

Curriculum Vitae

Thomas Paul Schmalzried, M.D.

**Board Certified Orthopaedic Surgeon
Hip and Knee Arthritis Specialist**

Positions

Physician Specialist, Harbor-UCLA Medical Center, Torrance, CA

Medical Director, Joint Replacement Institute at St. Vincent Medical Center, Los Angeles, CA; Retired, January 24, 2020

Education and Training

Stanford University, 1976-1980: B.A., Human Biology

Phi Beta Kappa
Distinction and Departmental Honors
Roscoe Maples Scholarship
3 Year Varsity Letterman (Basketball)
Rhodes Scholarship Nominee

UCLA Medical School, 1980-1984

Alpha Omega Alpha
Bicknell Scholarship
Lange Medical Book Award

Post-Graduate

Internship, Surgery, UCLA; 1984-1985
Residency, Orthopaedics, UCLA; 1985-1990

Fellowships

N.I.H. Research Fellow in Joint Replacement, UCLA; 1986-1987
Hip and Implant Fellow, Harvard University; 1990-1991
Assistant in Orthopaedic Surgery, Mass. General Hospital; 1990-1991

Honors and Awards

1991 John Charnley Award from the Hip Society:

"The Mechanism of Loosening of Cemented Acetabular Components in Total Hip Arthroplasty: Analysis of Specimens Retrieved at Autopsy"

1991 AOA-Zimmer Travel Award for Orthopaedic Fellows:

"The New Number One Problem in Total Hip Replacement"

1993 John J. Fahey North American Traveling Fellow of the American Orthopaedic Association (AOA)

1994 Presidential Guest Speaker, Orthopaedic Research Society

"Polyethylene Issues in Total Hip Replacement"

1994 John Charnley Award from the Hip Society

"The Origin of Sub-Micron Polyethylene Wear Particles in Total Hip Replacement"

1994 Orthopaedic Research and Education Foundation (OREF) Research Grant

"Canine Model of the Effective Joint Space"

1995 Presidential Guest Speaker, California Orthopaedic Association

"Wear Debris as the Predominant Cause of Late Failure in Prosthetic Joints"

1996 Earl C. Marmor Lecture, Albert Einstein Medical Center (Visiting Professor)

"Wear Issues in Total Hip Arthroplasty"

1997 Visiting Professor, Texas Tech. University Health Sciences Center

1998 Elected to Active Membership in The Hip Society

1998 Visiting Professor, University of Pennsylvania

1999 Visiting Professor, University of Alabama, Birmingham

1999 Elected to Active Membership in The American Orthopaedic Association

2000 John Charnley Award from the Hip Society

"Wear is a Function of Use, Not Time"

2001 Visiting Professor, University of New Mexico

2001 Visiting Professor Medical University of South Carolina

2004 Presidential Guest, Japanese Orthopaedic Society

2004 Elected to Active Membership in the International Hip Society

2007 Visiting Professor University of Missouri, Kansas City

2008 Visiting Professor University of Tenn. at Chattanooga

2009 Presidential Guest, Korean Knee Society

2009 Presidential Guest, Japanese Orthopaedic Society

2009 Visiting Professor University of Tenn. at Chattanooga

2010 Elected to Active Membership in The Knee Society

2010 Visiting Professor University of Tenn. at Chattanooga

2010 Presidential Guest, Korean Orthopaedic Association

The 100 classic papers of orthopaedic surgery: a bibliometric analysis. Kelly JC, et al. J Bone Joint Surg Br. 2010 Oct;92(10):1338-43. **No. 25: Schmalzried TP et al.**

100 most cited articles in orthopaedic surgery. Lefaivre KA, Shadgan B, O'Brien PJ. Clin Orthop Relat Res. 2011 May;469(5):1487-97. **No. 26: Schmalzried TP et al.**

2011 Visiting Professor University of Tenn. at Chattanooga

2012 Frank Stinchfield Award from the Hip Society

“Decreasing Patient Activity with Aging:
Implications for Cross-Linked Polyethylene Wear”

2012 Visiting Professor Stanford University

2012 Presidential Guest Speaker, Clinical Orthopaedic Society

2013 Guest Speaker, Swedish Orthopedic Institute Seattle

2015 Visiting Professor University of Tenn. at Chattanooga

2018 Guest Speaker, Forever Active Forum, Melbourne, Australia

2019 Presidential Guest Speaker, Australian Orthopaedic Association, Canberra

Licensures

California Medical License Number G55401
California DEA Number AS3243211

Board Certification

Diplomat of the American Board of Orthopaedic Surgery; July 9, 1993
Recertified through 12/31/2024; participating in MOC

