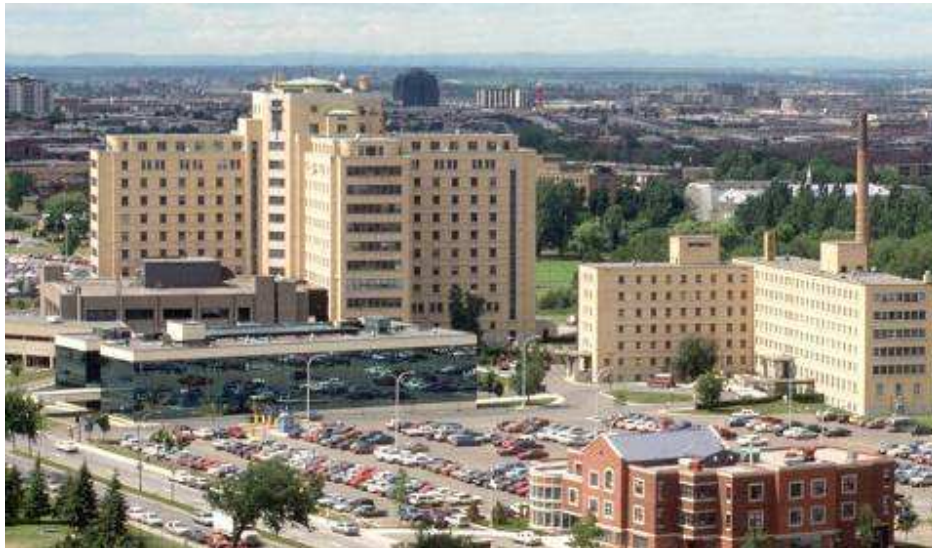


## **Complementary training in lower limbs articular reconstruction at the Hospital Maisonneuve-Rosemont**

**Arthroplasty Group:**

**Louis-Philippe Amiot  
David Blanchette  
Michel Fallaha  
Marc Isler  
Martin Lavigne  
Patrick Lavigne  
Vincent Massé  
Sophie Mottard  
Alain Roy (Chief Surgeon)  
Pascal-A Vendittoli**



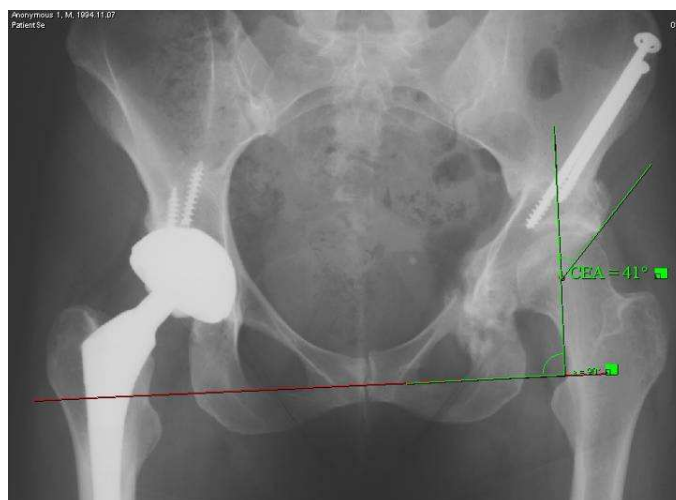
## Articular Reconstruction Unit

The Arthroplasty Unit of Hospital Maisonneuve-Rosemont is a Quebec referral centre for hip and knee articular replacement. The specific clientele referred to Hospital Maisonneuve-Rosemont consists mainly of young patients suffering hip and knee arthrosis.

All of the surgeons in the unit have been specifically trained in hip and knee surgery, thus ensuring quality service. Research represents an important axis for this unit. A number of ongoing projects are aimed at improving postoperative analgesic treatments, various cutaneous incisions and new implants favoring a more rapid return to regular activities. Moreover, new techniques of minimally invasive surgery have been developed to afford more effective rehabilitation and allow the patient to return home as soon as the day after the surgery.

