

BHS Traveling Fellowship October 2011
Destination: Endoklinik, Hamburg, Germany
Author: JCJ Webb

In February 2011, the British Hip Society awarded me a traveling fellowship. My application was to visit the Endoklinik in Hamburg with a focus on the treatment of prosthetic joint infection.

I was appointed as a hip surgeon at the Avon Orthopaedic Centre in 2008. I work in a team of seven revision hip surgeons. In addition, I am part of a multidisciplinary team that provides a regional prosthetic joint infection service. This clinical subspecialty interest was borne out of my MD research thesis, which investigated antibiotic loaded bone cement.

Central to this subject is the pioneering work of Hans-Wilhelm Buchholz, who developed the first ALBC in 1970 for the treatment of PJI. In 1976, he founded the Endoklinik in Hamburg.

Buchholz's championed the one stage exchange arthroplasty for PJI treatment. The practice of radical surgical debridement and reconstruction using the benefits of ALBC allowed the Endoklinik to herald a new era of success in the treatment of PJI. Hitherto the results of this complication were dire with excision arthroplasty and persistent infection often being the outcome.

Buchholz was a contemporary of Charnley, who had written a monograph on acrylic bone cement and was expanding its use in UK orthopaedics and they communicated frequently on the subject. It has remained a world-leading centre for total joint arthroplasty.

Charnley was a fellow expert in acrylic bone cement and they communicated frequently. However, there was some initial English skepticism regarding the addition of antibiotics, with Charnley famously quoted as saying, 'My dear Buchholz, nothing leaks out of a stone'

Later Charnley would engage with ALBC.

At the Endoklinik, ALBC started to be used as a prophylactic agent in primary hip arthroplasty. This practice then became commonplace in Northern Europe, Scandinavia and the UK, as it does to this day.

The Endoklinik itself developed an unrivalled reputation for excellence in joint arthroplasty which has continued to the current day. It remains the most productive centre in Europe performing more than 6000 hip and knee arthroplasties per annum. It has an infection rate of 0.4% in its primary arthroplasties.

Approximately 1500 of these are revisions and up to 600 of these are for sepsis.

The medical director is Professor Thorsten Gehrke runs a team of 15 surgeons. There are eight theatres, four of which are in a barn formation known as 'The Factory'. The unit averages 30 joint replacements per day including revisions. There are two dedicated PJI surgeons – Volker Jonen and Stefan Luck. They perform all the septic revisions and this can be up to 4 per day.

The surgeons will have 3 or 4 full day operating sessions per week and one day spent in clinic.

The working day starts at 07.10am prompt with a radiology meeting discussing all the previous day's surgeries. Meanwhile the first patient's on the list have been sent for. At the end of the meeting any special cases for the day are discussed and then the teams proceed to theatre.

By 07.45 the first-on-the-list patients are wheeled into theatre having been positioned by theatre orderlies and skin preparation can begin. The order and discipline is

notable. Everyone knows their role and performs it without fuss. There is strict discipline regarding infection control and theatre discipline. Knife to skin is always before eight.

The next patient on the list is sent for well in advance and although the anaesthetic turnaround times are no different to my experience in the UK by midday most lists will have completed three or four primaries or their equivalent in revisions.

As regards the septic revisions, these are performed in two sealed theatres (1&2). The protocol for their investigation and treatment is simple. All cases will have had up to three aspirations or even biopsies to obtain the relevant organisms and their antibiograms. The head of microbiology for the Endoklinik, Lars von Frommelt will then provide a bespoke menu of antibiotics. This includes those to be administered systemically together with those to be added to the cement intra-operatively. Owing to the nature of biofilm infections antibiotics in the cement are seldom used in isolation and often gentamicin, clindamycin and vancomycin prove effective. In order to preserve the mechanical characteristics of the cement a limit of 5% of powder weight will be added as antibiotic.

The core elements to the surgical tactic are a meticulous radical tumour-like debridement followed by reconstruction utilizing cement.

Long stemmed cemented implants accommodate for long bone loss and Burch Schneider cages and cement augmentation are used in the acetabulum. To reduce the dislocation rate in proximal femoral replacements a cemented dual mobility cup is often used.

Approximately 90% of the septic cases are revised using a one-stage technique. The patients will then have only two weeks of systemic antibiotics, as long as the cultures from the intraoperative samples do not divulge any unexpected organisms.

Criteria that lead to a two-stage approach include the need for reconstruction with bone grafting, negative pre-operative cultures, highly resistant organisms and soft tissue constraints.

I was made very welcome by all the staff at the Endoklinik and by Professor Thorsten Gehrke (Medical Director) and Akos Zahar who coordinates the visiting fellow programme in particular. I was able to scrub in with every case and discuss all the management at length. They appreciate an attempt at discourse in German however their English is excellent. They are interested in UK practice and are envious of the National Joint Registry – as the development of a German registry remains in the discussion stages.

I did note that the severity of many of the revision cases showed severe deformities and bone loss. This reflects not only their quaternary referral status but also the erratic nature of clinical follow-up in Germany. This forced me to reflect upon the current pressures in my own region to reduce our direct involvement in clinical follow-up. Salutary lessons locally are reinforced by my experience at the Endoklinik. The best care for our patients demands that we remain responsible for their clinical follow-up.

Under the guidance of Prof Gehrke and Daniel Kendoff there is a drive to increase the publication output of the Endoklinik from the extensive clinical database. With particular reference to the treatment of prosthetic joint infection, I think this will offer valuable information to guide modern best practice.

In summary I would heartily recommend a visit to the Endoklinik for any surgeon interested in primary or revision arthroplasty surgery. A special reference must be made of their PJI treatment service, which was central in the development of this

subject and I believe continues to lead by the use of sound clinical and scientific principles.



L to R: JCJW; Akos Zahar (Head of Fellowship programme Endoklinik); Enrique Cifuentes (Consultant Visitor from Santiago, Chile).



The 'New' Endoklinik - Hamburg