Memberships and Societies

Orthopaedic Research Society; Local Area Host, 1999; Board of Directors, 2000-2003
California Orthopaedic Association
American Academy of Orthopaedic Surgeons; Board of Directors, 1998-2000
Western Orthopaedic Association; Board of Directors, 1996-97
CAP-MPT Education Committee, 1998-2001
The Hip Society; Membership Committee Chair 2007-2008
International Hip Society
The Knee Society
Association of Arthritic Hip and Knee Surgeons; Board of Directors, 2000-2003
The American Orthopaedic Association; Critical Issues Committee, 2001-2003
Trustee, Orthopaedic Research and Education Foundation, 2008-2015

American Academy of Orthopaedic Surgeons (AAOS) Activities

Board of Directors, 1998-2000

Chairman, Task Force on Gifts and Lectureships
Chairman, Task Force on the Internet and the AAOS Website

Scientific Exhibits

The Extensor Apparatus of the Knee:
Decreased Mechanical Advantage Following Total Knee Replacement
63rd Annual Meeting, Atlanta, GA, 1996

Access Disease: The Pathophysiology of Osteolysis
63rd Annual Meeting, Atlanta, GA, 1996

Factors Contributing to the Variability of Clinical Wear Rates of
Polyethylene Implants
64th Annual Meeting, San Francisco, CA, 1997

Long-Term Experience with Precision-Fit Hemi-Resurfacing for
Osteonecrosis of the Hip
64th Annual Meeting, San Francisco, CA, 1997

Variables Affecting Utilization of Orthopaedic Specialty Services
65th Annual Meeting, New Orleans, LA, 1998

The Multi-Factorial Nature of Polyethylene Wear *In Vivo*
66th Annual Meeting, Anaheim, CA, 1999

Committees

Basic Science Evaluations Committee, 1996-1999
Internet Communications Committee, 2000-2002

AAOS and NIH Consensus Workshop

"Considerations of Implant Wear for the Future of Total Joint
Replacement"
September 1995

"Wear 2000"
October 2000

Publications

1. Nilsson, O.S.; Urist, M.R.; Dawson, E.G.; Schmalzried, T.P., and Finerman, G.A.M.: Bone repair induced by bone morphogenetic protein in ulnar defects in dogs. *J. Bone Joint Surg.*, 68B(4):635-642, 1986.
2. Urist, M.R.; Nilsson, O.; Rasmussen, J.; Hirota, W.; Lovell, T.; Schmalzried [Sic], T., and Finerman, G.A.M.: Bone regeneration under the influence of a bone morphogenetic protein (BMP) beta tricalcium phosphate (TCP) composite in skull Trephine defects in dogs. *Clin. Orthop.*, 214:295-304, 1987.
3. Schmalzried, T.P., and Finerman, G.A.M.: Osteolysis in aseptic failure. *In* Non-Cemented Total Hip Arthroplasty. Fitzgerald, R.H., Jr., ed. Raven Press, New York, 1988, 303-318.
4. Johnson, E.E.; Urist, M.R.; Schmalzried, T.P.; Chotivichit, A.; Huang, H.K., and Finerman, G.A.M.: Autogeneic cancellous bone grafts in extensive segmental ulnar defects in dogs. *Clin. Orthop.*, 243:254-265, 1989.
5. Markolf, K.L.; Schmalzried, T.P., and Ferkel, R.D.: Torsional strength of the ankle *in vitro*: The supination-external-rotation injury. *Clin. Orthop.* 246:266-272, 1989.
6. Schmalzried, T.P.; Grogan, T.J.; Neumeier, P.A., and Dorey, F.J.: Metal removal in a pediatric population: Benign procedure or necessary evil? *J. Ped. Orthop.* 11:72-76, 1991.
7. Schmalzried, T.P., and Amstutz, H.C.: Nerve injury and total hip arthroplasty. *In* Operative Nerve Repair and Reconstruction. Gelberman, R.H., ed. J.B. Lippincott Company, 1991, 1245-1254.
8. Schmalzried, T.P., and Finerman, G.A.M.: Bone grafting in total hip arthroplasty. *In* Hip Arthroplasty. Amstutz, H.C., ed. Churchill Livingstone, New York, 1991, 335-356.
9. Nuwer, M.R., and Schmalzried, T.P.: Nerve palsy: Etiology, prognosis, and prevention. *In* Hip Arthroplasty. Amstutz, H.C., ed. Churchill Livingstone, New York, 1991, 415-427.
10. Nasser, S.; Schmalzried, T.P., and Amstutz, H.C.: Sepsis prevention. *In* Hip Arthroplasty. Amstutz, H.C., ed. Churchill Livingstone, New York, 1991, 449-455.