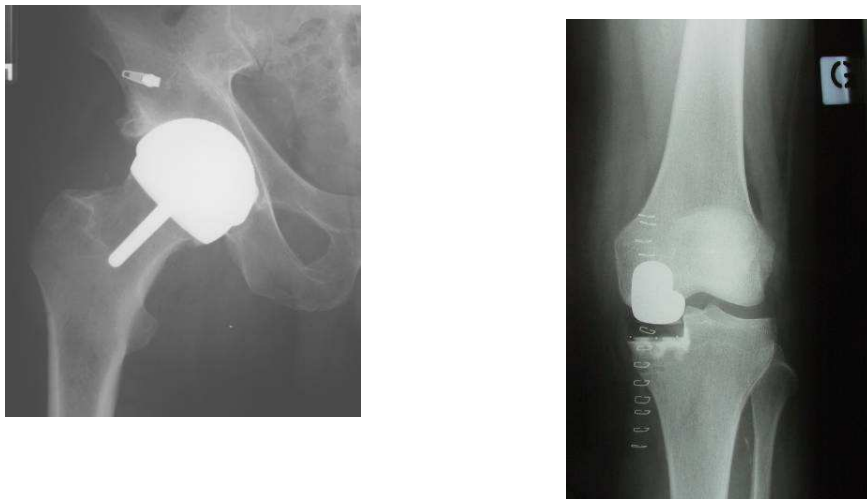
### Particular clientele

The Arthroplasty Unit enjoys unique expertise in Quebec in the treatment and prevention of hip arthrosis in young patients. The Service offers early treatment of hip arthrosis by hip arthroscopy, open dislocation of the hip and periacetabular osteotomy. These techniques allow young patients to avoid or delay joint replacement.



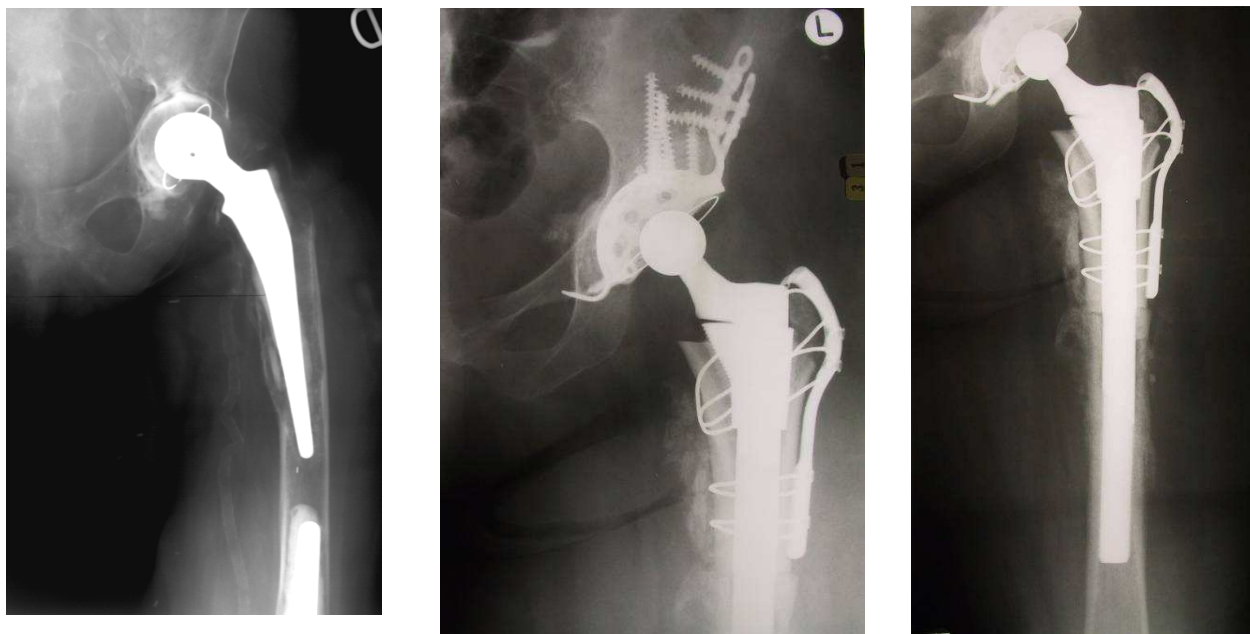
**Figure 1:** 42-year-old patient requiring a total alumina-alumina prosthesis of the right hip and a periacetabular osteotomy of the left hip.

