#596 Sacral neuromodulation in female voiding dysfunction: a single-centre ten year follow up study

Rahman S[1], Barnecott J[1], Hornshaw D[1], Downey A[1], Ali A[1], Beckley I[1]

1. Mid Yorkshire Teaching NHS Trust, Wakefield, United Kingdom

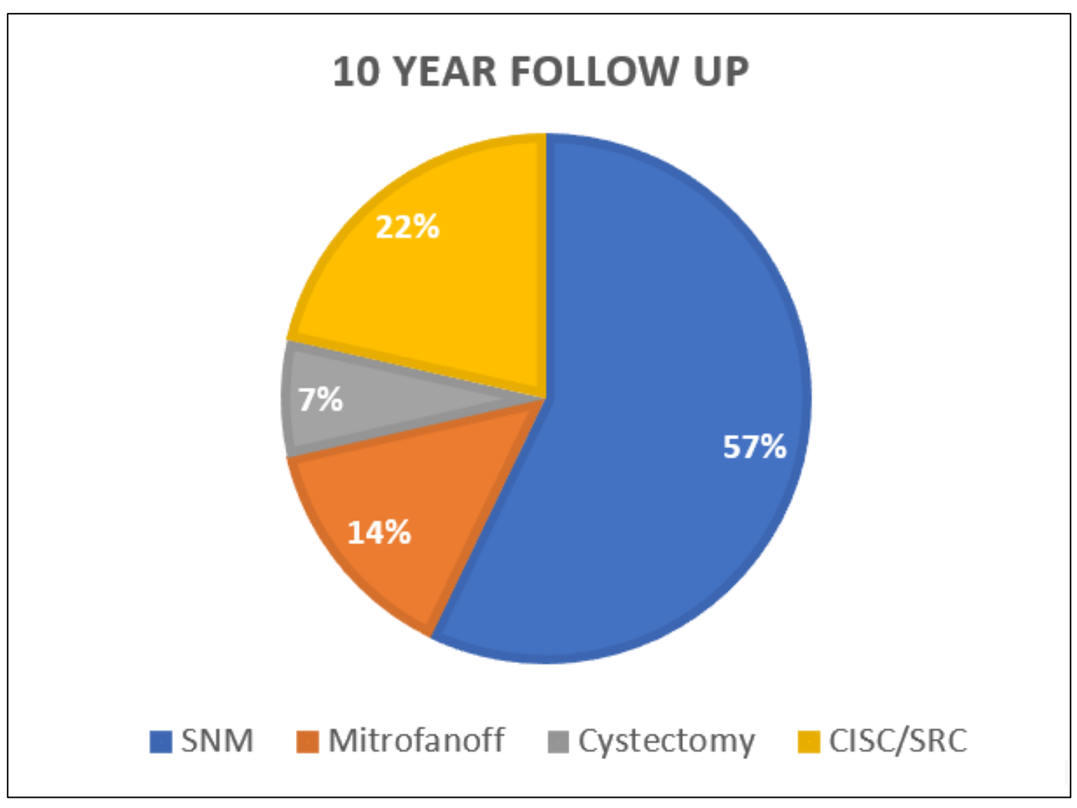
Aims of study

Sacral neuromodulation has proven to be an effective treatment for idiopathic voiding dysfunction but there is limited data on long-term follow up for this intervention. Previous studies have demonstrated a risk of various complications including the requirement for further surgical intervention.[1,2] The aim of this study was to characterise the current complication rate in our clinical practice.

