THE CHOICE OF ARTHROPLASTY IMPLANTS IN A DEVELOPING COUNTRY

The use of arthroplasty in end stage arthritis in Kenya is now established. Arthroplasty is now carried out in a number of the main city hospitals, particularly in the private sector and in some mission hospitals. Some patients travel out of the country, particularly to India in search of arthroplasty. There is, also, an increasing number of patients from the neighbouring countries travelling to Kenya in search of joint replacements, particularly for the hip and knee.

With establishment of arthroplasty, the issue of choice of implants needs to be addressed. What should guide a surgeon as to the choice of implants for a low resource developing country? In Kenya there are two main suppliers who provide Johnson and Johnson, Depuy and Smith and Nephew implants. There are, also, newer players in the market with new implants some of which are much cheaper than established ones. The implants supplied, also, are both cemented and uncemented ones, particularly, for the hip. There is significant pressure to reduce costs and this would favour the use of cheaper implants. Should cost be the only consideration in implant selection?

There are a number of factors which determine the outcome of arthroplasty. While the most important of these is the quality of the surgical technique, choice of implant is also important (1). With regard to the former, for instance, the Swedish Hip Register showed that modern cementing techniques had a beneficial effect in implant survival. These included retrograde canal filling with a cement gun, cleaning by pulse lavage, distal plugging, pressurization by means of a proximal seal for the stem and pressurization of acetabulum. Individually, each of these steps was found to reduce the risk of revision by 25% when compared with finger packing (1). While surgical technique can be improved with training and provision of adequate facilities, choice of implant can be complex as it involves the affordability by patient, institutional decisions and implant availability. The surgeon's input into this aspect of patient treatment is crucial to achieve a good outcome.

In Europe, all implants used are required to have a CE (Conformite Europeenne) mark. This means that the implant has satisfied one of the 83 notified bodies. Proof of safety of the composite materials rather than clinical effectiveness qualifies the implant for use (2). The CE mark only implies safety of materials used and does not guarantee long –term high performance (3).

Some countries have developed guidelines to assist in making implant choices. The practice in Sweden has been influenced by the Arthroplasty Register results. These have narrowed the number of implants used in the country. In the UK The National Joint Register (NJR) collects information on all types of hip and knee replacements in use in England and Wales and monitors performance of these implants (4). The UK, also, has a system of rating hip prostheses by the ODEP (Orthopaedic Data Evaluation Panel). The ODEP panel consists mainly of consultant orthopaedic surgeons who use a specific proforma to objectively assess data provided by individual companies , a statistician and representatives of the NHS (National Health Service) procurement (5). ODEP have established criteria for rating of implants based on benchmarks of years of follow up and implant failure (i.e. 3 years with up to 3% failure, 5 years with up to 5% failure, 7 years with up to 7% failure and 10 years with up to 10% failure). The quality of evidence is also assigned such that A (acceptable evidence) B (weak evidence) and unacceptable for implants for up to 7 years. For 10 years A (strong evidence), B (reasonable evidence), C (weak evidence - products given 2 years to improve data otherwise deemed unacceptable) and unacceptable (5). There is, however, currently no ODEP rating for knee implants.

There currently does not exist a functioning arthroplasty register in the east African region with regularly published results. With the cost of revision arthroplasty being very high and requiring appropriately trained human resource and facilities, there is need to carry out the index operation with the use of "evidence based" prostheses. There is no capacity in a low resource country to "experiment" with prostheses which have not gone through follow up to establish long term results. There is, therefore, need to prioritise published results above cost considerations. Only affordable implants with adequate follow-up and published results should, therefore, be selected (6). Such practice would be cost effective over the long term by reducing the need for expensive revisions.

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REFERENCES

1. Herberts, P. and Malchau, H. How outcome studies have changed total hip arthroplasty practices in Sweden. *Clin Orthop Relat Res.* 1997; **344**:44-60.
2. Carr, A.J., Robertson, O., Graves, S., *et al*. Knee replacement. *Lancet.* 2012; **379** (9823): 1331.
3. Ng Man, S. , Gillott, E., Bhamra, J. and Briggs, T. Implant use for primary hip and knee arthroplasty. Are we getting it right first time? *J Arthroplasty.* 2013; **28**(6): 908-912.
4. National Joint registry. http:// www.njrcentre.org.uk
5. Orthopaedic Data Evaluation Panel (ODEP). Cited. http://www.supplychain.nhs.uk/product-areas/orthopaedics/odep/
6. Oroko, P.K. Use of joint replacements in a developing country. *East Afr Med J.* 2001; **78**(2): 59.