



Hip resurfacing for the young arthritic hip

The concept of a hip resurfacing procedure is not new. Many well-known surgeons, over the last 4 decades, at times advocated the practice of resurfacing the hip, as it seemed intuitively most logical to ‘reshape’ the joint to its native form, instead of performing a hip replacement (1). However, not all generations of hip resurfacing were successful, for a variety of reasons. The lessons learned from each generation of hip resurfacing improved our understanding of surgical technique, hip biomechanics, and tribology (1,2). The knowledge gathered from the past, coupled with advancements in technology and manufacturing, have enabled surgeons to now offer hip resurfacing with various bearings to young arthritic patients (3-5).

We are delighted and honored to have been able to assemble thoughts and manuscripts from several centers around the globe focusing on various aspects about “Hip resurfacing for the young arthritic hip”.

Dr. Sluis-Cremer and Dr. Shimmin provide the reader with an overview of what the various arthroplasty options are for the young arthritic patient presenting to clinic (6). Furthermore, they review results from both registry- and individual series- of the various bearing options a surgeon should consider for young arthritic patients. Dr. Lawrie and Dr. Barrack provide a historical perspective of hip resurfacing and how designs evolved to the current ones used (7). They also provide an overview of factors associated with outcome. Dr. Multani *et al.* describe what factors a surgeon offering hip resurfacing considers when deciding for the optimal implant for his/her patients (8).

Once it has been decided that a resurfacing procedure is the optimal implant for the patient, deciding on the approach to use would be of significance as each approach is associated with certain advantages and disadvantages, which are detailed in the article by Dr. Gomez *et al.* (9). There are some inherent differences between a hip resurfacing and a THR that have certain technical implications when performing the procedure. Dr. Nicol *et al.* provide the reader with several surgical-dependent factors that ought to be considered to improve chances of success following hip resurfacing procedure (10).

Each resurfacing implant has individual design and material characteristics; Dr. De Smet has a huge experience on the topic having used several implants in his very high-volume practice. Dr. Van Quickenborne *et al.* share their results of a prospective study of 9 different implants, including how the study was affected with the various regulations implemented (11). The method of fixation can also vary; despite most designs only offering hybrid fixations, a few surgeons have used uncemented implants with good results. Slullitel *et al.* provide a review of the literature and share Dr. Kim’s results with uncemented fixation (12).

The current generation of metal-on-metal hip resurfacings has been associated with adverse reactions to the metal debris produced. Dr. Campbell and Dr. Takamura describe the local and systemic consequences associated with these implants and highlight what the histopathological examination of tissues has taught us (13). Furthermore, Dr. Su provides the reader with the state-of-the art approach to the painful hip resurfacing by describing his evaluation algorithm and the revision options one should consider (14).

There is little doubt that female gender has been associated with adverse outcome following hip resurfacing. As a result, most surgeons no longer offer a resurfacing to female patients (2,4). However, Dr. Gross has not had similar adverse experience when resurfacing females. In this issue, he overviews his results and describes improvements in technique that have narrowed the disparity described between genders (15).

The occurrence of adverse reactions to metal debris and their consequences have led to surgeons and engineers in search of alternative bearings. Advancements in manufacturing have enabled the production of ceramic-on-ceramic and metal-on-polyethylene resurfacing bearings. Dr. Pritchett provides the reader with an invaluable insight on the life-long journey of using a metal-on-polyethylene resurfacing design and what the results of such combination are in expert hands (16). Dr. de Villiers *et al.* share their experience on the past, the present and the future of ceramic implants and resurfacing along with the challenges associated with introducing this novel implant into the market (17). There is little doubt that the introduction of new implants into the market should be tightly regulated to timely identify any adverse outcome that may occur. Dr. Kendrick *et al.* review the use of RSA when introducing novel implants and propose what a contemporary introduction of new implants into practice should be (18).

Lastly, with a reducing number of hip resurfacings performed there is little doubt that training may be impeded with an associated hesitation of introducing resurfacing into one’s practice. Dr. Slullitel *et al.* provide a literature review on the

learning curve associated with introducing a hip resurfacing procedure and highlight the pitfalls that may take place during these cases (19).

We hope that the readers enjoy this issue of *Annals of Joint* and find it as stimulating as we do. We are grateful to all authors for contributing manuscripts of high quality, reflecting their wide experience and knowledge.

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References

1. Amstutz HC, Grigoris P, Dorey FJ. Evolution and future of surface replacement of the hip. *J Orthop Sci* 1998;3:169-86.
2. Murray DW, Grammatopoulos G, Gundle R, et al. Hip resurfacing and pseudotumour. *Hip Int* 2011;21:279-83.
3. Farrier AJ, Moore L, Manning W, et al. Comparing the cup deformation following implantation of a novel ceramic-on-ceramic hip resurfacing bearing to a metal standard in a cadaveric model. *Proc Inst Mech Eng H* 2019;233:603-10.
4. Murray DW, Grammatopoulos G, Pandit H, et al. The ten-year survival of the Birmingham hip resurfacing: an independent series. *J Bone Joint Surg Br* 2012;94:1180-6.
5. Treacy RBC, Holland JP, Daniel J, et al. Preliminary report of clinical experience with metal-on-highly-crosslinked-polyethylene hip resurfacing. *Bone Joint Res* 2019;8:443-50.
6. Sluis-Cremer T, Shimmin AJ. Arthroplasty options for the young arthritic hip. *Annals of Joint* 2020;5. [Epub ahead of print].
7. Lawrie CM, Barrack RL. Hip resurfacing arthroplasty—what has history taught us? *Annals of Joint* 2020;5. [Epub ahead of print].
8. Multani IS, Cunningham IKT, Walter WL. My current indications for hip resurfacing. *Ann Joint* 2020;5:14.
9. Gomez AM, Grammatopoulos G, Beulé PE. Contemporary surgical approaches for hip resurfacing. *Ann Joint* 2020;5:9.
10. Nicol G, Vanbiervliet J, Grammatopoulos G. Surgical considerations to avoid adverse mechanics. *Ann Joint* 2020;5:6.

11. Van Quickenborne D, Van Der Straeten C, De Smet K. Randomized controlled trial comparing 9 different hip resurfacing designs with a follow-up of 5 years. *Ann Joint* 2019;4:47.
12. Slullitel P, Tubin N, Kim P. Then and now, design matters: significant improvements in the clinical and radiological performance of cementless hip resurfacing. *Ann Joint* 2019;4:38.
13. Campbell P, Takamura K. Local and systemic consequences of metal-on-metal hip resurfacing implants. *Ann Joint* 2020;5:5.
14. Su EP. Evaluation and treatment of the painful hip resurfacing. *Ann Joint* 2020;5:16.
15. Gross TP. Female Gender is not a Contraindication for Hip Resurfacing. *Annals of Joint* 2020;5. [Epub ahead of print].
16. Pritchett JW. Polyethylene for hip resurfacing—worth a second look. *Ann Joint* 2020;5:10.
17. de Villiers D, Richards L, Tuke M, et al. Ceramic resurfacing: the future and challenges. *Ann Joint* 2020;5:12.
18. Kendrick B, Palmer A, Taylor A. How best to regulate new implants in the market—is radiostereometric analysis enough? *Ann Joint* 2019;4:45.
19. Slullitel P, Grammatopoulos G, Calistri A, et al. What is the learning curve associated with a hip resurfacing? *Ann Joint* 2019;4:42.

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