

CURRICULUM VITAE

Name: Federico Foschi, BDS MSc, PhD, FHEA, FDS RCS

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General Dental Council registration number: 175853, DipDS 2002, Specialist in Endodontics (2010), Periodontics (2014), Prosthodontics (2014), Restorative Dentistry (2014)

Education

- 2002, B.D.S., with Honours School of Dentistry, University of Bologna, Italy.
- 2006, Ph.D. in Medical Biotechnology and Endodontic Clinical Microbiology, University of Bologna, Italy and The Forsyth Institute, Boston, MA, USA.
- 2009, MSc in Endodontics, Alma Mater Studiorum, University of Bologna, Italy,
- 2011 FHEA - PGCAP, King's College, Learning Institute. "Disseminate the visual knowledge of Endodontic procedures to undergraduate students: use of the microscope to improve assessment and feedback."
- 2014 Specialty in Restorative Dentistry (Endodontics (2010), Periodontics and Prosthodontics), King's College London

Academic Appointments

- 2002-2003, Clinical demonstrator, Division of Endodontics, Department of Dental Sciences, University of Bologna, Italy.
- 2002-2003, Clinical demonstrator, Master of Endodontics, Division of Endodontics, Department of Dental Sciences, University of Bologna, Italy.
- 2006-2007, Postdoctoral Program in Photodynamic Endodontic Disinfection, Applied Photomedicine Laboratory, The Forsyth Institute, Boston, MA.
- 2007-2009 Postdoctoral program in Tissue Engineering and clinical demonstrator, Department of Dental Science University of Genoa, Italy.
- 2009-2014 Lecturer in Endodontology. Honorary SpR in Restorative Dentistry. King's College, Dental Institute at Guy's and St. Thomas Hospitals, London.
- 2010-2014 Course Organiser, Conservative Dentistry, King's College London
- 2014 PhD Examiner, Barts and The London School of Medicine and Dentistry,
- 2014-current Program Director MSc in Endodontics, King's College London
- 2014-current Visiting Professor, Universidad Cardenal Herrera, Valencia
- 2015-2019 Consultant in Endodontics, Guy's and St Thomas' NHS Foundation Trust
- 2015-current Honorary Senior Lecturer, King's College London
- 2016 PhD Examiner, School of Dentistry, University of Birmingham
- 2019-current Professor, Sechenov University, Moscow
- 2019-current Training Program Director for Endodontics on behalf of Health Education England

2019-current Training Programme Director for Endodontics, Health Education England
2020-current Clinical Senior Lecturer and Honorary Consultant in Endodontics, King's
College London

Professional Societies and Membership

BES (British Endodontic Society)
Royal College of Surgeons of England
SAAD (Society for the Advancement of Anaesthesia in Dentistry)
AAE (American Association of Endodontics)
HEA (Higher Education Academy)
Key Opinion Leader for VDW

Honours, Awards and Commitments

2005, Pulp Biology Group Award, Predoctoral Category for the study "Treponema denticola and Red-Complex Endodontic Infection in RAG-1 and WT Mice. Foschi F, Izzard J, Sasaki, Prati C, Sambri V, Stashenko P. J Dent Res 84 (Spec Iss A): 1579, 2005."

Reviewer: Quintessence International, Journal of Applied Oral Science, Journal of Biomaterials Applications, International Endodontic Journal, Oral Health and Preventive Dentistry, PlosOne, Future Microbiology, Odontology

Teaching Curriculum

Clinical Tutor and Demonstrator, Conservative and Endodontology (2003-).
Endodontic Microbiology, Endodontology Master, School of Dentistry, Bologna, Italy (2004-2008)
Endodontology, 3rd, 4th year dental students, School of Dentistry, Bologna, Italy (2002-2003, 2006)
Thesis laboratory advisor, MMSc in Endodontics, Harvard School of Dental Medicine, Boston, MA (2006-2007)
Clinical Tutor, BDS3, Conservative Dentistry, King's College
Clinical Tutor, BDS3, BDS4, Endodontics, King's College
Pastoral care Tutor, BDS 2/BDS3, King's College
Pulp Biology Lecture, BDS 2, Oral Biology, King's College
Phantom Head Course, BDS 2 Demonstrator, Conservative Dentistry, King's College
BDS4 Conservative Dentistry Course organizer for the academic year 2011/2012, King's College
First Supervisor, PhD student Media Saeed. "Development of a sterile protocol for endodontic treatments".

