

Sacral Nerve Stimulation in Severe Constipation.

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Abstract: Severe chronic constipation is a common cause of morbidity world wide, for which treatment options are unsatisfactory. Laxatives are helpful in some cases but produce significant morbidity in some. may cause bloating and abdominal pain. Subtotal colectomy has become increasingly popular in refractory cases, however less invasive procedure for the treatment of constipation are being sought. Improved therapy can only stem from better understanding of the phenomenon underlying constipation. Colonic movement depends upon colonic propagating pressure wave sequences (PSs). Difficulties in PSs frequency, amplitude and extent of propagation are all implicated in severe defecatory dysfunction. Recently sacral nerve stimulation is being used to modify PSs frequency and amplitude; hence been utilized for the treatment of severe constipation. However little is known about the effect of SNS upon colonic motor patterns, but result from limited number of studies are encouraging.

Keywords: sacral nerve stimulation, constipation.

CONSTIPATION: HEALTH CARE BURDEN

Constipation is a common cause of morbidity which affects 15-27% of western world population. The prevalence further increase to 30-40% of people aged over 65 years. Overall morbidity and treatment cost is very high for chronic constipation.

For number of patients' laxative use will sufficiently alleviate their symptoms. However for patient in whom laxative do not restore normal bowel habit, increase abdominal pain and bloating can result. Biofeedback therapy is also useful in some patients, particularly those with obstructive defecation. In some cases biofeedback therapy can demonstrate significant improvement in qualities of life and stool frequency. But long-term efficacy (>1 year) in patients with severe slow transit constipation is poor. At least 36 years of chronic constipation patient population fails to respond on non surgical options. These patients score poor on quality of life questionnaires in comparison to healthy individuals. Subtotal colectomy becomes an option for patients who doesn't responds to non surgical options; in addition patient can develop post operative small and large bowel constipation like intractable diarrhea, small bowel obstruction, fecal incontinence and recurrent constipation.

ETIO-PATHOGENESIS

Exact cause of constipation is undetermined, however abnormal colonic movement pattern are implicated. Studies using colonic motometry and scintigraphy have shown that colonic propagating sequences (PSs) and high amplitude propagating sequences (HAPSS) are temporarily associated with discrete movement of colonic content. PSs and HAPSS stimulate defecatory process which involve entire colon. It is recognized that both HAPSS and long extent PSs are deficient or absent in severe slow transit constipation. It appear that neural apparatus necessary for generation of these motor pattern appears to be intact because intra luminal irritant laxative can trigger them. The entire nervous system provide the direct neuronal control of colonic motility, modulated through the sympathetic, parasympathetic and extrinsic afferent pathway. The vagal nerve provide parasympathetic innervations to caecum, ascending colon and most of the transverse colon, whilst parasympathetic fiber from 2nd-4th sacral section of the spinal cord innervates the distal part of the transverse colon, descending colon and the recto sigmoid colon. Yet evidence exists to suggest that stimulation of pelvic nerve is capable of inducing pan colonic motor patterns. Possibly this attenuated pathway can be re-established through electric stimulation of pelvic nerves. In few cases direct stimulation to anal canal and sacrum resulted in stool evacuation. Although high voltage stimulation cannot be applied to patient with spinal cord, applying low voltage stimulation to the sacral nerves can achieve comparable results.

SACRAL NERVE STIMULATION IN CONSTIPATION

Use of sacral nerve stimulation in urinary and fecal incontinence has been documented in several recent reviews. SNS is a minimally invasive surgical technique that allows for direct electrical stimulation of the sacral nerve S₂-S₄ via an electrode placed through sacral foramen. Out of 3 sacral roots S₃ which contains afferent sensory, efferent autonomic motor nerves and voluntary somatic nerves, provide the most satisfactory clinical response. This technique involves two stages. The first the peripheral nerve evaluation

(PNE), is conducted over 2-3 weeks and involves a temporary wire with a single electrode being introduced to the sacral root and connected to an external stimulator. Patient that responds favorably to the PNE move onto the second stage where a pulse generator connected to a tined lead with 4 electrodes is implanted permanently. Although many small studies are available regarding SNS in constipation, but it shows positive response. The data obtained from this study indicate that SNS appear to induce both proximal and distal colonic motor patterns. During the 3-week PNS phase, 75% of patients respond improvement in stool frequency possibly this happen via stimulation of afferent as well as efferent nerve pathways.

CONCLUSION

SNS technique appears to be a good alternative for chronically constipated patient, who are not responding to non-surgical measures; however further work, is still required.

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