Study design, materials and methods

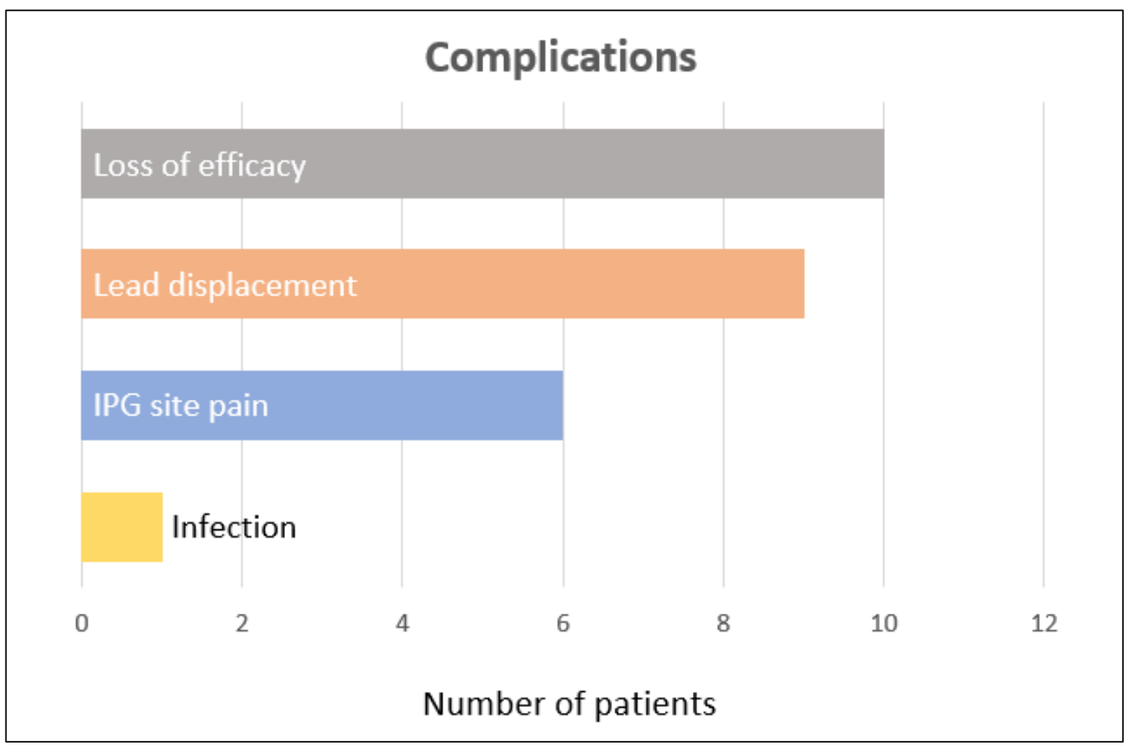
32 female patients (age range: 20-63 years, mean: 39 years) who underwent sacral neuromodulation procedures for voiding dysfunction between 2008 and 2013 were identified using a local registry of patients treated with sacral neuromodulation at our institution. A retrospective review of case notes was performed of patients with a minimum of ten-year follow up. In total, 4 patients were excluded; 2 patients did not engage with follow up having been discharged from the service within 5 years, another patient had relocated out of the area and one patient had died.

