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## Dr Charles C J Rivière, MD, PhD

### Profile and Current clinical practice

I am a Consultant in Orthopaedic Surgery, specialized in hip and knee reconstruction. I hold a Honorary Consultant Position in the **South West London Elective Orthopaedic Center (SWLEOC) Hospital (NHS trust)**, and also perform private surgery at **The Lister Hospital** in Chelsea. Also I am a member of the prestigious **French Hip and Knee Society (SFHG)**, and I am **Past Vice President of the General Assembly of the Federation of Orthopaedic Trainees in Europe (FORTE)**.

I graduated from Bordeaux University, France, in 2004 and completed a 2.5 years Senior Clinical Fellowship focusing on joint reconstruction at the London Hip Unit (Dr Sarah Muirhead-Allwood, London, UK), and at the Maisonneuve-Rosemont Hospital (Prof Vendittoli, Montreal, Quebec, Canada).

In 2013 I became a Consultant (substantive position) at the Bordeaux University Hospital (Hôpital Pellegrin) in France. In 2015 I was given the opportunity to move to London and be part of the MusculoSkeletal Laboratory (MSK Lab) alongside Professor Justin Cobb. My elective practice is exclusively focused on Hip & Knee reconstruction, either primary or revision. My work in joint reconstruction as well as my research projects are mainly oriented towards joint replacement techniques aiming at **patient-specific implant positioning** (cup planning based on spine-hip relations assessment & kinematic alignment technique for total knee arthroplasty).

- Graduation as a specialist orthopaedic surgeon: 28<sup>th</sup> January 2011
- Validation PhD in 2016 – “Kinematic Alignment of TKA”
- Granted a license to practice by the General Medical Council (GMC) on the 04/04/2016

### Work places:

- **Public surgical practice (NHS Trusts):**
  - South West London Elective Orthopaedics Center (SWLEOC)
- **Private surgical practice:**
  - The Lister Hospital (Chelsea)

➤ **Research:**

- Musculo-Skeletal Laboratory (MSK Lab) - Imperial College London
- South West London Elective Orthopaedics Research Center - St Georges University

Previous work places:

- **University Hospital Pellegrin** (CHU Pellegrin) – Bordeaux University, Bordeaux, France: Consultant Orthopaedic Surgeon with Substantive Permanent position, May 2013 to May 2015.
- **Charing Cross Hospital**, London, UK: Consultant Orthopaedic Surgeon with Locum Permanent position, April 2016 to November 2016.

Specificities in surgical practice and research interest:

1. Patient-specific implant positioning for hip and knee replacement (personalized joint replacement)
2. Augmented reality for optimization of implants positioning
3. Intraoperative quality control of implants positioning

Consultant activity for Orthopaedic private company

1. Paid Consultant for Depuy J&J in 2014 and 2015

Medical & surgical education

*2.5y senior clinical fellowship in Hip & Knee reconstruction (2011 to 2013):*

1. The London Hip Unit, Dr Sarah Muirhead-Allwood, 2011
2. Maisonneuve Rosemont Hospital, Professors P.A Vendittoli and M Lavigne (Montreal, Quebec, Canada) 2011 to 2013

*5 years surgical residency at Bordeaux University Hospital and affiliated hospitals (2004 to 2010):*

1. 1.5y training in **General surgery** (Cardiac, Chest, Digestive & Vascular Surgeries)
2. 3.5y training un **Orthopaedic surgery** → Graduation as specialist surgeon in January 2011

*Medical school at Bordeaux University (1997 to 2004)*

Additional Orthopaedic Training

*Arthroscopy:*

1. Master degree in arthroscopic surgery in 2009

*Additional visits related to hip & knee reconstruction:*

2. Two weeks visit **Professor Paul Beaulé**, "conservative surgery and hip and knee reconstruction unit", April 2013 (Ottawa Hospital, Ottawa, Ontario, Canada)
3. Three day visit **Dr Sabouret**, "Bi-cruciate TKA expert (Cloutier' school)", march 2013 (Notre Dame Hospital, Montréal, Québec, Canada)
4. Three day visit **Pr Frederic Picard**, July 2014 (Jubilee Hospital, Glasgow, UK)
5. One week visit **Dr Stephen Howell**, world specialist in Kinematic Aligned TKA, at Methodist hospital in October 2014 (Sacramento, California, USA)

