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Treating infected joint replacements

Deep prosthetic joint infection (PJI) is a devastating complication after hip replacement, affecting approximately 1% of patients and causing severe pain, poor function, reduced quality of life, and even death. The treatment burden is high for patients and healthcare systems. Further surgery is usually required and is complex, protracted, and associated with further complications.

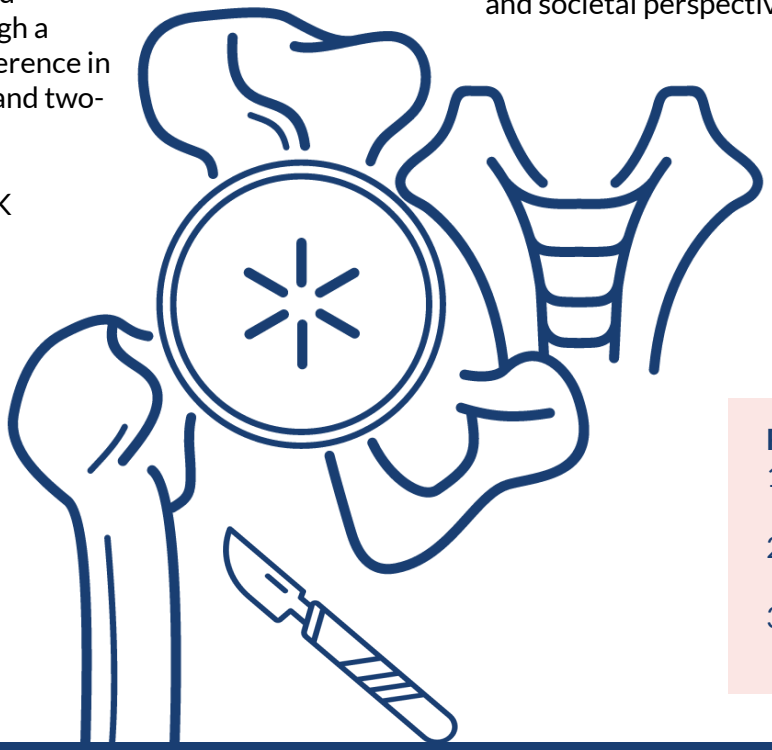
In England and Wales, over 1,000 revision procedures are performed annually because of hip joint replacement infection. This surgery can be one-stage (implant removed and replaced in one operation) or two-stage (implant removed and replacement delayed for several months until clear evidence of the infection being gone). The two-stage strategy has traditionally been considered the best, but the best treatment option was uncertain.

What translational research was done?

Our translational research informed the design of a randomized trial — where patients are randomly assigned to different treatments — comparing one-stage with two-stage revision surgery for hip PJI. We analysed pooled individual patient data gathered through a global collaboration and found no difference in re-infection rates between one-stage and two-stage revision surgery[1].

We interviewed patients across the UK which revealed the devastating physical, psychological, social and financial impact of PJI and its treatment on patients and their families, and that two-stage revision was a heavier burden for patients[2].

Interviews with orthopaedic surgeons revealed they weren't certain about the best treatment option for PJI and were willing to randomize patients to treatments and engage with a randomized trial[3].



Translation into later phase research, clinical practice and patient benefit

Based on these findings we designed and delivered a randomized trial in several countries, including **140 patients,** comparing one-stage with two-stage revision surgery for hip PJI. The trial found benefits of one-stage surgery from a patient and societal perspectives, and that one-stage surgery is more cost-effective.

As part of the trial, we did a patient choice study which found that patients had a strong preference for one-stage surgery. We are now using implementation science and learning collaboratives to mobilise and embed our findings into clinical practice.

Our translational and later phase research will change surgical practice globally, with increased use of one-stage revision surgery for infected hip replacements.

References

1. Kunutsor et al., European Journal of Epidemiology, 2018;DOI:10.1007/s10654 018-0377-9
2. Moore et al., BMJ Open, 2015;DOI:10.1136/bmjopen-2015-009495
3. Moore et al., BMC Musculoskeletal Disorders, 2017;DOI:10.1186/s12891-017-1499-z