Second Supervisor, PhD student Dylan Herzog. Industrial CASE Studentships Award- "In situ detection of residual bioburden within root canal spaces using fluorescence-amplified microendoscopic detection".

Second Supervisor, PhD student Nassr Al-Nuaimi. "The effect of tooth structure loss on the outcome of root canal re-treatments: Clinical study and in vitro investigations".

Second Supervisor of the PhD student Navid Saberi. "Clinical applications of rapid bacterial detection in endodontics."

Publications

Thesis and Dissertation

[2002] Ultrastructural analysis of root canal dentine shaped with nickel titanium endodontic instruments D.D.S. Thesis, School of Dentistry, Alma Mater Studiorum, University of Bologna, Italy

[2006] Aetiopathogenetic role of *Treponema denticola* in endodontic pathology. Ph.D. Dissertation, Alma Mater Studiorum, University of Bologna, Italy ~ The Forsyth Institute, Boston, MA

Books and Chapters

1. Common Complications in Endodontics. Prevention and Management. Chapter 8: Strategies to Reduce the Risk of Reinfection in Endodontics. Springer, 2018.
2. Endodontology at a Glance, Alix Davies, Federico Foschi, Shanon Patel. Wiley Blackwell, 2019.
3. The Principles of Endodontics. Chapter 2: Life of a Tooth. Federico Foschi, Sadia Niazi and Prof Moya Meredith Smith. Third Edition. Oxford University, 2019.

Peer Reviewed Articles

1. Prati C, Foschi F, Nucci C, Montebugnoli L, Marchionni S. Appearance of the root canal walls after preparation with NiTi rotary instruments: a comparative SEM investigation. Clin Oral Investig. 2004; 2: 102-110.
2. Foschi F, Nucci C, Montebugnoli L, Marchionni S, Breschi L, Malagnino VA, Prati C. SEM evaluation of canal wall dentine following use of Mtwo and ProTaper NiTi rotary instruments. Int Endod J. 2004; 12: 832-839.
3. Foschi F, Nucci C, Marchionni S, Prati C. Ultrastruttura della Dentina Trattata Endodonticamente. Italian Journal of Operative Dentistry. 2004; 2: 21-28.
4. Marangoni A, Sambri V, Cavrini F, Frabetti A, Storni E, Accardo S, Servidio D, Foschi F, Montebugnoli L, Prati C, Cevenini R. *Treponema denticola* infection is not a cause of false positive *Treponema pallidum* serology. New Microbiol. 2005; 28: 215-221.