When articular degeneration in young patients is too severe, conservative joint replacement surgery is offered: metal-metal resurfacing of the hip. The Service is a pioneer in this technique in Canada and currently possesses the greatest experience in this type of surgery. In cases of early stage arthrosis of the knee, a conservative technique is unicompartmental prosthesis.



**Figure 2:** Left, metal-metal resurfacing of the hip.  
Right, unicompartmental prosthesis of the knee.

Over the years, the Service has established peak expertise in prosthetic revision surgery.



**Figure 3:** Left, total prosthesis of loose hip with significant bone loss.  
Centre and right, prosthetic revision with proximal femoral allograft and acetabular cage.

## **Teaching activities**

The Orthopedic Service of Hospital Maisonneuve-Rosemont is one of three hospital training centers for medical residents in orthopedics in the Édouard Samson Program in Orthopedics of the Université de Montréal (Hospital Sacré-Cœur, Hospital Sainte-Justine and Hospital Maisonneuve-Rosemont). We offer doctors-in-training excellent training in joint replacement techniques.

## **Research activities**

The Service directs several research projects aimed at improving patient care. Prospective and randomized projects are favored. We are currently improving peri-operative analgesic techniques to reduce pain associated with joint replacement surgery. In addition, we seek to determine if conservative surgery, such as resurfacing of the hip, serves to improve function and reduce the length of convalescence. Our team includes 3 full-time research assistants and a computerized database.

## **Description of advanced training in reconstruction of adult lower limbs**

The main objectives of this advanced training are:

1. To learn and master the treatment of early arthrosis of the hip and knee with techniques of joint preservation.
2. To master hip and knee joint replacement techniques (primary and revision).
3. To undertake and conduct a clinical research project in the area of lower limb reconstruction.

During his/her clinical training, the monitor will treat patients suffering hip pathologies by various means: periacetabular osteotomy, proximal femoral osteotomy, hip dislocation and osteoplasty, arthroscopy, total hip prosthesis, revision and "resurfacing."

Further, he/she will treat articular pathologies of the knee by the following means: tibial or femoral osteotomy, total prosthesis of the knee and unicompartmental prosthesis, in addition to ligament reconstruction and arthroscopy of the knee.

The clinical monitor will play an active role in the lower limb reconstruction team. Under supervision by orthopedist members of the Service, he/she will be involved with preoperative patient evaluation, assisting in operations, performing surgery and post-operative follow-up. In addition, the clinical monitor will have active instructional tasks relative to students and residents of the Orthopedics Service.

Research activity will be another priority for the clinical monitor. There are always several ongoing prospective projects assessing various problems related to adult lower limb reconstruction. He/she will work closely with the research assistant in coordinating one or more projects leading to at least one publication during his/her training.

The fellow's weekly schedule entails 2-3 days in the operating room, 1 day in the clinic and 1-2 days of research activities.

This training takes place at Hospital Maisonneuve-Rosemont, a University Hospital Centre, affiliated with the Université de Montréal. To be able to practice within our establishment, you will need a temporary practice permit from the Quebec College of Physicians as well as the approval of your training by the Department of Surgery of the Université de Montréal

Assistance towards finding a residence will be offered to the clinical monitor. However, the clinical monitor will be responsible for all residence-related costs and personal expenses. Transportation, health insurance and any other expenses related to the training will be the responsibility of the clinical monitor. Four weeks of vacation a year are provided for, and your participation in the congress of the Quebec Orthopedic Association is strongly encouraged.