11. Schmalzried, T.P.; Amstutz, H.C., and Dorey, F.J.: Nerve palsy associated with total hip replacement: Risk factors and prognosis. *J. Bone Joint Surg.* 73-A:1074-1080, 1991.
12. Schmalzried, T.P.; Amstutz, H.C.; Au, M., and Dorey, F.J.: Incidence of deep sepsis in total hip arthroplasty: Survivorship analysis over 17 years from one hospital. *J. Arthroplasty* 6:S47-51, 1991.
13. Schmalzried, T.P.; Kwong, L.M.; Jasty, M.; Sedlacek, R.C.; Haire, T.C.; O'Connor, D.O.; Bragdon, C.R.; Kabo, M.; Malcolm, A., and Harris, W.H.: The mechanism of loosening of cemented acetabular components in total hip arthroplasty: Analysis of specimens retrieved at autopsy. *Clin. Orthop.* 274:60-78, 1992.
14. Schmalzried, T.P. and Eckardt, J.J.: Spontaneous gluteal artery rupture resulting in compartment syndrome and sciatic neuropathy. *Clin. Orthop.* 275:253-257, 1992.
15. Schmalzried, T.P.; Neal, W.C., and Eckardt, J.J.: Gluteal compartment and crush syndromes. *Clin. Orthop.* 277:161-165, 1992.
16. Schmalzried, T.P.; Amstutz, H.C.; Au, M., and Dorey, F.J.: Etiology of deep sepsis in total hip arthroplasty: The significance of hematogenous and recurrent infections. *Clin. Orthop.* 280:200-207, 1992.
17. Schmalzried, T.P.; Jasty, M., and Harris, W.H.: Periprosthetic bone loss in total hip arthroplasty: The role of polyethylene wear debris and the concept of the effective joint space. *J. Bone and Joint Surg.* 74-A:849-863, 1992.
18. Schmalzried, T.P. and Harris, W.H.: The Harris-Galante porous-coated acetabular component with screw fixation: Radiographic analysis of eighty-three primary hip replacements at a minimum of five years. *J. Bone and Joint Surg.* 74-A:1130-1139, 1992.
19. James, S.; Schmalzried, T.P.; McGarry, F.J., and Harris, W.H.: Extensive porosity at the cement-femoral prosthesis interface: A preliminary study. *J. Biomed. Biomat. Res.* 27:71-78, 1993.
20. Schmalzried, T.P. and Finerman, G.A.M.: The use of inductive implants for treating fractures. *In* *Fractures and Dislocations*. Gustillo, R.B., Kyle, R.F., Templeman, D.C. eds., Mosby - Year Book Inc., 1993, 141-152.
21. Schmalzried, T.P.; Maloney; W.J., Jasty, M.; Kwong, L.M., and Harris, W.H.: Autopsy studies of the cement-bone interface in well-fixed cemented total hip replacements. *J. Arthroplasty* 8:179-188, 1993.