6. One week visit **Dr Matthew Abdel**, March 2015 (Mayo clinic, Rochester, Minnesota, USA)

#### Hip and knee reconstruction Master Classes:

7. Master Class " Revision Hip & Knee arthroplasty," Zimmer Montreal 2011
8. Master Class " Revision Hip & Knee arthroplasty," Zimmer Montreal 2012
9. Master Class " Hip and knee arthroplasty & Trauma Symposium " stryker Montreal 2012
10. "Hip reconstruction ", Zimmer, Lyon 2009
11. Oxford UKA course, Oxford July 2013
12. Direct Anterior approach (ASII approach) in hip arthroplasty, Tornier Tour 2013
13. Blue Belt training system Navios, 2013 Leaven
14. " Revision Knee Arthroplasty " meeting, Depuy Amsterdam 2013
15. Attune course, Depuy London 2013
16. GMK sphere learning center, Medacta, Zurich 2014

#### Traumatology:

17. American orthopaedic traumatology association (OTA) courses:
18. Basic course, Chicago April 2012
19. Advanced course, Los Angeles February 2012
20. AO courses:
21. Basic course, Saint Cyr sur mer 2006
22. Advanced course, Davos 2009
23. Osteosynthesis course, Dr. Taglan, Strasbourg 2006

#### Research and Statistics:

24. Master degree in medical and biologic science, 2001
25. Statistical analysis Course, September 2011, Montreal
26. Formadea clinical research lessons completed in 2015

#### Theses - Research

1. **Medical thesis** on "Total Hip Resurfacing" – 28<sup>th</sup> January 2010
2. **Scientific thesis** (PhD) on "Kinematic Alignment Technique for Total Knee Replacement" - University Aix-Marseille, France – 15<sup>th</sup> December 2016

#### Board Membership

1. Past Vice President at the General Assembly Table at the **Federation of Orthopaedic Trainees in Europe** (FORTE organization, part of EFORT)
2. **French Orthopaedic Trainees Association** (CJO)

#### Society Membership

1. Fellow of the Hip and Knee French Society (SFHG)
2. Fellow of the French Society of Orthopaedic Surgery and Traumatology (SOFOT)
3. International society of joint replacement (ICJR)
4. European Hip Society (EHS)

## Teaching activities

1. 2016: Faculty member at the FORTE summer school (EFORT branch), lectures on primary and revision knee replacement, fractures around the knee
2. 2013 to date: involved in Resident education for “Hip/Knee reconstruction” and “Traumatology” at University of Bordeaux. Creation in 2014 of the “Bordeaux Orthopaedic Program ” (POB)
3. 2011-2013: involved in Resident education for "hip/knee reconstruction" at University of Montreal.
4. 2012: One week teaching of "basic surgical technique in traumatology” for Canadians orthopaedic residents, Montreal, September 2012.
5. 2009: Nurse Courses "orthopaedic pathology and trauma", Charles Perrens Hospital.
6. 2005 and 2006: Anatomy Class at the Institute of podiatry CHU Bordeaux.
7. 1999-2002: Preparatory Courses of the School of Medicine of Bordeaux.

## Book chapters

1. Alignment options in TKA (French society knee book 2016 – conférences de la SOFCOT 2016)
2. Tools for bone cut in TKA (French society knee book 2016 - conférences de la SOFCOT 2016)

