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CORR Insights®: Does HIV Infection Increase the Risk of Perioperative Complications after THA? A Nationwide Database Study

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Where Are We Now?

The question regarding the outcomes of a standard procedure like THA in a particular group of patients is a challenging task from a methodological point of view. Nevertheless, dealing with such topics is important for several reasons: (1) The

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treatment of HIV-infected patients is complex and expensive for the public health system; (2) owing to the increasingly successful treatment of HIV, some orthopaedic complications such as avascular necrosis of the femoral head are likely to make this a larger part of orthopaedic practice in the years to come; and (3) these patients require specific planning of the surgical procedure.

Clinical studies alone offer only a limited perspective on the problem, since single-center and even multi-center series often lack the statistical power needed to run important analyses. Some registers publish the results of individual departments [1, 7]; these sometimes show an alarming degree of variation, and demonstrate that THA — generally thought to be predictable — can sometimes be anything but so. The revision rates can vary fivefold across the best and the worst departments in countries, which publish such

data. Even using the same implant, the mean value of three Scandinavian countries shows variations of almost 300% [2]. Against this background, it should come as no surprise that the results of clinical studies regarding individual implants often differ considerably [3–5].

Given this, the analysis of large data sets from registers or based on routine data collection in other national-level data programs can help guide practice, can serve as reference material, and can be compared to sample-based clinical studies in a way that allows the detection of hidden confounders.

On the other hand, such approaches have limitations. They only convey a relatively rough picture of the situation and cannot address all aspects. Sometimes data are missing, and sometimes relevant data are not sufficiently linked.

Where Do We Need To Go?

Data from routine documentation such as those shared by Naziri and colleagues have only been available for a relatively short period of time — since

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electronic documentation found its way into almost all areas of health care.

Data-protection regulations and deficiencies in linking individual data sources restrict the possibilities of data evaluation. The legitimate desire for the protection of privacy competes against the desire to improve the treatment of (future) patients by data evaluations. To date, arthroplasty registers have had a great share in demonstrating the value of such evaluations and developing appropriate methods. However, the development of the current methods and procedures was mainly science-driven, and they are mostly used to deal with national issues. If a Swedish surgeon draws conclusions from the data of his patients about the treatment of future patients of the same population, this will be completely sufficient from his point of view. The general background to this process (the expertise regarding certain surgical procedures, the profiles of patients and hospitals, postoperative care, and much more) only play a minor role for that Swedish surgeon.

This does not necessarily apply to the same extent if these data, results, and conclusions are meant to apply in a general way in other countries. The growing interconnectedness of systems worldwide in consequence of globalization and the rapidly increasing amounts of data available have resulted in big challenges in using these approaches for the patient's benefit,

and also regarding the best utilization of healthcare resources.

The availability of data does not guarantee the quality of those data, and the approaches to analyze them still need to be employed thoughtfully. Where data quality is difficult to verify, researchers must rely on external validation. Along a similar line, data quality and completeness for scientific purposes may be influenced by the original purpose of the source database (which may have been created for administrative or accounting purposes, rather than to allow for the analysis of surgical results).

At present, there is no established global standard for the interpretation of such data. Which data are valid for which purposes? How do we know the data have been reliably entered? Even for arthroplasty registers, where data are collected for a clearly defined purpose and according to clear standards, currently no globally established standards exist determining which data are reliable for which purposes.

How Do We Get There?

This last point is critical, especially for newer and developing registers. To enable large-scale sensible data evaluations in various fields (and therefore, frequently not performed by proven experts), the development of such standards and the establishment

of outcome assessment tools will be absolutely necessary.

Although guidelines for clinical research articles have been available for decades, we lack analogous tools for the evaluation of studies that are driven by “Big Data.” [6]. It would be most reasonable to describe the background of the data in a structured way and calculate adjustment factors. Any expert in the field will agree that teaching hospitals with a high proportion of complex cases will have to expect higher revision rates, without this implying inferior quality of care. What would be a fair value, however, has not been defined thus far. The present article features a balanced assessment, as well as a detailed list of limitations. It would be desirable for this attitude to persist when the findings are applied.

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