5. Cavrini F, Sambri V, Moter A, Servidio D, Marangoni A, Montebugnoli L, Foschi F, Prati C, Di Bartolomeo R, Cevenini R. Molecular detection of *Treponema denticola* and *Porphyromonas gingivalis* in carotid and aortic atheromatous plaques by FISH: report of two cases. *J Med Microbiol.* 2005; 54: 93-96.
6. Foschi F, Cavrini F, Montebugnoli L, Stashenko P, Sambri V, Prati C. Detection of bacteria in endodontic samples by polymerase chain reaction assays and association with defined clinical signs in Italian patients. *Oral Microbiol Immunol.* 2005; 5: 289-295.
7. Pirani C, Chersoni S, Foschi F, Piana G, Loushine RJ, Tay FR, Prati C. Does hybridization of intraradicular dentin really improve fiber post retention in endodontically treated teeth? *J Endod.* 2005; 12: 891-894.
8. Foschi F, Izard J, Sasaki H, Sambri V, Prati C, Muller R, Stashenko P. *Treponema denticola* in disseminating endodontic infections. *J Dent Res.* 2006; 85: 761-765.
9. Soukos NS, Chen PS, Morris JT, Ruggiero K, Abernethy AD, Som S, Foschi F, Doucette S, Luschke Bammann L, Fontana CR, Doukas AG, Stashenko PP. Photodynamic therapy for endodontic disinfection. *J Endod.* 2006; 32: 979-984.
10. Foschi F, Fontana CR, Ruggiero K, Riahi R, Vera A, Doukas AG, Pagonis TC, Kent R, Stashenko PP, Soukos NS. Photodynamic inactivation of *Enterococcus faecalis* in dental root canals in vitro. *Lasers Surg Med.* 2007; 39: 782-787.
11. Cavrini F, Pirani C, Foschi F, Montebugnoli L, Sambri V, Prati C. Detection of *Treponema denticola* in root canal systems in primary and secondary endodontic infections. A correlation with clinical symptoms. *New Microbiol.* 2008; 31: 67-73.
12. Pirani C, Bertacci A, Cavrini F, Foschi F, Acquaviva GL, Prati C, Sambri V. Recovery of *Enterococcus faecalis* in root canal lumen of patients with primary and secondary endodontic lesions. *New Microbiol.* 2008; 31: 235-240.
13. Fimple JL, Fontana CR, Foschi F, Ruggiero K, Song X, Pagonis TC, Tanner AC, Kent R, Doukas AG, Stashenko PP, Soukos NS. Photodynamic treatment of endodontic polymicrobial infection in vitro. *J Endod.* 2008; 34: 728-734.
14. Pagonis TC, Chen J, Fontana CR, Devalapally H, Ruggiero K, Song X, Foschi F, Dunham J, Skobe Z, Yamazaki H, Kent R, Tanner AC, Amiji MM, Soukos NS. Nanoparticle-based endodontic antimicrobial photodynamic therapy. *J Endod.* 2010; 36: 322-328.
15. Foschi F, Conserva E, Pera P, Canciani B, Cancedda R, Mastrogiacomo M. Graft Materials and Bone Marrow Stromal Cells in Bone Tissue Engineering. *J Biomater Appl.* 2011; 1-14.
16. De Carlo B, Sauro S, Deb S, Pitzolu G, Foschi F, Mannocci F, Zanna S, Mongiorgi R. Porosity, Micro-Hardness and Morphology of White and Gray Portland Cements in Relation to Their Potential in the Development of New Dental Filling Materials *J Adhesion Science Tech.* 2011; 0:1-8

17. Sauro S, Di Renzo S, Castagnola R, Grande NM, Plotino G, Foschi F, Mannocci F. Comparison between water and ethanol wet bonding of resin composite to root canal dentin. *Am J Dent*. 2011; 24(1):25-30.
18. Conserva E, Foschi F, Cancedda R, Mastrogiacomo M. In vitro and in vivo osteoinductive/osteoconductive properties of a Synthetic Bone Substitute. *Oral Craniofac Tissue Eng* 2011;1:244–251
19. Lennon S, Patel S, Foschi F, Wilson R, Davies J, Mannocci F. Diagnostic accuracy of limited volume cone beam computed tomography in the detection of periapical bone loss: 360° scans versus 180° scans. *Int Endod J*. 2011; 44(12):1118-27.
20. Osorio E, Toledano M, Osorio R, Levrini L, Thompson I, Foschi F, Sauro S. Evaluation of enamel roughness subsequent to air-polishing treatments with bioactive glass. *Prevenzione & Assistenza Dentale*. 2011; 37(4): 123–129.
21. Stern S, Patel S, Foschi F, Sherriff M, Mannocci F. Changes in centring and shaping ability using three nickel–titanium instrumentation techniques analysed by micro-computed tomography (μ CT). *Int Endod J*. 2012 Jun;45(6):514-23.
22. Patel S, Wilson R, Dawood A, Foschi F, Mannocci F. The detection of periapical pathosis using digital periapical radiography and cone beam computed tomography -part 2: a 1-year post-treatment follow-up. *Int Endod J*. 2012 Aug;45(8):711-23.
23. Niazi SA, Clark D, Do T, Gilbert SC, Foschi F, Mannocci F, Beighton D. The effectiveness of enzymic irrigation in removing a nutrient-stressed endodontic multispecies biofilm. *Int Endod J*. 2013 Nov 18. doi: 10.1111/iej.12214. [Epub ahead of print] PubMed PMID: 24246147.
24. Giovarruscio M, Uccioli U, Malentacca A, Koller G, Foschi F, Mannocci F. A technique for placement of apical MTA plugs using modified Thermafil carriers for the filling of canals with wide apices. *Int Endod J*. 2013 Jan;46(1):88-97.
25. Conserva E, Foschi F, Cancedda R, Mastrogiacomo M. In vitro and in vivo osteoinductive and osteoconductive properties of a synthetic bone substitute. *Int J Oral Maxillofac Implants*. 2013 Nov-Dec;28(6):e432-9. doi: 10.11607/jomi.te23. PubMed PMID: 24278942.
26. Pop I, Manoharan A, Zanini F, Tromba G, Patel S, Foschi F. Synchrotron light-based μ CT to analyse the presence of dentinal microcracks post-rotary and reciprocating NiTi instrumentation. *Clin Oral Investig*. 2014 Feb 15. [Epub ahead of print] PubMed PMID: 24532388.
27. Niazi SA, Al-Ali WM, Patel S, Foschi F, Mannocci F. Synergistic effect of 2% chlorhexidine combined with proteolytic enzymes on biofilm disruption and killing. *Int Endod J*. 2014 Dec 5. doi: 10.1111/iej.12420. [Epub ahead of print] PubMed PMID: 25482847.
28. Davies A, Patel S, Foschi F, Andiappan M, Mitchell PJ, Mannocci F. The detection of periapical pathoses using digital periapical radiography and cone beam computed tomography in

