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ANNOTATION

Do we need a national arthroplasty register ?

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Total joint replacement is an end-stage procedure for incapacitating arthritis. Salvage procedures are limited to revision joint replacement, resection or arthrodesis. Because of the morbidity and risks associated with these operations, the procedures must establish a measurable improvement in pain and functional capacity. We know that 90% of the patients undergoing total hip (THA) or total knee (TKA) arthroplasty have a dramatic functional improvement and pain reduction. It has been shown that the procedures are highly cost-effective (*10*). However, essential information remains undisclosed. It is unclear which patient is most likely to benefit from those procedures, nor do we know which patient factors are associated with better or worse clinical outcomes (*1, 3*). The indication to proceed to joint arthroplasty is likely to be dependent on the medical system and on the physician specialty. Cross *et al* looked at 42 different patient factors as indications or contraindications to proceed with TKA and found no agreement amongst physician groups (*1*). The only consensus on indication for TKA was 'pain not responsive to drug treatment'. The only consensus on contraindication for TKA was a 'major psychiatric disorder including dementia'. Many other important patient factors like e.g. body mass index, peripheral vascular disease, muscular deficiency or range of motion were considered differently amongst physician specialties (orthopaedic surgeons, rheumatologists, primary care providers). It is concluded that at this stage the literature does not support indications to proceed to TKA (*1, 3*).

Outcome after TKA or THA can be defined in terms of long-term survival, functional results and the occurrence of complications (*12*). Measurement tools are limited. Long-term survival is traditionally measured with Kaplan Meyer survivorship analysis. Functional outcome is deducted from functional scores like WOMAC, SF 36 or the Knee Society Functional score. Complications are reported in case reports or in the form of registers. Outcome studies on selected patient populations report very high survivorship at long-term follow-up.

Ranawat *et al*, Stern *et al*, Font-Rodriguez *et al* and Ritter *et al* reported survivorship ranging from 94 to 99% at 12 to 15 years of follow-up (*2, 7, 8, 11*). Surprisingly, these excellent outcomes are not supported by broad community data. Medicare data, covering 70% of all TKA procedures in the United States disclose that approximately 3% of the joints fail each year and an additional 1-2% require revision for infection (*6*). According to those same Medicare data, the revision rate for TKA is 12%. Data from countries with a national register also report high revision percentages like 9% (Australia), 7% (Sweden) and 6% (Canada) (*6*).

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Given the fact that future projection on the number of primary and revision TKA's and THA's reveals a steep increase in those operations, the financial burden on society is likely to be very high. Kurtz predicts for the United States an increase in primary THA of 237% between 2005 and 2030 (*5*). Revision THA is predicted to grow from 41000 operations in 2005 to 98000 in 2030. TKA revisions were projected to grow from 37000 in 2005 to 195000 in 2030. Primary TKA was projected to grow from 428000 in 2005 to 2.16 million in 2030 (*5*).

Is there a reason for the gross underestimation of failures after TKA or THA based on the available peer reviewed literature? Several arguments can be listed to explain the underreporting of failures in the literature. Publication bias is a well-known phenomenon that is caused by the fact that surgeons are more likely to report on their successes than on their failures. Also, industry funding of research will lead to underreporting of inferior results.

The surgeon bias is a second contributing factor. Most publications are based on the clinical work of academic or large non-academic groups with a high level of subspecialisation, performing a higher volume of procedures per year (*4*). Finally, there is an important patient bias, especially in prospective randomised trials that are likely to include patients that do not necessarily represent the normal population : those who are motivated, and those who understand. Also, patients in those trials are more likely to be well guided and counselled, as compared to the daily life situation in an average clinical practice.

These three important levels of bias explain to a certain extent the differential between peer reviewed literature outcome studies and community reports provided by registers.

A register can be a powerful tool to detect flaws in certain implant devices or surgical techniques. More than with any other study tool, failing devices can be detected early on. Also, as failure rates for specific implants or hospitals are quantified, the register can be used to encourage improvement in surgical practice by feed-back. A clear example was shown in the Swedish register. As the 1997 report showed a net improvement over time in the outcome of TKA with improving implants and surgical techniques (*9*), this improvement over time was not seen for unicompartmental replacements. Over the next five years, the use of unicompartmental replacement was reduced (7055 between 1991-1995 versus 5026 between 1996-2000) due to more stringent indications (*13*).

A register certainly has its limitations. Due to the size of the database, the information per patient is limited and especially functional outcomes are hard to record on large patient groups. The information that is gathered can be misused by third parties like health-care insurers. Still, it should be possible to create a Belgian Register under the control of a college of orthopaedic surgeons that owns, controls and holds responsibility for the data. This should ensure a trustful relationship with the orthopaedic community. The latter is an undisputable condition for a successful implementation.

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