22. Schmalzried, T.P.; Jasty, M.; Rosenberg, A., and Harris, W.H.: Histologic identification of polyethylene wear debris using oil red o stain. *J. Applied Biomat.* 4:119-125, 1993.
23. Schmalzried, T.P. and Harris W.H.: The hybrid total hip replacement: A six and one half-year follow-up study. *J. Bone and Joint Surg.* 75-B:608-615, 1993.
24. Maloney, W.J.; Schmalzried, T.P.; Jasty, M.; Kwong, L.M., and Harris,W.H.: Retrieval studies. In *The Cement Interface*. Morey, B.F., ed., Raven Press Ltd., New York, New York, 1993, 51-69.
25. Guttman, D.; Schmalzried, T.P.; Jasty, M., and Harris, W.H.: Light microscopic identification of submicron polyethylene wear debris. *J. Applied Biomat.* 4:303-307, 1993.
26. Schmalzried, T.P. and Guttman, D.: Critical care of the orthopaedic patient. In *Critical Care. Diagnosis and Management*. Bongard, F.S. and Sue, D.Y. eds. Appleton and Lange, Norwalk, CT, 1994, 731-740.
27. Campbell, P.; Ma, S.; Schmalzried, T., and Amstutz, H.C.: Tissue digestion for wear particle isolation. *J. Biomed. Mat. Res.* 28:523-526, 1994.
28. Schmalzried, T.P.; Guttman, D.; Grecula, M., and Amstutz, H.C.: The relationship between the design, position, and articular wear of acetabular components inserted without cement in the development of pelvic osteolysis. *J. Bone and Joint Surg.* 76-A:677-688, 1994.
29. Amstutz, H.C.; Grigoris, P.; Safran, M.; Grecula, M.J.; Campbell, P.A., and Schmalzried, T.P.: Precision-fit surface hemiarthroplasty for femoral head osteonecrosis. Long-term results. *J. Bone and Joint Surg.* 76-B:423-427, May 1994.
30. Schmalzried, T.P.; Wessinger, S.A.; Hill, G.E., and Harris, W.H.: The Harris-Galante porous (HGP) acetabular component press-fit without screw fixation: Five-year radiographic analysis of primary cases. *J. Arthroplasty* 9:235-242, 1994.
31. Schmalzried, T.P.; Jasty, M.; Rosenberg, A., and Harris, W.H.: Polyethylene wear debris and tissue reactions in knee as compared to hip replacement prostheses. *J. Applied Biomat.* 5:185-190, 1994.
32. Campbell, P.; Ma, S.; Yeom, B.; McKellop, H.; Schmalzried, T.P., and Amstutz, H.C.: Isolation of predominantly submicron sized UHMWPE particles from periprosthetic tissues. *J. Biomed. Mat. Res.*, 29:127-131, 1995.

33. McKellop, H.A.; Campbell, P.; Park, S.; Schmalzried, T.P.; Amstutz, H.C. and Sarmiento, A.: The origin of sub-micron polyethylene wear debris in total hip arthroplasty. *Clin. Orthop.*, 311:3-20, 1995.
34. Schmalzried, T.P. and Brown, I.C.: Mechanisms of prosthetic hip joint failure. *In* Revision Total Hip Arthroplasty. Galante, J., ed., pp. 91-107. Raven Press Ltd., New York, New York, 1995.
35. Navarro, R.A.; Schmalzried, T.P.; Amstutz, H.C., and Dorey, F.J.: Surgical approach and nerve palsy in total hip arthroplasty. *J.Arthroplasty*, 10:1-5, 1995.
36. Maloney, W.J.; Smith, R.L.; Schmalzried, T.P.; Chiba, J.; Huene, D., and Rubash, H.: Isolation and characterization of wear particles generated in patients who have had failure of a hip arthroplasty without cement. *J. Bone and Joint Surg.*, 77-A:1301-1310, Sept. 1995.
37. Schmalzried, T.P.: Retaining the capitated contract. *Orthopaedics Today*, 15:17-19, Dec., 1995.
38. Grecula, M.J.; Grigoris, P.; Schmalzried, T.P., Dorey, F., and Amstutz, H.C.: Endoprostheses for osteonecrosis of the femoral head. A comparison of four models in young patients. *Inter. Orthop. (SICOT)* 19:137-143, 1995.
39. Schmalzried, T.P.; Peters, P.C.; Maurer, B.T.; Bragdon, C.R., and Harris W.H.: Long duration metal-on-metal total hip replacements with low wear of the articulating surfaces. *J. Arthroplasty*, 11:322-331, 1996.
40. Mai, M.T.; Schmalzried, T.P., and Amstutz, H.C.: The contribution of frictional torque to loosening at the cement-bone interface in Tharies hip replacements. *J. Bone and Joint Surg.*, 78-A:505-511, 1996.
41. Wright, T.M. and Goodman, S.B., eds.: *Implant Wear: The Future of Total Joint Replacement*. American Academy of Orthopaedic Surgeons, Rosemont, Il., 1996.
42. Schmalzried, T.P.; Szuszczewicz, E.S.; Akizuki, K.H.; Petersen, T.D., and Amstutz, H.C.: Factors correlating with long-term survival of McKee-Farrar total hip prostheses. *Clin. Orthop.* 329S:S48-S59, 1996.
43. Schmalzried, T.P.; Fowble, V.A.; Ure, K.J., and Amstutz, H.C.: Metal on metal surface replacement of the hip: technique, fixation and early results. *Clin. Orthop.* 329S:S106-S114, 1996.

