

Shockwave treatment for aseptic loosening of prostheses

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Methods:

Shockwave treatment has proven helpful for deep infections of implants in patients who are not suitable for operative intervention. We have experience of a patient who had undergone a massive replacement of the left distal femur for a tumour. Five years later she developed a bacteremic infection of the implant with chronic sinuses leaking pus from the tibial component. Despite vigorous treatment with appropriate antibiotics, the sepsis continued for five years. Surgical revision was considered but the patient could not accept the inevitable significant risk of an above knee amputation. The patient developed renal failure and required regular dialysis. She was referred for a renal transplant but could not be accepted on the programme with a chronic infection which could jeopardise the outcome.

Shockwave treatment was provided and four sessions led to the ultimate complete healing of the infected sinuses.

Since developing the sepsis, the patient had experienced extreme difficulty in mobilizing because the tibial component appeared to be loose within the bone. As the sinuses healed, the patient found that she could bear weight on her leg for the first time for several years.

A beneficial side effect of shockwave treatment appeared to be consolidation of the implant within the bone. Shockwave treatment is proposed as a potential valuable treatment for aseptic loosening of hip and knee replacements. National Joint Registries now provide objective information on the incidence of early complications. Aseptic loosening is the most common reason for early revision of hip prostheses. In the British National Joint Registry aseptic loosening accounts for more than 60% of cases requiring revision within the first three years of implantation. This has comprised a total of more than 8,000 patients over a three year period.

Discussion:

We are at present seeking funding for an appropriate animal experimental model to establish the efficacy of shockwave treatment consolidating implants within bone. There is concern that shockwave treatment could delaminate the hydroxyapatite coating of uncemented prostheses. In addition shockwave treatment could fragment bone cement. Push out tests and histological examinations are required before clinical trials of such treatment can be advocated.