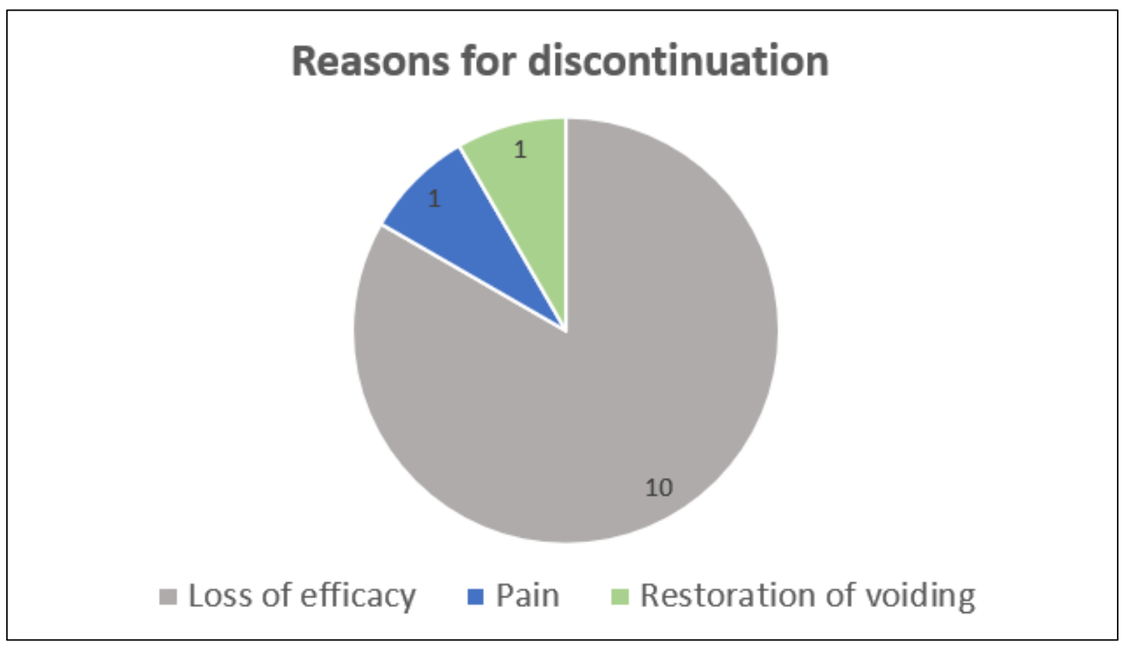
Results



All implants were preceded by percutaneous nerve evaluation (PNE) or performed as a two-stage procedure. Overall, 26 out of 28 (93%) patients demonstrated a good initial response (defined as restoration of physiological voiding or >50% reduction in frequency of intermittent self-catheterisation) and proceeded to implantable pulse generator (IPG) insertion.16 out of 28 (57%) patients continued with neuromodulation ten years after undergoing insertion of their initial implant. This cohort required on average 1.9 further procedures per patient within the 10-year period including requiring an IPG replacement on average 8.2 years after initial insertion.

The most common complication proved to be irreversible loss of efficacy despite reprogramming or lead replacement occurred in 10 out of 28 (36%) patients and was the main factor behind discontinuation of neuromodulation. In our study, this averaged around 2.6 years after the initial implantation but we could not identify any consistent patterns in this patient group that could trigger or predict this outcome. Damaged or displaced leads requiring surgical intervention in 9 out of 28 (32%) patients was the second most prevalent complication and IPG-site pain was also reported with 6 out of 28 (21%) patients who then underwent re-siting of the IPG. This pain was severe in three patients with one patient, in particular, undergoing three attempts at re-siting while the remaining two opted to discontinue neuromodulation altogether and have the implant removed. Due to poor outcomes after attempting neuromodulation, 4 out of 28 (14%) patients ultimately opted to undergo mitrofanoff formation with another two deciding to proceed directly to cystectomy. Only one patient in our cohort required temporary explantation due to infection with a successful re-implantation after 8 months.





Results interpretation

Patients with sustained benefit from sacral neuromodulation are likely to require further surgical intervention within 10 years in order to maintain efficacy. Though this primarily involved IPG replacements due to battery expiry, complications such as lead damage or displacement and generator-site pain also contributed towards morbidity and the need for further interventions. Prior to sacral neuromodulation, patients with voiding dysfunction often have poor quality of life outcomes from conservative measures including intermittent self-catheterisation and indwelling catheters. In our study, irreversible loss of efficacy affected 36% of patients, and these patients would either need to revert to previous catheter-based management or consider more invasive surgery and it is therefore crucial to assess the aetiology and rates of failure with larger scale studies.

Conclusion

While sacral neuromodulation is an effective intervention in the long term, it does carry a risk of complications and is likely to require further procedures to sustain benefit. As research and development into this field progresses, more modern IPGs with a longer battery lifespan are likely to require fewer interventions relating to battery replacement. This is particularly relevant in female patients with voiding dysfunction who are typically young and will require ongoing treatment for many years. Consequently, it is important that they are counselled to understand that a good early response does not guarantee long term benefit. Larger scale, multi-centre studies would be useful to further delineate the long-term success rates of neuromodulation in female voiding dysfunction.

References

1. Datta, S.N., Chaliha, C., Singh, A., Gonzales, G., Mishra, V.C., Kavia, R.B.C., Kitchen, N., Fowler, C.J. and Elneil, S. (2008), Sacral neurostimulation for urinary retention: 10-year experience from one UK centre. BJU International, 101: 192-196

2. Dirk De Ridder, Ost, D. and Frans Bruyninckx (2007). The Presence of Fowler's Syndrome Predicts Successful Long-Term Outcome of Sacral Nerve Stimulation in Women with Urinary Retention. European Urology, 51(1), pp.229–234.