## Publications

### Published peer reviewed Articles:

1. **Charles Rivière**, Antoinette Hardijzer, Jean-Yves Lazennec, Paul Beaulé, Sarah Muirhead-Allwood, Justin Cobb. Spine-hip relations add understandings to the pathophysiology of femoro-acetabular impingement: A systematic review. *Orthop and Trauma: Surgery & research – Minor revision.*
2. **Charles Rivière**, Jean-Yves Lazennec, Catherine Van Der Straeten, Edouard Auvinet, Justin Cobb, Sarah Muirhead-Allwood. Influence of spine-hip relations on total hip replacement: A systematic review. *Orthop and Trauma: Surgery & research –submitted.*
3. **Charles Rivière**, Olivier Matthieu, Damien Girerd, Jean-Noël Argenson, Sébastien Parratte. Standing limb alignment after TKA does not predict dynamic alignment and knee loading during gait. *The Knee*, 2017 – In Press.
4. **Charles Riviere MD<sup>1</sup>**; **Martin Lavigne MD MSc FRCS<sup>1</sup>**; **Ahmed Alghamdi MD FRCS<sup>1</sup>**; **Pascal-André Vendittoli, MD MSc FRCS<sup>1</sup>**. Failure of Metal-on-Metal Large-Diameter Head Total Hip Arthroplasty Revised with a Dual-Mobility Bearing: A Case Report. *JBJS Case Connector*, Volume 3, Issue 3, September 25, 2013.
5. **Vendittoli PA**, **Rivière C**, **Roy AG**, **Barry J**, **Lusignan D**, **Lavigne M**. Metal-on-metal hip resurfacing compared with 28-mm diameter metal-on-metal total hip replacement: a randomised study with six to nine years' follow-up. *BJJ*. 2013 Nov;95-B(11):1464-73. doi: 10.1302/0301-620X.95B11.31604.
6. **Vendittoli PA**, **Rivière C**, **Lavigne M**, **Lavoie P**, **Alghamdi A**, **Duval N**. Alumina on alumina versus metal on conventional polyethylene: a randomized clinical trial with 9 to 15 years follow-

up. Acta Orthop Belg. 2013 Apr; 79(2): 181-90.

Under revision:

7. **Charles Rivière**, Stephen Howell, Sébastien Parratte, Pascal.A Vendittoli, Farhad Iranpour, Justin Cobb. Alignment Options For Knee Replacement: Current Evidence. Orthop and Trauma: Surgery & research – Accepted minor revision.
8. **Charles Riviere**, Farhad Iranpour, Simon Harris, Edouard Auvinet, Arash Aframian, Patrick Chabrand, Justin Cobb. Kinematic alignment technique reliably aligns the femoral component with the cylindrical axis. Orthop and Trauma: Surgery & research –submitted.
9. **Charles Rivière**, Farhad Iranpour, Edouard Auvinet, Arash Aframian, Kirsty Asare, Simon Harris, Justin Cobb, Sébastien Parratte. Uncorrectable imbalance after mechanically aligned TKA: frequent and clinically deleterious. Orthop and Trauma: Surgery & research –submitted.
10. **Charles Riviere**, Farhad Iranpour, Edouard Auvinet, Kirsty Asare, Simon Harris, Arash Aframian, Justin Cobb, Sebastien Parratte. High rate of distal lateral trochlea facet overstuffing after mechanically aligned TKA. Orthop and Trauma: Surgery & research –submitted.
11. **Charles Rivière**, Farhad Iranpour, Simon Harris, Edouard Auvinet, Arash Aframian, Sébastien Parratte, Justin Cobb. Differences in trochlear parameters between native knee and kinematically and mechanically aligned total knee replacement. Bone & Joint Journal –submitted.
12. **Charles Rivière**, Fatima Dhaif, Hemina Shah, Farhad Iranpour, Edouard Auvinet, Arash Aframian, Justin Cobb, Stephen Howell, Simon Harris. Kinematic alignment of current TKA implants does not restore the native trochlear anatomy. Orthop and Trauma: Surgery & research – submitted.
13. **Charles Riviere**, Adam Ali, Farhad Iranpour, Simon Harris, Edouard Auvinet, Arash Aframian, Justin Cobb, Patrick Chabrand. Kinematically aligned total knee replacement using larger femoral component size to match the anterior trochlear lateral facet height: Is it reasonable?. Orthop and Trauma: Surgery & research –submitted.

Editorial papers:

14. **Charles Rivière**. Vive la Différence! THAs in France, United States. Journal of the American Academy « AAOS now » : february 2014.
15. **Charles Rivière**. Différence culturelle en Arthroplastie entre la France et les États-Unis. Journal of French Society (SOFOT) «Bof » february 2014.