If you wish to apply for the post of Fellow in our Service, you must send a letter of intention and your CV to:

Dr Pascal-André Vendittoli  
Dr Martin Lavigne  
Hôpital Maisonneuve-Rosemont  
5415 boul l'Assomption  
Pavillon rachel Tourigny, porte 4152  
Montreal, Quebec  
H1T 2M4  
Ph: 514-252-3400, ext 5701  
Fax 514-251-7762  
[Pa.vendittoli@videotron.ca](mailto:Pa.vendittoli@videotron.ca)  
[Lavigma2@hotmail.com](mailto:Lavigma2@hotmail.com)

## **List of our students and fellows**

### Doctors in sub specialized training in arthroplasty (fellowship)

2004-2005	Ahmed Abaub (Strasbourg, France)
2005-2006	Julien Girard (Lille, France)
2006	Reddi Boddu Siva Rama (U.K.)
2007	Muthu Ganapathi (U.K.)
2007	Chabane Aityahia
2008	Jean-Michel Lafosse (Toulouse, France)
2008	André Nzocu (Gabon)
2009	Sanket Diwanji (India)
2009	Nejla Tidjane (Algeria)
2010	Ahmed Alghamdi (Saudi Arabia)

### **Master students (MSc)**

2005-2006	Véronique Villagio Université de Montréal Thesis: Évaluation fonctionnelle post resurfaçage de la hanche
2008-	Traian Amzica Université de Montréal Thesis: Mesure et analyse du taux ionique post arthroplastie totale de la hanche metal-métal
2008-	Mahmoud Khodavesi Université de Montréal Thesis : Évaluation clinique d'une tige conique flutée dans les cas de révision fémorale.
2008-	Sophie Mottard Université de Montréal Thesis: Comparaison des différent médium pour la mesure des taux ioniques post arthroplastie totale de la hanche metal-métal
2009-	Alexandre Renaud Université de Montréal Thesis : Total knee replacement with soft tissue guided motion design.

### **Doctoral students (PhD)**

- 2005-2008 Julie Nantel  
Université de Montréal  
Thesis: Comparaison fonctionnelle du remplacement de la hanche par PTH et resurfaçage  
Boursière MENTOR (CIHR)
- 2007- Hassan Nasri  
École de technologie supérieure de Montréal  
Thesis: Analyse des contraintes et déformations dans l'acetabulum et optimisation des paramètres lors de la mise en place des prothèses de hanche (cupule métallique) par press-fit
- 2008- Christiane Caouette  
École de technologie supérieure de Montréal
- 2008- Vicky Bouffard  
Université de Montréal  
Thesis: Comparaison fonctionnelle du remplacement de la hanche par PTH et resurfaçage

### **Postdoctoral students**

- 2005-2007 Renaud Winzenrieth  
Étude du remodelage osseux acétabulaire post resurfaçage de la hanche  
Boursier MENTOR (CIHR)

### **Researchers**

- 2009 Micheal Reimeringer PhD, Post Doc student  
Ecole de Technologie Supérieure
- 2009 Marie-Ève Lacasse, MD, Resident in orthopaedic surgery  
Randomized study comparing femoral nerve bloc and local infiltration in TKA  
Research rotation, 2 months  
Maisonneuve-Rosemont Hospital
- 2008-2009 Isaac Berman, MD, Resident in orthopaedic surgery  
Clinical and radiographic review of our first 400 Durom acetabular component with minimum 2 years of follow up.  
Research rotation, 2 months  
Maisonneuve-Rosemont Hospital
- 2008 Alexandre Renaud, MD  
Évaluation des facteurs associés à l'infection de l'arthroplastie du genou ou de la hanche  
Research rotation, 1 month  
Maisonneuve-Rosemont Hospital