44. Jacobs, J.J.; Skipor, A.; Doorn, P.F.; Campbell, P.; Schmalzried, T.P.; Black, J., and Amstutz, H.C. Cobalt and chromium concentrations in patients with metal on metal total hip replacements. *Clin. Orthop.* 329S:S256-S263, 1996.
45. Amstutz, H.C. et al.: Metal on metal total hip replacement workshop consensus document. *Clin. Orthop.* 329S:S297-303, 1996.
46. Schmalzried, T.P.: Arthritis. *In* *Surgery. A Clinical Approach.* Bongard, F.S.; Stamos, M.J.; Passaro, E. eds. Churchill Livingstone, New York, 1997, 517-527.
47. Treuting, R.J.; Waldman, D.; Hooten, J.; Schmalzried, T.P., and Barrack, R.L.: Prohibitive failure rate of the total articular replacement arthroplasty at five to ten years. *Am. J. Orthop.* 26:114-118, 1997.
48. Schmalzried, T.P.; Akizuki, K.H.; Fedenko, A.N., and Mirra, J.: The role of access of joint fluid to bone in periarticular osteolysis. *J. Bone and Joint Surg.* 79-A:447-452, 1997.
49. Amstutz, H.C.; Fowble, V.; Schmalzried, T.P., and Dorey, F.J.: Short-course indomethacin prevents heterotopic ossification in a high-risk population following total hip arthroplasty. *J. Arthroplasty* 12:126-132, 1997.
50. Schmalzried, T.P. and Johnston, R.C.: Demonstrating the value of orthopaedics. *AAOS Bulletin* 45:13-14, 1997.
51. Schmalzried, T.P.; Campbell, P.; Schmitt, A.K.; Brown, I.C., and Amstutz, H.C.: Shapes and dimensional characteristics of polyethylene wear particles generated *in vivo* by total knee replacements compared to total hip replacements. *J. Biomed. Mater. Res. (Appl. Biomater.)* 38:203-210, 1997.
52. Schmalzried, T.P.: Learning to build value in our professional services. Guest Commentary, *Orthopaedics Today*, 17:6-7, Oct., 1997.
53. Amstutz, H.C.; Noordin, S.; Campbell, P.A., and Schmalzried T.P.: Precision-fit surface hemiarthroplasty for femoral head osteonecrosis. *In* *Osteonecrosis: Etiology, Diagnosis, and Treatment.* Urbaniak, J.R. and Jones, J.P., Jr., eds., pp. 373-383, American Academy of Orthopaedic Surgeons, 1997.
54. Schmalzried, T.P.: Bearing surfaces. *In* *The Hip.* Callaghan, J.; Rosenberg, A.; and Rubash, H., pp. 247-265, Lippincott-Raven Publishers, Philadelphia, 1998.
55. Szuszczewicz, E.S.; Schmalzried, T.P., and Petersen, T.D.: Progressive bilateral pelvic osteolysis in a patient with McKee-Farrar metal-metal total hip prostheses. *J. Arthroplasty* 12:819-824, 1997.