Investments leading to thanks:

1. Chaumeron A, D Audy, Drolet P, Lavigne M , Vendittoli PA. Periarticular injection in knee arthroplasty improves quadriceps function. Clinical Orthopaedic Related Research. 2013 Jul, 471 (7): 2284-95.
2. Martin Lavigne. Inventory of the metal-metal couple of big diameter Hip arthroplasty. Maîtrise orthopédique, March 2012.

Principal investigator – Fund raising

1. Prospective cohort - Maxera™ (Zimmer, USA) – **40 000 euros (2013)**
2. Randomized controlled trial: « Hermetic wound Vs Standard closure in total hip replacement with direct anterior approach » - **40 000 euros (2014)**
3. Randomized controlled trial (Bordeaux): « kinematic aligned total knee replacement Vs mechanical aligned TKR » - **36 000 euros (2014)**

#### Reviewer activity for Orthopaedics journal

1. 2016 – present: Orthopaedics & Traumatology: Surgery and Research (OTSR)
2. 2015 - present: Bone & joint Journal (BJJ)

#### Moderator in international congresses

1. International Society for Technology in Arthroplasty (ISTA) Congress - Boston 2016
2. European Orthopaedic & Research Society Congress (EORS) - Bologna 2016
3. International Society of Orthopaedic & Trauma Congress (SICOT) - Hyderabad, October 2013

#### Keynote speaker

##### FORTE Summer School, Faro 2016

1. Primary knee replacements
2. Revision knee replacement
3. Fractures around the knee

##### Great Debate, London, June 2016 (member of the faculty)

4. Kinematic alignment in Total Knee Arthroplasty
5. Bi-unicompartimental arthroplasty – current evidence

##### Aquitania Orthopaedic Congress (CAO):

6. Kinematic alignment and TKA, may 2014
7. The use of ultra-porous metal in revision arthroplasty, may 2014

##### B-Braun's day hip & knee meeting:

8. Navigation and Hip replacement, May 2014
9. Kinematic alignment and TKA, may 2015

##### Hip & Knee Sanofi Congress, Biarritz October 2014

10. Case discussion

#### Oral communications (Podium)

##### ➤ International Congress

##### European Knee Society, London April 2017 (forthcoming):

1. **Charles Riviere, Farhad Iranpour, Edouard Auvinet, Kirsty Asare, Simon Harris, Arash Aframian, Justin Cobb, Sebastien Parratte.** High rate of distal lateral trochlea facet overstuffing after mechanically aligned TKA. Orthop and Trauma: Surgery & research –submitted.

European Orthopaedic & Research Society Congress (EORS), Bologna 2016:

2. **Does Standing Limb Alignment Of Total Knee Arthroplasty Predicts Dynamic Alignment And Knee Loading During Gait?** Charles Rivière, Matthieu Ollivier, Damien Girerd, Jean Noël Argenson, Sébastien Parratte
3. **Does Kinematic Alignment Of Conventional TKA Implants Restore The Patient's Native Trochlear Geometry?** Charles Rivière, Hemina Shah, Farhad Iranpour, Arash Aframian, Edouard Auvinet, Justin Cobb, Stephen Howell, Simon Harris
4. **Spine-hip relations add understandings to the pathophysiology of femoro-acetabular impingement.** Charles Rivière, Antoinette Hardijzer, Paul-Émile Beaulé, Sarah Muirhead-Allwood, Jean-Yves Lazennec, Justin Cobb

SICOT Congress, Hyderabad, October 2013:

5. **Symposium " Hip Tribology ": Comparison of whole blood metal ion levels in four kinds of metal-on-metal total hip arthroplasty wide head and Its clinical consequences.**
6. **Hip Resurfacing versus 28mm Metal on Metal Total Hip Arthroplasty: Randomised Trial at 6 to 9 Years Follow-up**
7. **Clinical and biomechanical evaluations of two different designs of total knee arthroplasty: Triathlon Vs Nexgen**

EFORT Congress, Geneva, June 2016:

8. **Does Kinematic Alignment of conventional TKA' implants restore the patient' s native trochlea geometry?**

Canadian National Congress of orthopaedic surgery (COA), Ottawa, May 2012:

9. **Alumina on alumina versus conventional metal on polyethylene: A randomized clinical trial with 9 to 15 years follow-up.** Charles Rivière, Pascal-André Vendittoli, Martin Lavigne, Pauline Lavoie, Ahmed Alghamdi, Nicolas Duval

French National Congress of orthopaedic surgery (SOFOT), Paris, November 2012:

10. **Aspirin versus LMWH in preventing DVT after THA: a randomized, double-blind.** Charles Rivière, Pascal-André Vendittoli, Martin Lavigne
11. **Block analgesia versus continuous femoral periarticular infiltration during TKA: a randomized, double-blind.** Charles Rivière, Pascal-André Vendittoli, Martin Lavigne
12. **Evaluation of the method of measuring released by total hip torque metal-on- metal blood metal ions.** Charles Rivière, Pascal-André Vendittoli, Janie Barry, Martin Lavigne

➤ Local Congress

Montreal University Edouard Sanson Congress, Montreal, February 2012 orthopaedic program :

13. **Alumina on alumina versus conventional metal on polyethylene: A randomized clinical trial with 9 to 15 years follow-up.** Charles Rivière, Pascal-André Vendittoli, Martin Lavigne, Pauline Lavoie, Ahmed Alghamdi, Nicolas Duval

Hip Toulouse Congress, Toulouse, September 2014:

14. **Acetabular reconstruction in 3A/3B bone defect with Trabecular metal: short term follow-up of our first 26 cases.** *Charles Rivière, Soufiane Gaïlhane, Julien Abad, Dominique Chauveaux, Thierry Fabre*
15. **Modified Stoppa approach in complex acetabular fracture: short term outcome of 8 cases.** *Charles Rivière, Cédric Maillot, Yann Wiart, Dominique Chauveaux, Thierry Fabre*
16. **Direct Anterior approach without table traction: Short term outcomes of our first 100 cases.** *Charles Rivière, Thierry Fabre, Julien Pallaro*

Posters with short presentation

[European Knee Society, London April 2017 \(forthcoming\):](#) 9 Eposters accepted

[EORS Congress, Bologna 2016:](#)

1. **Patient-Specific Cup Planning In Total Hip Replacement: Taking Into Account The Patient-Specific Spine-Hip Relation.** *Charles Rivière, Jean-Yves Lazennec, Catherine Van Der Straeten, Edouard Auvinet, Justin Cobb, Sarah Muirhead-Allwood*
2. **Alignment Options For Total Knee Replacement: Current Evidence.** *Charles Rivière, Farhad Iranpour, Stephen Howell, Pascal.A Vendittoli, Justin Cobb, Sébastien Parratte*

[International Society for Technology in Arthroplasty \(ISTA\) Congress, Boston 2016:](#)

3. **Patient-Specific Cup Planning In Total Hip Replacement: Taking Into Account The Patient-Specific Spine-Hip Relation.** *Charles Rivière, Jean-Yves Lazennec, Catherine Van Der Straeten, Edouard Auvinet, Justin Cobb, Sarah Muirhead-Allwood*
4. **Alignment Options For Total Knee Replacement: Current Evidence.** *Charles Rivière, Farhad Iranpour, Stephen Howell, Pascal.A Vendittoli, Justin Cobb, Sébastien Parratte*
5. **Does Standing Limb Alignment Of Total Knee Arthroplasty Predicts Dynamic Alignment And Knee Loading During Gait?** *Charles Rivière, Matthieu Ollivier, Damien Girerd, Jean Noël Argenson, Sébastien Parratte*
6. **Does Kinematic Alignment Of Conventional TKA Implants Restore The Patient's Native Trochlear Geometry?** *Charles Rivière, Hemina Shah, Farhad Iranpour, Arash Aframian, Edouard Auvinet, Justin Cobb, Stephen Howell, Simon Harris*
7. **Does Kinematic Alignment Of Modern TKA Implants Restore The Patient's Native Trochlear Geometry?** *Charles Rivière, Fatima Dahif, Farhad Iranpour, Arash Aframian, Edouard Auvinet, Justin Cobb, Simon Harris*