- 2008 Christian Desmarais, MSc  
Modélisation par éléments finis du remodelage osseux fémoral post  
resurfaçage de la hanche  
École de technologie supérieure de Montréal
- 2008 Payam Farhadnia, MD  
Comparaison de la reconstruction biomécanique de PTH BFH et  
resurfaçage de la hanche
- 2007-2008 Nancy Marcotte, second-year medical student  
Cours travail clinique individuel MMD 1087  
Université de Montréal
- 2007-2009 Marc Thérien, MSc  
Analyse de la démarche de sujets porteurs de PTH BFH ou de  
resurfaçage de la hanche.  
Laboratory for the Analysis of Movement, Marie-Enfant Hospital
- 2005-2006 Dominic Plamondon, MSc  
Évaluation de l'amplitude articulaire de différents types d'implants de  
resurfaçage de la hanche  
École de technologie supérieure de Montréal
- 2005-2006 Édith Martin, MSc  
Évaluation de la corrosion chrome cobalt titane d'implants de  
remplacement articulaire  
École polytechnique de Montréal
- 2005-2006 Nicolas Termoz, PhD  
Comparaison fonctionnelle du remplacement de la hanche par PTH et  
resurfaçage  
Marie-Enfant Hospital, Laboratory for the Analysis of Movement



## Prizes with fellows or master students

- 2006 **Best Research Day Clinical Presentation**  
27<sup>th</sup> Research Day of the Programme d'orthopedie Édouard Samson (POES),  
Montreal, QC, Canada  
**Mottard S**, Lavigne M, Roy A, Vendittoli PA  
Metal ion release following metal-on-metal 28 mm total hip arthroplasty versus  
surface replacement arthroplasty: a randomized study
- 2006 **Best Research Presentation**  
Annual Meeting of the Quebec Orthopaedics Association (QOA),  
Montreal, QC, Canada  
**Mottard S**, Lavigne M, Roy A, Vendittoli PA  
Ions sanguins chrome cobalt associés au remplacement total et resurfaçage de la  
hanche
- 2006 **Best Research Day Presentation of the Programme d'orthopedie Édouard  
Samson (POES)**  
Montreal, QC, Canada  
**Mottard S**, Lavigne M, Roy A, Vendittoli PA  
Amplitude articulaire suite à une prothèse totale et un resurfaçage de la hanche :  
une étude clinique randomisée
- 2006 **Best Poster Presentation at the 35<sup>th</sup> Scientific Days of the Department of  
Surgery**, Faculty of Medicine, Université de Montréal, Montreal, QC, Canada  
**Mottard S**, Lavigne M, Roy A, Vendittoli PA  
Ions sanguins chrome cobalt associés au remplacement total et resurfaçage de la  
hanche
- 2009 **John Charnley award from the American Hip Society**  
Given at the Annual Hip Society meeting  
Las Vegas, USA  
For the paper :  
Lavigne M, **Therrien M**, Prince F, Vendittoli PA. Randomized trial comparing metal-  
on-metal total hip arthroplasty with large diameter head and total hip resurfacing.  
Clin Orthop Relat Res 2009
- 2009 **Best poster**  
Canadian Orthopaedic Association annual meeting  
Whistler, BC, Canada  
For the paper:  
**Muthu Ganapathi**, Pascal-André Vendittoli, Martin Lavigne: Residual Groin Pain  
and Discomfort 2 Years After Metal-on-Metal 28mm THA, Large Diameter Head THA  
and Hip Resurfacing

- 2009 **Best poster**  
Canadian Orthopaedic Association annual meeting  
Whistler, BC, Canada  
For the paper:  
Vendittoli Pascal-A, Carrier Mathieu, **Ganapathi Muthu**, Lavigne Martin :  
Reliability and usefulness of the signs of bony integration in assessment of  
uncemented acetabular components in the short term follow-up period
- 2009 **Best oral presentation**  
**84th annual meeting of Société d'Orthopédie et de Traumatologie  
Française (SOFCOT)**, Paris, France.  
**Laffosse JM**, Potapov A, Malo M, Lavigne M, Fallaha M, Girard J,  
Vendittoli PA.  
Hypoesthésie après PTG. Étude prospective, comparative et randomisée  
de l'incision cutanée latérale versus mini médiane.

