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SPINAL CORD STIMULATION FOR AXIAL LOW BACK PAIN: #V E.004FE
SINGLE PERCUTANEOUS ELECTRODES

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Spinal cord stimulation for chronic, intractable pain has been increasingly successful in clinical practice because of recent technical improvements, in paticular the development of electrode arraya with multiple contacts, supported by programmable implanted pulse generators. "Dual electrode" percutaneous arrays, created by inserting electrode in parallel, recently have been reported to have advantages in the treatment of axial low back pain, which is a common clinical problem.

We have undertaken a prospective, controlled study to compare the performance of single and dual electrodes in the treatment of axial low back pain. The standard clinical practice of screening patients with temporary electrodes before implanting a permanent system has allowed each of 20 patients to serve as hie or her own control. cgingle percutaneous electrodes with 4 contacts (1x4) and 9mm intercontact spacing have been compared with dual electrodes with 4 contacts (2x4) and 7-10 mm intercontact distances at the same spinal levels in the same patients. The two designs have been compared in a quantitative fashion, using a computerized system which allows direct patient interaction, adjusting stimulation parameters to specific psychophysical thresholds.

Significant performance advantages have been observed for the single over the dual electrode systems; Patient ratings of overlap of pain by stimulation paresthesias, calculated overlap (from graphic inputs by patients), and scaled amplitude necessary to cover the low back, were all significantly better for the single electrode than the dual 7 mm electrodes, and slightly (but not significantly) better for the single electrode the= for the du&!. 10 mm electrode. Amplitude requirements were significantly lower for the single electrode than for either dual electrode configuration.

While we have not observed advantages for the more elaborate dual electrode systems in treating axial low back pain, we have observed that technically successful treatment can be achieved with single or dual electrodes in the great majority of patients. Extended clinical followup will be required to demonstrate that this can be maintained chronically, und that it is clinically useful.