



Position Statement regarding Robotic-assisted Hip and Knee Replacement Surgery

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Introduction

This position statement has been developed by the Arthroplasty Society of Australia which is a subspecialist group within the Australian Orthopaedic Association (AOA). Australian orthopaedic surgeons are justifiably proud of the high standard of joint replacement surgery performed in our country as shown by results in the AOA National Joint Replacement Registry.

Orthopaedic surgeons are always striving to improve patient outcomes and the survivorship of prosthetic implants. Recently there has been considerable interest in the addition of robotic technology to joint replacement surgery.

Background

All hip and knee replacement surgeries require the creation of an operative plan and a means of executing that plan. Historically, mechanical alignment instruments were, and still are, used successfully to prepare the bone for the joint replacement prostheses. The next advance in the 1990's was the introduction of Computer Assisted Surgery (CAS) in an attempt to improve the accuracy of bone preparation. This was followed by the development of Patient Specific Guides (Image-derived customised alignment and cutting guides) in the late 2000's as another means of achieving accurate bone preparation. The latest advance in instrumentation is the development of robotic-assisted surgery.

Robotic-assisted Surgery

Robotic technologies have been developed with the aim of improving surgical precision, component alignment and soft-tissue balance, with the expectation that this improvement will result in better patient outcomes.

Robotic-assisted joint replacement surgery often includes an image-derived preoperative plan, the use of computer-assisted orientation for positioning (known as navigation) and the use of robotic-assisted cutting or burring tools for bone preparation.

While robotic-assisted surgery has been met with optimism, it will take time to obtain the necessary scientific data to be able to clearly outline its role, as it may be many years before

the benefits of improved alignment and balance are realised. There are encouraging 2-year results from the AOANJRR that show robotic-assisted partial knee replacement had an improved revision rate when compared to non-robotic-assisted partial knee replacements. As robotic-assisted total knee and hip replacement has more recently been introduced, results of this technology for total knee and hip replacement are not yet known.

Conclusion

All new technologies and techniques require ongoing research and continual assessment of outcomes before a definitive role can be established.

There is currently insufficient evidence to show that robotic-assisted surgery delivers better outcomes for hip or knee replacements.

Disclaimer

This statement is an expression of the policy of the Arthroplasty Society of Australia. It is not a comprehensive review of the subject nor is it intended as medical advice for the treatment of individual patients.