56. Schmalzried, T.P.; Noordin, S., and Amstutz, H.C.: Update on nerve palsy associated with total hip replacement. *Clin. Orthop.* 344:188-206,1997.
57. Wen, D.Y.; Puffer, J.C., and Schmalzried, T.P.: Lower extremity alignment and risk of overuse injuries in runners. *Med. and Sci. in Sports and Exerc.* :1291-1298, 1997.
58. Schmalzried; T.P.; Szuszczewicz, E.S.; Northfield, M.R.; Akizuki, K.H.; Frankel, R.E.; Belcher, G.; and Amstutz, H.C.: Quantitative assessment of walking activity after total hip or knee replacement. *J. Bone and Joint Surg.* 80-A:54-59, 1998.
59. Schmalzried, T.P.: Metal-on-metal: Historical perspectives and lessons learned through retrieval studies. *Seminars in Arthroplasty* 9:135-142, 1998.
60. Schmalzried, T.P.; Fowble, V.; and Amstutz, H.C.: The fate of pelvic osteolysis after reoperation. *Clin. Orthop.* 350:128-137, 1998.
61. Schmalzried, T.P. and Luck, J.V.: Capitated reimbursement for medical services returns control of the patient to the surgeon. *Orthopedics* 21:620-631, 1998.
62. Ure, K.J.; Amstutz, H.C.; Nasser, S.; and Schmalzried, T.P.: Direct-exchange arthroplasty for the treatment of infection after total hip replacement. An average ten-year follow-up. *J. Bone and Joint Surg.* 80-A:961-968, 1998.
63. Schmalzried, T.P.; Dorey, F.J.; and McKellop, H.: The multifactorial nature of polyethylene wear *in vivo*. *J. Bone and Joint Surg.* 80-A:1234-1243, 1998.
64. Wen, D.Y.; Puffer, J.C., and Schmalzried, T.P.: Injuries in runners: A prospective study of alignment. *Clin. J. of Sports Med.* 8:187-194, 1998.
65. Zahiri, C.A.; Schmalzried, T.P., and Amstutz, H.C.: Assessing activity in joint replacement patients *J. Arthroplasty* 13:890-895, 1998.
66. Schmalzried, T.P. and Callaghan, J.J.: Wear in total hip and knee replacements. *J. Bone and Joint Surg.* 81-A:115-136, 1999.
67. Zahiri, C.A. and Schmalzried, T.P., Ebramzadeh, E.; Szuszczewicz, E.S.; Salib, D.; Kim, C.; and Amstutz, H.C.: Lessons learned from loosening of the McKee-Farrar metal-on-metal total hip replacement. *J. Arthroplasty* 14:326-332, 1999.
68. Schmalzried, T.P.; Brown, I.C.; Amstutz, H.C.; Engh, C.A., and Harris, W.H: The role of acetabular component screw holes and/or screws in the development of pelvic osteolysis. *Proc. Instn. Mech. Engrs.* 13:147-153, 1999.

69. Schmalzried, T.P.: Wear and bearing surfaces in total knee arthroplasty. *Seminars in Arthroplasty* 10:258-269,1999.
70. Shepherd, E.F.; Toloza, E.; McClung, C.D.; and Schmalzried, T.P.: Step activity monitor (SAM): Increased accuracy in quantifying ambulatory activity. *J. Orthop. Res.* 17:703-708, 1999.
71. Scott, D.L.; Campbell, P.A.; McClung, C.D. and Schmalzried, T.P.: Factors contributing to rapid wear and osteolysis in hips with modular acetabular bearings made of Hylamer. *J. Arthroplasty* 15:35-46, 2000.
72. McClung, C.D. et al.: The relationship between body mass index and activity in hip or knee arthroplasty patients. *J. Orthop. Res.* 18:35-39, 2000.
73. Schmalzried, T.P. and McKellop, H.A.: Rationale for crosslinked polyethylene in hip and knee replacement surgery. *Current Opinion in Orthopedics* 11:387-402, 2000.
74. Schmalzried, T.P.; Zahiri C.A. and Woolson, S.T.: The significance of stem-cement loosening of grit-blasted femoral stems. *Orthopedics* 23:1157-1164, 2000.
75. Schmalzried, T.P. et al: Wear is a function of use, not time. *Clin. Orthop.* 381:36-46, 2000.
76. Jackson, W.O. and Schmalzried, T.P.: Limited role of direct-exchange arthroplasty in the treatment of infected total hip replacements. *Clin. Orthop.* 381:101-105, 2000.
77. Mikulak, S.A.; Mahoney, O.M.; Dela Rosa, M.; Schmalzried, T.P.: Loosening and osteolysis with the Press-Fit Condylar posterior-cruciate-substituting total knee replacement. *J. Bone Joint Surg.* 83-A:398-403, 2001.
78. Beaulé, P.E.; Schmalzried, T.P.; Campbell, P. A.; Dorey, F. and Amstutz, H.C.: Duration of symptoms and outcome of hemiresurfacing for hip osteonecrosis. *Clin. Orthop.* 385:104-117, 2001.
79. Tharani, R. Dorey, F. J. and Schmalzried, T.P.: The risk of cancer following total hip or total knee replacement. *J. Bone Joint Surg.* 83-A:774-780, 2001.
80. Schmalzried, T.P.; Campbell, P. and Chan, F.W.: Biological issues in metal-metal total hip arthroplasty. *Biomater. Forum* 23:6-20, 2001.

