

## ORTHOPAEDICS, ARTHROPLASTY AND ARTHROSCOPY

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### The evolution of robotic surgery in hip arthroplasty

**Hatim ALShareef**

Orthopedic Consultant at King Fahad Armed Forces Hospital, Saudi Arabia

Robotic surgery has emerged as a revolutionary technology in the field of orthopedics, offering new possibilities for improving the outcomes of hip arthroplasty. This abstract aims to provide an update on the advancements in robotic options for hip arthroplasty, focusing on the active, semi-active, and passive types of robotics used in this surgical procedure. Furthermore, the advantages and disadvantages of robotic hip replacement surgery, along with an assessment of the learning curve and cost-effectiveness of implementing this technology. Finally, an appraisal of the existing literature discussing the outcomes of robotic hip replacement surgery will be provided.

Robotic-assisted technology in hip arthroplasty offers several benefits. Active robotic systems utilize real-time feedback mechanisms, enabling surgeons to precisely plan and execute the procedure. Semi-active systems provide assistance to enhancing precision and reducing the risk of errors. Passive robotic systems act as guides, allowing surgeons to follow preoperative plans. Each type of robotic system presents unique advantages, such as improved implant positioning, enhanced surgical accuracy, and reduced soft tissue damage. As surgeons gain experience, procedure times decrease, and outcomes improve. While initial costs may be higher, the potential for reduced revision rates and improved patient outcomes could contribute to long-term cost savings. Studies reported improved implant positioning and reduced dislocation rates when robotic technology is utilized.

In conclusion, the evolution of robotic surgery in hip arthroplasty has introduced innovative options for surgeons. The active, semi-active, and passive robotic systems offer distinct advantages and disadvantages, impacting surgical precision and patient outcomes. While the learning curve and cost-effectiveness are important considerations, the existing literature demonstrates promising results in terms of improved implant positioning and functional outcomes. Continued research and advancements in robotic technology will contribute to further optimizing the benefits of robotic hip replacement surgery.

#### References

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#### Biography

Hatim ALShareef is a highly skilled Consultant Orthopedic Trauma Surgeon specializing in Sports Medicine and Arthroscopic Surgery. He is also experienced in Arthroplasty and Lower Limb Reconstruction Surgery. He completed a fellowship in Arthroplasty and Lower Limb Reconstruction Surgery at the University of Toronto, where he gained extensive knowledge and expertise in this field. Currently, He is working as an Orthopedic Consultant at King Fahad Armed Forces Hospital in Jeddah, Saudi Arabia. He is dedicated to providing high-quality orthopedic care, particularly in the areas of sports medicine, arthroscopy, arthroplasty, and lower limb reconstruction surgery. His commitment to patient well-being, medical education, and research makes him a valuable asset to the field of orthopedics.

dr.hatim.alshareef@gmail.com