## **Recent publications with fellows or master students**

### **1) Book chapter**

Lavigne M, **Laffosse JM**, Vendittoli PA. Historical evolution of the concept of femoro-acetabular impingement as a cause of hip osteoarthritis. 2010

**Djiwanji Sanket**, Vendittoli Pascal-A, Lavigne Martin Hip resurfacing versus Total Hip replacement. In: Bhandari Evidence-base orthopaedic textbook, Wiley-Blackwell, 2010

**Laffosse Jean-Michel**, Lavigne Martin, Vendittoli Pascal-A. Hip Resurfacing revision, In : Cahier d'enseignement de la SOFCOT, Paris, 2010.

### **2) Research or scholarly publications in peer-reviewed journals**

1. Vendittoli PA, **Motard S**, Roy AG, Lavigne M. Randomized study comparing chromium and cobalt ion release in blood with 28 mm metal-on-metal total hip arthroplasty and metal-on-metal total hip resurfacing. J Bone Joint Surg B., 2010 Jan;92(1):12-9.
2. Lavigne M, **Therrien M**, **Nantel J**, Roy A, Prince F, Vendittoli PA. The John Charnley Award: The Functional Outcome of Hip Resurfacing and Large-head THA Is the Same: A Randomized, Double-blind Study. Clin Orthop Relat Res. 2009 Jun 20.
3. **Nantel J**, Lavigne M, Vendittoli PA, Prince F. Postural balance during quiet standing in patients with total hip arthroplasty with large femoral head and surface replacement arthroplasty. Arch Phys Med Rehabil. 2009 Sep;90(9):1607-12.

4. **Nantel J**, Termoz N, Centomo H, Lavigne M, Vendittoli PA, Prince F. Gait patterns following total hip arthroplasty and surface replacement arthroplasty. *Arch Phys Med Rehabil*. 2009 Mar;90(3):463-9.
5. Rama KR, Vendittoli PA, **Ganapathi M**, **Borgmann R**, Roy A, Lavigne M. Incidence and severity of heterotopic ossification after surface replacement arthroplasty and total hip arthroplasty: a randomized study. *J Arthroplasty*. 2009 Feb;24(2):256-62. Epub 2008 Apr 11.
6. **Nantel J**, **Termoz N**, Centomo H, Lavigne M, Vendittoli PA, Prince F. Postural balance during quiet standing in patients with total hip arthroplasty and surface replacement arthroplasty. *Clin Biomech (Bristol, Avon)* 2008;23(4):402-7.
7. Lavigne M, **Rama RK**, **Ganapathi M**, Nuno N, Winzenrieth R, Vendittoli PA. Factors affecting acetabular bone loss during primary hip arthroplasty – A quantitative analysis using computer simulation. *Clin Biomech (Bristol, Avon)* 2008;23(5):577-83.
8. Lavigne M, **Masse V**, **Girard J**, Roy AG, Vendittoli PA. [Return to sports after hip resurfacing or total hip arthroplasty: a randomized study] *Rev Chir Orthop Reparatrice Appar Mot* 2008;94(4):361-7.
9. Lavigne M, **Rama KR**, Roy A, Vendittoli PA. Painful impingement of the hip joint after total hip resurfacing: a report of two cases. *J Arthroplasty* 2008;23(7):1074-9.
10. **Girard J**, Vendittoli PA, Roy AG, Lavigne M. [Femoral offset restoration and clinical function after total hip arthroplasty and surface replacement of the hip: a randomized study] *Rev Chir Orthop Reparatrice Appar Mot* 2008;94(4):376-81.
11. **Ganapathi M**, Vendittoli PA, Lavigne M, Gunther KP. Femoral component positioning in hip resurfacing with and without navigation. *Clin Orthop Relat Res*. 2009 May;467(5):1341-7. Epub 2008 May 17.
12. Vendittoli PA, **Mottard S**, Roy AG, Dupont C, Lavigne M. Chromium and cobalt ion release following the Durom high carbon content, forged metal-on-metal surface replacement of the hip. *J Bone Joint Surg Br* 2007;89(4):441-8.
13. Vendittoli PA, **Ganapathi M**, Lavoie P, Duval N, Roy A, Lavigne M. Randomised study comparing two methods of acetabular cup positioning in total hip arthroplasty. *Hip Int* 2007; 17(3).
14. Vendittoli PA, **Ganapathi M**, Nuno N, Plamondon D, Lavigne M. Factors affecting hip range of motion in surface replacement arthroplasty. *Clin Biomech (Bristol, Avon)* 2007;22(9):1004-12.
15. Vendittoli PA, **Ganapathi M**, Lavigne M. Blood and urine metal ion levels in young and active patients after Birmingham hip resurfacing arthroplasty. *J Bone Joint Surg Br* 2007;89(7):989.