- endodontically retreated teeth - part 2: a 1 year post-treatment follow-up. *Int Endod J.* 2015 Jul 14. doi: 10.1111/iej.12500.
29. Al-Nuaimi N, Patel S, Foschi F, Mannocci F. The Detection of Simulated Periapical Lesions in Human Dry Mandibles with Cone Beam Computed Tomography - A Dose Reduction Study. *Int Endod J.* 2015 Oct 20. doi: 10.1111/iej.12565.
30. Ballal NV, Khandewal D, Karthikeyan S, Somayaji K, Foschi F. Evaluation of Chlorine Dioxide Irrigation Solution on the Microhardness and Surface Roughness of Root Canal Dentin. *Eur J Prosthodont Restor Dent.* 2015 Dec;23(4):173-8.
31. Niazi SA, Al Kharusi HS, Patel S, Bruce K, Beighton D, Foschi F, Mannocci F. Isolation of *Propionibacterium acnes* among the microbiota of primary endodontic infections with and without intraoral communication. *Clin Oral Investig.* 2016 Feb
32. Vaz de Souza D, Schirru E, Mannocci F, Foschi F, Patel S. External Cervical Resorption: A Comparison of the Diagnostic Efficacy Using 2 Different Cone-beam Computed Tomographic Units and Periapical Radiographs. *J Endod.* 2017 Jan;43(1):121-125.
33. Herzog DB, Hosny NA, Niazi SA, Koller G, Cook RJ, Foschi F, Watson TF, Mannocci F, Festy F. Rapid Bacterial Detection during Endodontic Treatment. *J Dent Res.* 2017 Jun;96(6):626-632.
34. Patel S, Foschi F, Mannocci F, Patel K. External cervical resorption: a three-dimensional classification. *Int Endod J.* 2017 Jul 26.
35. Al-Nuaimi N, Patel S, Davies A, Bakhsh A, Foschi F, Mannocci F. Pooled analysis of 1-year recall data from three root canal treatment outcome studies undertaken using cone beam computed tomography. *Int Endod J.* 2017 Aug 28. doi: 10.1111/iej.12844.
36. Saeed M, Koller G, Niazi S, Patel S, Mannocci F, Bruce K, Foschi F. Bacterial Contamination of Endodontic Materials before and after Clinical Storage. *J Endod.* 2017 Sep 23. pii: S0099-2399(17)30850-6.
37. Al-Nuaimi N, Patel S, Foschi F, Mannocci F, Austin RS. Assessment of residual coronal tooth structure postendodontic cavity preparation using digital dental impressions and micro-computed tomography. *Int J Comput Dent.* 2017;20(4):377-392
38. Ali AH, Koller G, Foschi F, Andiappan M, Bruce KD, Banerjee A, Mannocci F. Self-Limiting versus Conventional Caries Removal: A Randomized Clinical Trial. *J Dent Res.* 2018 Oct;97(11):1207-1213.
39. Zavattini A, Mancini M, Higginson J, Foschi F, Pasquantonio G, Mangani F. Micro-computed tomography evaluation of microleakage of Class II composite restorations: An in vitro study. *Eur J Dent.* 2018 Jul-Sep;12(3):369-374.
40. Patel S, Foschi F, Condon R, Pimentel T, Bhuvu B. External cervical

resorption-part 2: Management. Int Endod J. 2018 May 8. doi: 10.1111/iej.12946. [Epub ahead of print] Review. PubMed PMID: 29737544.

