while continuing to demonstrate tolerable postoperative pain, allowing our patients to be discharged the same day. The reduction in radiation exposure to the child by simply using a temporary methylene blue tattoo is reliable without its fading by the time of the second stage. The application of the ureteral sheath provides the surgeon with a longer and increased caliber dilator to allow for easier subcutaneous manipulation between 2 points with 1 stab wound, instead of 2 larger incisions.

Although the cosmesis is obviously improved with a decreased number of skin disruptions, the comparison of the conventional and modified procedures found a decreased number of postoperative infections after the modified 2-stage SN implantation. Of the 8 patients in the conventional 2-stage SN implantation cohort, 1 (11%) required IPG explantation because of a postoperative infection involving the IPG implantation site (Table 1). Of the 19 patients who underwent our modified 2-stage SN implantation, none have had evidence of a postoperative infection. Although this represents only 1 of 27 total patients (4%) and was not a statistically significant difference ($P = .333$), this finding might allude to the ability of our modified procedure to decrease the incidence of postoperative infections. Larger series that use our modified 2-stage SN implantation are required to confirm whether our modification results in a decreased postoperative infection rate.

CONCLUSIONS

Our modified 2-stage SN device implantation procedure is technically simple and quick to perform and results in decreased radiation exposure, excellent pain control, and improved cosmesis, without compromising the outcomes. Larger series using the modified 2-stage SN implantation technique are required to confirm whether our modification has a decreased postoperative infection rate.

References

1. Humphreys MR, Vandersteen DR, Slezak JM, et al. Preliminary results of sacral neuromodulation in 23 children. *J Urol.* 2006;176:2227-2231.
2. Roth TJ, Vandersteen DR, Hollatz P, et al. Sacral neuromodulation in children with dysfunctional elimination syndrome: a single center experience in twenty children. *J Urol.* 2008;180:306-311.
3. Daneshgari F, Moy ML. Current indications for neuromodulation. *Urol Clin North Am.* 2005;32:37-40.
4. Bower WF, Yip SK, Yeung CK. Dysfunctional elimination symptoms in childhood and adulthood. *J Urol.* 2005;174:1623-1628.
5. Janknegt RA, Weil EHJ, Eerdmans PHA. Improving neuromodulation technique for refractory voiding dysfunctions: two-stage implant. *Urology.* 1997;49:358-362.

Video Clips cited in this article can be found on the internet at: http://www.goldjournal.net

EDITORIAL COMMENT

The treatment of children with refractory dysfunctional elimination syndrome can be quite frustrating. Fortunately, as previously demonstrated by the authors,[1] the implantation of a sacral neurostimulator can be effective in treating these children. The drawbacks of implanting this device include exposure to ionizing radiation, the presence of multiple incisions, and the risk of infection. In the present study, the authors make yet another contribution as they describe their experience implementing innovative modifications of the standard technique aimed at overcoming these shortcomings. Although they cannot eliminate the need for fluoroscopy in the first stage of the procedure, the need for subsequent fluoroscopy is obviated by the clever use of methylene blue at the site of the connector between the quadripolar tined lead and temporary external lead. They improve the cosmesis by limiting the number of incisions to the incision in the second stage of the procedure by using a ureteral access sheath for tunneling the wires in the first stage. This advance eliminates 1 incision for those in whom the device will remain and avoids any incision in those children in whom the device is ultimately not implanted. The risk of infection cannot be determined at this point. The authors should be congratulated for making strides in this arena and advancing the cause of both minimally invasive procedures and the treatment of the child with difficult dysfunctional elimination syndrome.

Lane S. Palmer, M.D., Division of Pediatric Urology, Schneider Children's Hospital, Lake Success, New York

Reference

1. Roth TJ, Vandersteen DR, Hollatz P, et al. Sacral neuromodulation in children with dysfunctional elimination syndrome: a single center experience in twenty children. *J Urol.* 2008;180:306-311.

doi:10.1016/j.urology.2008.11.036
UROLOGY 73: 644, 2009. © 2009 Elsevier Inc.

REPLY

Our experience now includes 41 children with dysfunctional elimination syndrome (DES) treated with sacral nerve stimulation, and we have seen no wound infections when using our modified procedure. Although this treatment modality has demonstrated its efficiency in treating very severe cases of DES (65%-90% improvement or resolution of urinary urgency, frequency, and incontinence) (unpublished data: Chavin GS, Rangel L, Hollatz P, et al. Sacral neuromodulation in children with dysfunctional elimination syndrome: a single center experience in forty-one children), we still advocate the use of sacral nerve stimulation in children in whom other medical treatments have previously not been successful as we gain longer term outcomes.

Shawn M. McGee, M.D., Department of Urology, Mayo Medical School and Mayo Clinic, Rochester, Minnesota

David R. Vandersteen, M.D., and Yuri Reinberg, M.D., Division of Urology, Children's Hospital of Minnesota, Minneapolis, Minnesota

doi:10.1016/j.urology.2008.12.002
UROLOGY 73: 644, 2009. © 2009 Elsevier Inc.