16. Vendittoli P, **Girard J**, Lavigne M, Lavoie P, Duval N. Comparison of alumina-alumina to metal-polyethylene bearing surfaces in THA: a randomized study with 4- to 9-years follow-up. *Acta Orthop Belg* 2007;73(4):468-77.
17. Vendittoli PA, **Makinen P**, Drolet P, Lavigne M, Fallaha M, Guertin MC, Varin F. A multimodal analgesia protocol for total knee arthroplasty. A randomized, controlled study. *J Bone Joint Surg Am* 2006;88(2):282-9.
18. Vendittoli PA, Lavigne M, Roy AG, Girard J. Removal of acetabular bone in resurfacing arthroplasty of the hip. *J Bone Joint Surg Br* 2006;88(6):838-9.
19. Vendittoli PA, Lavigne M, **Girard J**, Roy AG. A randomised study comparing resection of acetabular bone at resurfacing and total hip replacement. *J Bone Joint Surg Br* 2006;88(8):997-1002.
20. **Girard J**, Vendittoli PA, Lavigne M, Roy AG. Resurfacing arthroplasty of the hip in osteopetrosis. *J Bone Joint Surg Br* 2006;88(6):818-21.
21. **Girard J**, Lavigne M, Vendittoli PA, Roy AG. Biomechanical reconstruction of the hip: a randomised study comparing total hip resurfacing and total hip arthroplasty. *J Bone Joint Surg Br* 2006;88(6):721-6.

### **3) Submitted, under revision or in press**

- a. Vendittoli PA, Collins Melissa, Lavigne Martin, **Ganapathi Muthu** : Joint perception after hip or knee replacement surgery. *J Arthroplasty* (submitted 2010)
- b. **Laffosse JM**, Potapov A, Malo M, Lavigne M, Fallaha M, Girard J, Vendittoli PA. : Hypoesthesia After Total Knee Arthroplasty: A Randomised, Controlled Trial Comparing Lateral Parapatellar to Mini Medial Incision in Total Knee Arthroplasty. *Clin Orthop* (submitted 2010)
- c. Lavigne M, Belzile E, Roy A, Vendittoli PA, Metal Ion Release: Comparison of Four Large Diameter Metal-on-metal Bearing Articulations. *J Bone and Joint Surgery AM* (accepted 2010).
- d. Lavigne M, **Lafosse JM**, Roy A, Vendittoli PA. Groin pain in 3 different types of hip arthroplasty: 28 mm THA, LDH THA and Hip resurfacing. *J Bone and Joint Surgery AM* (accepted 2010).
- e. **Renaud A**, Lavigne M, Vendittoli PA, Total joint replacement infection, 17 years follow up study. *Can J Surgery* (submitted 2010)
- f. **Vicky Bouffard, Julie Nantel**, Marc Therrien, Martin Lavigne, Pascal-André Vendittoli, François Prince. Gait biomechanics in hip arthroplasty patients and control subjects: effect of big femoral head and surface replacement prostheses (Submitted 2011)
- g. **M. Reimeringer**, N. Nuño, C. Desmarais-Trépanier, M. Lavigne, P.A. Vendittoli. Uncemented femoral stem length effect on its primary stability. (soumis 2011).
- h. **Jean Michel Laffosse**, Kim Aubin, Martin Lavigne, Alain Roy, Pascal-André Vendittoli. Évolution radiologique du col fémoral après resurfaçage de hanche. *Revue de Chirurgie et Orthopédie* (accepté 2010).