41. Patel S, Patel R, Foschi F, Mannocci F. The Impact of Different Diagnostic Imaging Modalities on the Evaluation of Root Canal Anatomy and Endodontic Residents' Stress Levels: A Clinical Study. J Endod. 2019 Apr;45(4):406-413.
42. Sauro S, Makeeva I, Faus-Matoses V, Foschi F, Giovarruscio M, Maciel Pires P, Martins Moura ME, Almeida Neves A, Faus-Llácer V. Effects of Ions-Releasing Restorative Materials on the Dentine Bonding Longevity of Modern Universal Adhesives after Load-Cycle and Prolonged Artificial Saliva Aging. Materials (Basel). 2019 Mar 1;12(5).

Patents

Pub. No.: WO/2013/024088; International Application No.: PCT/EP2012/065873
Publication Date: 21.02.2013; International Filing Date: 14.08.2012. Endodontic imaging. Field of invention: This invention pertains generally to the field of endodontic imaging. More particularly, the invention relates to a method and apparatus for imaging, quantitative measurement and/or data collection inside a tooth, and more particularly the root canal. Cook R, Koller G, Watson T, Foschi F, Mannocci F, Festy F.

Lectures, Oral and Poster Presentations

Morphology of Endodontic Dentin Surface after NiTi Preparation.
European Festival of Oral Science Cardiff, Wales UK. IADR inaugural meeting of the pan European federation. 26th September 2002. Oral presentation

Endodontics between clinical practice and research.
Il giornata di endodonzia - Società Italiana di Endodonzia, Sezione SAE; Giulianova, Italy. 8th March 2003. Lecture

Ability of Thermafil to Seal the Lateral Channels and Role of Smear Layer.
IADR 81st General Session; Goteborg, Sweden, 24 June 2003. Oral presentation

Endodontic Microbiology. Postgraduate Master in Advanced Endodontics; Chieti, Italy. 11th October 2003. Lecture

SEM Analysis of root canal morphology following shaping with two NiTi rotary instruments. Congresso Nazionale Società Italiana di Endodonzia – SIE; Torino, Italy. 28th November 2003. Oral presentation

Periodontal Health Improves Systemic Inflammatory and Haemostatic Status. The IADR/AADR/CADR 82nd General Session; Honolulu, HI. 12 March 2004. Oral presentation

Microbiological Evaluation of Root Canal from Symptomatic and Asymptomatic Patients.
The IADR/AADR/CADR 82nd General Session; Honolulu, HI. 13th March 2004. Oral presentation

Enterococcus faecalis Endodontic Biofilms Inactivation by Photodynamic Therapy In Vitro.
Joint Meeting of the Continental European (CED) and the Scandinavian (NOF) Divisions of IADR; Amsterdam, Netherland. 15th September 2005. Oral presentation

Microtensile Bond Strength of Self-etching Bonding Systems Using a Novel Electric Device.
Joint Meeting of the Continental European (CED) and the Scandinavian (NOF) Divisions of IADR; Amsterdam, Netherland, 16th September 2005. Oral presentation

Treponema denticola Endodontic Infection in WT and SCID Mice. Dentin/Pulp Complex Meeting, IADR Pulp Biology Group, Heinrich-Heine-University; Düsseldorf, Germany. 19th September 2005. Poster presentation

Bacterial adhesion and dentinal permeability. 14^o Congresso Nazionale della Società Italiana di Microbiologia Medica Odontoiatrica e Clinica. Perugia, Italy. 11th May 2006. Lecture

Microbiology in Endodontic practice. Is it relevant? 5a giornata endododontica SERE, Dipartimento di Scienze Odontostomatologiche, Bologna, Italy. 23rd September 2006. Lecture.

Photodynamic Therapy Applied to Enterococcus faecalis Biofilms in Root Canals In Vitro.
Forsyth Harvard Symposium. Boston. 8th February 2007. Poster presentation.

