1-13, 1972.
47. Heaney, R.P., Harris, W.H., Cockin, J., Weinberg, E.H.: Growth Hormone. The Effect on Skeletal Renewal in the Adult Dog. Part II. Mineral Kinetic Studies. *Calcif. Tiss. Res.*, 10:14-22, 1972.
48. Lavorgna, J.J., Burstein, N.A., Schiller, A.L., Harris, W.H.: Carcinogenesis of Plastics Used in Orthopaedic Surgery. *Clin. Orthop.*, 88:223-227, 1972.
49. Malt, R.A., Remensnyder, J.P., Harris, W.H.: Long-term Utility of Replanted Arms. *Annals of Surgery* 176: 334-342, 1972.
50. Harris, W.H.: Answers to Dr. Frost's Letter to the Editor. *Calcif. Tiss. Res.*, 10: 254-255, 1972.
51. Harris, W.H.: Extensive Exposure of the Hip Joint. *Clin. Orthop.*, 91:58-62, 1973.
52. Harris, W.H.: A "Second Generation" Total Hip Replacement. *Orthop. Clin. Of No. Am.*, 4:513-522, 1973.
53. Harris, W.H., Sara, S.M., Salzman, E.W., DeSanctis, R.W., Waltman, A.C., Athanasoulis, C.: Impedance Phlebography: A Correlation with Lower Limb Venography in the Diagnosis of Deep Vein Thrombosis. *Surgery* 74:385-389, 1973.
54. Coutts, R.D., Harris, W.H., Weinberg, E.H.: Compression Plating: Experimental Study of the Effect on Bone Formation Rates. *Acta Orthop. Scand.*, 44:256-262, 1973.
55. Harris, W.H.: Preliminary Report of Results of Harris Total Hip Replacement. *Clin. Orthop.*, 95:168-173, 1973.
56. Harris, W.H., Heaney, R.P., Weinberg, E.H., Cockin, J., Akins, C.M., Graham, J.: Skeletal Responses of Young Adult and Aged Dogs to Growth Hormone. In: *Proceedings of the 9th European Symposium on Calcified Tissues*. Vienna: Verlag H. Egermann Facta-Publication, Ed. H. Czitober, J. Eschberger. Pp. 75-80, 1973.
57. Harris, W.H., Malt, R.A.: Late Results of Human Limb Replantation. *J. Trauma*, 14:44-52, 1974.
58. Carlson, E.C., Mann, R.W., Harris, W.H.: A Radio Telemetry Device for Monitoring Cartilage Surface Pressure in the Human Hip. *Biomed. Eng. BME-21*:257-264, 1974.

59. Demirjian, Z., Sara, M., Stulberg, D., Harris, W.H.: Disseminated Intravascular Coagulation in Patients Undergoing Orthopaedic Surgery. *Clin. Orthop.*, 102:174-180, 1974.
60. Davis, N.J., Jennings, J.J., Harris, W.H.: Induced Hypotensive Anesthesia for Total Hip Replacement. *Clin. Orthop.*, 101:93-98, 1974.
61. Harris, W.H.: Indications for Major Elective Reconstructive Surgery of the Hip in the Adult. In: *AAOS Instructional Course Lectures*. St. Louis: C.V. Mosby Co., XXIII: 143-149, 1974.
62. Harris, W.H.: Total Hip Replacement for Failed Endoprostheses and Cup Arthroplasty: Technical Considerations. In: *AAOS Instructional Course Lectures*. St. Louis: C.V. Mosby Co., XXIII: 154-163, 1974.
63. Harris, W.H.: Thromboembolic Disease in Elective Reconstructive Surgery in the Adult Hip. In: *AAOS Instructional Course Lectures*. St. Louis: C.V. Mosby Co., XXIII: 242-244, 1974.
64. Carlson, C.E., Mann, R.W., Harris, W.H.: A Look at the Prosthesis-Cartilage Interface: Design of the Hip Prosthesis Containing Pressure Transducers. *J. Biomed. Mater. Res.* 8:261-269, 1974.
65. Harris, W.H., Editor: *The Hip, Proceedings of the Second Open Scientific Session of the Hip Society*, St. Louis: C.V. Mosby Co., 1974.
66. Stulberg, S.D., Harris, W.H.: Acetabular Dysplasia and Development of Osteoarthritis of the Hip. In: *The Hip, Proceedings of the Second Open Scientific Session of the Hip Society*, Ed. W.H. Harris, St. Louis: C.V. Mosby Co., pp. 82-93, 1974.
67. Harris, W.H.: Total Hip Replacement for Congenital Dysplasia of the Hip: Technique. In: *The Hip, Proceedings of the Second Open Scientific Session of the Hip Society*, ed. W.H. Harris, St. Louis: C.V. Mosby Co., pp. 251-265, 1974.
68. Harris, W.H., Salzman, E.W., Athanasoulis, C., Waltman, A.C., Baum, S., DeSanctis, R.W.: Comparison of Warfarin, Low-Molecular-Weight Dextran, Aspirin, and Subcutaneous Heparin in Prevention of Venous Thromboembolism Following Total Hip Replacement. *J. Bone Joint Surg.*, 56-A:1552-1562, 1974.
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