81. Beaulé, P.E.; Campbell, P. A.; Hooper, J. and Schmalzried, T.P.: Osteolysis in a cementless, second generation metal-on-metal hip replacement. *Clin. Orthop.* 386:159-165, 2001.
82. Schmalzried, T. P.: Patient Activity and Wear. *In* *World Tribology Forum*. Rieker, C. and Oberholzer, S. eds. Hans Huber, Bern, 2001.
83. Schmalzried, T.P. et al.: Contemporary issues in total hip arthroplasty. *Am. J. of Orthop.* 30:626-632, 2001.
84. Schmalzried, T.P. and Huk, O.: What patient-related factors contribute to implant wear? *In* *Implant Wear*. Wright, T.M. and Goodman, S.B., eds. AAOS, Rosemont, IL, 2001.
85. Park, S.-H. et al: Cement-cement interface strength: Influence of time to apposition. *J. Biomed. Mater. Res.* 58:741-746, 2001.
86. Beaulé, P.E.; Schmalzried, T.P. et al.: Jumbo femoral head for the treatment of recurrent dislocation following total hip replacement. *J. Bone Joint Surg.* 84-A:256-263, 2002.
87. Beaulé, P.E. et al.: Polyethylene wear characteristics *in vivo* and in a knee simulator. *J. Biomed. Mater. Res.* 60:411-419, 2002.
88. Mahoney, O.; McClung, C.D.; dela Rosa, M. and Schmalzried, T.P.: The effect of total knee arthroplasty design on extensor mechanism function. *J. Arthroplasty* 17:416-421, 2002.
89. Barrack R.L. and Schmalzried, T.P. Impingement and rim wear associated with early osteolysis after a total hip replacement: A case report. *J. Bone Joint Surg.* 84-A: 1218-1220, 2002.
90. Silva, M. et al.: Average patient walking activity approaches 2 million cycles per year: Pedometers under-record walking activity. *J. Arthroplasty* 17:693-697, 2002.
91. Callaghan, J.J. et al: Tibial post impingement in posterior-stabilized total knee arthroplasty. *Clin. Orthop.* 404:83-88, 2002.
92. Silva, M.; Tharani, R. and Schmalzried, T.P.: Results of direct exchange or debridement of the infected total knee arthroplasty. *Clin. Orthop.* 404:125-131, 2002.
93. Maloney, W.J.; Schmalzried, T.P. and Harris, W.H.: Analysis of long-term cemented total hip arthroplasty retrievals. *Clin. Orthop.* 405:70-78, 2002.

94. Barrack, R.L. et al.: Analysis of retrieved uncemented porous-coated acetabular components in patients with and without pelvic osteolysis. *Orthopedics* 25:1373-1378, 2002.
95. Skipor, A.K. et al.: Serum and urine metal levels in patients with metal-on-metal surface arthroplasty. *J. Mater. Sci. Mater. Med.* 13:1227-1234, 2002.
96. Klein, R. et al.: Rotational constraint in posterior-stabilized total knee prostheses. *Clin. Orthop.* 410:82-89, 2003.
97. Silva, M. and Schmalzried, T.P.: Polyethylene in total knee arthroplasty. *In* *The Adult Knee*. Callaghan, J.J.; Rosenberg, A.G.; Rubash, H.E.; Simonian, P.T.; and Wickiewicz, T.A., eds, pp. 278-288, Lippincott William & Wilkins, Philadelphia, 2003.
98. Heisel, C.; Silva, M. and Schmalzried, T.P.: Bearing surface options for total hip replacement in young patients. *J. Bone Joint Surg.* 85-A: 1366-1379, 2003.
99. Beaulé, P.E. et al.: [Tripolar arthroplasty for recurrent total hip prosthesis dislocation.] *Rev. Chir. Orthop. Reparatrice Appar. Mot.* 89:242-249, 2003.
100. Silva, M. and Schmalzried, T.P.: Metal-on-metal: history, basic science, and toxicity. *Semin. Arthroplasty* 14:113-122, 2003.
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Patents

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