[Journée école doctorale, mai 2015, Nice:](#)

8. **Standing coronal alignment after TKA does not predict dynamic alignment and knee loading during gait.** *C.Rivière, O.Matthieu, D.Girerd, JN.Argensson, S.Parratte*

[Canadian National Congress \(COA\), Ottawa, May 2012:](#)

9. **Randomised trial - UKA with modular tibial implant Vs full polyethylene.** *Pascal-André Vendittol, Payam Farhadnia, Charles Rivière, Martin Lavigne*



French national Congress (SOFOT), Paris, November 2012:

10. **Randomised trial - UKA with modular tibial implant Vs full polyethylene.** *Pascal-André Vendittoli, Payam Farhadnia, Charles Rivière, Martin Lavigne*
11. **Alumina on alumina versus metal on conventional polyethylene: a randomized clinical trial with 9 to 15 years follow-up.** *Pascal-André Vendittoli, Charles Rivière, Martin Lavigne, Pauline Lavoie, Ahmed Alghamdi, Nicolas Duval*

International Society of Orthopaedic & Trauma Congress (SICOT), Dubai, October 2012:

12. **Alumina on alumina versus metal on conventional polyethylene: a randomized clinical trial with 9 to 15 years follow-up.** *Pascal-André Vendittoli, Charles Rivière, Martin Lavigne, Pauline Lavoie, Ahmed Alghamdi, Nicolas Duval*
13. **Randomised trial - UKA with modular tibial implant Vs full polyethylene.** *Pascal-André Vendittoli, Payam Farhadnia, Charles Rivière, Martin Lavigne*

International Orthopaedic Congress (SICOT), Hyderabad, October 2013:

14. **A prospective cohort of femoro-acetabular impingement Treated with hip dislocation approach: mid - term follow up of 83 cases.** *Pascal-André Vendittoli, Payam Farhadnia, Charles Rivière, Martin Lavigne*
15. **Clinical and biomechanical evaluations of two different designs of total knee arthroplasty: Triathlon Vs Nexgen.** *Alexandre Renaud, Pascal-André Vendittoli, Charles Rivière, Martin Lavigne*
16. **Hip resurfacing versus 28mm Metal on Metal Total Hip Arthroplasty: Randomised Trial at 6 to 9 Years Follow-up.** *Pascal-André Vendittoli, Charles Rivière, Martin Lavigne*

Congress Participation

High impact congress:

1. International Society for Technology in Arthroplasty (ISTA): 2016
2. European Orthopaedic and Research Society Congress (EORS): 2016
3. American National Congress (AAOS): 2012, 2013, 2014, 2015
4. French National Congress (SOFOT): 2006, 2009, 2010, 2012, 2013, 2014
5. Canadian National Congress (COA): 2012
6. European Federation of National Associations of Orthopaedic and Traumatology Congress (EFORT): 2015, 2016
7. International congress of joint replacement (ICJR): 2015
8. International Congress of Orthopaedic and Trauma surgery (SICOT) 2013 Great debate, London 2015, 2016
9. London Hip meeting 2011, 2016

Others congresses:

10. Great debate, London 2015, 2016
11. London Hip meeting 2011, 2016
12. Quebec Congress (COQ): 2011
13. Montreal University Edouard Sanson Congress (POES), Montreal 2012
14. Aquitania Congress, St Jean de Luz (2009, 2014, 2015)
15. "Orthopaedic and biology" Congress, Berlin 2008
16. "Knee reconstruction" Biomet Congress, Prague 2013

17. Hip & knee BBraun's days, St Cyr-sur-mer 2014, 2015
18. Navigation BBraun Aesculap Club, Lyon, 2015
19. Journée de l'École doctorale, Nice, 2015

#### Fluent languages

1. French
2. English

#### Interests

- **Travelling:** One year "world- trip" (2008), More than 60 countries visited worldwide
- **Sports:** Tennis, Golf, Mountain activities (skiing, hiking), Kite-surfing