Bone marrow stromal cells osteogenic induction with different bone graft materials. Academy of Osteointegration. San Diego, 8th March 2009. Lecture

In vitro models of mature endodontic biofilms. BES teachers meeting. Manchester 8th, 9th July 2010. Lecture

Susceptibility of a mature multispecies endodontic biofilm to different chemo-physical treatments. BES. Spring Meeting 2011. Back to the future. How have we done and how can we do better? The Institution of Civil Engineers, London. 12th March 2011. Poster presentation

Evolving dentistry event. Dentsply, Addlestone 1st June 2011. Lecture and hands-on course.

What is new in the Canal? Elliott and McCarthy, Hartlepool 12th June 2011. Study Group

Wave One instrumentation. Harpenden Dental Centre, Harpenden. 20th September 2011. Lecture and hands-on course.

Root canal cleanliness: are we there yet? King's College Hospital. Dental Alumni Weekend 3rd March 2012. Lecture

Approaches to Root Canal Disinfection and Real-time Assessment of Infection. The Forsyth Institute, Boston, MA, USA. 17th April 2012. Invited Lecture.

Real-Time Bacterial detection in root canal treatments. AAE, Boston, MA, USA 18th April 2012. Oral presentation.

Confocal microscopy applied to real time detection of endodontic infection. Manchester 4th, 5th October 2012. Lecture

Collegio Dental Potosino. Easy Endodontics: Myth or Reality. San Luis Potosi, Mexico. 16th October 2014. Lecture

The 8th Annual Conference, University of Jordan. Hands on Course in reciprocating Endodontics, Teaching and Learning Endodontics. 27th-28th May 2015.

Reciprocation in Endodontics, Valencia, Spain. 27th June 2015, Master in Endodontics Lecture

Calcium silicate based materials including MTA, Biodentine and MTAplus: stress free usage. Southampton, UK. 20th November 2015. British Endodontic Society

The predictable root canal treatment. Reigate, UK. 4th of May 2016. The Surrey Hill Study Club.

Microbiome in Endodontics and Clinical implications. London, UK. 19th Conference in Genomics and Proteomics of Human Pathogens. Public Health England.

Endodontic in the primary care settings. London, UK. 7th of April 2017. The British Society of Prosthodontic.

Restoring endodontically treated teeth. London, UK. 7th of April 2017. The British Society of Prosthodontic.

A novel method for rapid detection of remnant live bacteria in the root canal space using fluorescence amplification. Brussels 15th of September 2017. European Society of Endodontology.

Endodontic Master Class. Paedodontics STRs. Londec. London 12th of February 2018.

Establishing the endodontic treatment endpoint with the aid of fluorescence-based live bacteria detection. Djurönäset, Stockholm. 24th of August 2018. SkandEndo, hosted by the Swedish Society of Endodontology.

The Limitations of Root Canal Treatment. Newcastle upon Tynes. 23rd of November 2018. British Endodontic Society.

External cervical tooth resorption Symposium: Aetiology and potential predisposing factors. ESE Biennial meeting. Vienna. 12th of September 2019.

Accrued Grants and Funding

1. Research Consultanship Project Agreement with the DRFP Ltd for the study "Bacterial colonization through root canals obturated with different material". Lead Consultant: Foschi F; £7,948.00 (active).
2. Research Consultanship Project Agreement with Dentsply Ltd for the study "Micro Computed tomography comparison between two single file instrumentation techniques". Lead Consultants: Mannocci F and Foschi F; £10,855 (active).
3. Elettra Synchrotron Facility Users Grant. Beamline: SYRMEP Required shifts: 9. Grant Title: Evaluation of teeth tubular structure. Proposal number: 20105406. £22,100 (non-active).
4. Research Consultanship Project Agreement with Schottlander Comparison of the efficacy of the New RACE instruments with that of Pro-Tapers on ex vivo intraradicular multispecies biofilm including *E faecalis*, *A radicidentis*, *P.acnes*, *S .epidermidis*, *P micros* (Principal Investigator) £ 8,500 (active).
5. Academy of Medical Sciences Starter Grants for Clinical Lecturer. When to stop? Determine the endpoint of root canal treatment by spectrophotometric measurement of bacterial fluorescence. £28,600
6. 61 PG student enrolled in the MSc in Endodontics programme.