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SACRAL NEUROMODULATION VERSUS PERIANAL BULKING INJECTION OF COLLAGEN IN THE TREATMENT OF FECAL INCONTINENCE FOLLOWING OBSTETRIC ANAL SPHINCTER INJURY: A RANDOMIZED CLINICAL TRIAL

Hypothesis / aims of study

This randomized clinical trial (RCT) origins from work in multidisciplinary teams where questionnaires are important tools used to assess and monitor fecal incontinence (FI), urinary incontinence (UI), sexual dysfunction and quality of life (QoL), and should be of fundamental interest for all ICS members interested in FI, the highly underreported prevalence of concomitant UI and sexual dysfunction in women with history of obstetric trauma.

Obstetric anal sphincter injury (OASIS) is a serious birth complication and is one of the most common risk factors for fecal incontinence (FI) in women¹. FI, concomitant urinary incontinence (UI) and sexual dysfunction are all distressing health problems with negative impact on women's quality of life (QoL). If failure of conservative treatment, sacral neuromodulation (SNM) and perianal injection of bulking agents¹ are treatment options. SNM is a staged procedure; its use is dependent on the efficacy assessed during a test period (percutaneous nerve evaluation, PNE) prior to permanent implantation. Bulking agents are easy to apply in an outpatient clinical setting and less expensive than SNM. In general, success-rate is 80 % following SNM² compared to 50% after injection of bulking agents³. These two minimal invasive treatments have not been compared in a randomized trial. The aim of this study was to investigate if SNM is superior to perianal injection of bulking with collagen in the treatment of FI following OASIS

Study design, materials and methods

This was an assessor-blinded parallel, randomized, clinical trial conducted at two university hospitals from February 2012 to September 2014. Women with FI following OASIS refractory to conservative treatment were eligible. Inclusion criteria were weekly incontinence episodes and St Mark's score of more than 8, with a successful PNE defined as 50 % or more decrease in incontinence episodes during the three-weeks testing period. Exclusion criteria were unsuccessful PNE. Immediately after the PNE period, participants were randomly assigned (1:1) to receive either permanent implantation of SNM (Interstim 2, Medtronic, Minneapolis, Minnesota, USA) or perianal injections of bulking with collagen (Permachol). Randomization was stratified by center, first block of 6 and subsequently 4, sequences unknown until closing of the study. Randomization was managed with a computer generated real-time, web-based system. Primary endpoint was difference in St Mark's score at six months between the groups. Secondary endpoints were response to treatment defined as 50 % or more decrease in incontinence episodes, difference in urinary incontinence score (ICIQ-UI SF questionnaire), change in sexual function and QoL questionnaire (Rockwood fecal incontinence QoL and EQ-5D), all at six months. Outcome measure was assessed blinded to group assignment by telephone interview before the six months follow-up. Sample size calculation was based on the assumption that a difference of more than four in St Marks score at six months was clinical relevant. With a power of 80%, significance level of 5%, two-sided tests and a dropout rate of 5%, assignment of 56 participants was required, 28 in each group. Categorical data are reported as frequencies and percentages and compared using the two-tailed Fischer's exact test. Continuous variables are presented as means with standard deviation (SD) and analyzed by linear regression, effect sizes presented as means with 95% confidence interval (CI), both unadjusted (ANOVA) and adjusted for baseline values (ANCOVA). All analysis were performed on an intention to treat basis (ITT), with a two sided significance level of 0.05 and 95% CI. Consort guidelines (2010) were followed to improve reporting of the results. Statistical analyses were performed using the SPSS program, version 22.0 (SPSS Inc., Chicago, IL). The trial was registered at ClinicalTrials.gov and approved by The Regional Committee for Medical Research Ethics. Written confirmed consent was obtained from all patients.

Results

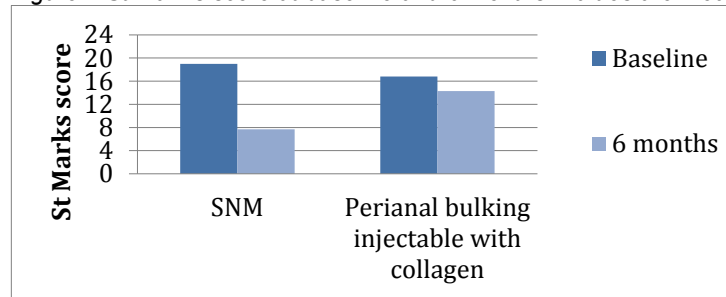
A total of 65 women aged 25-74 were enrolled in this trial. Fifty-eight with successful PNE were included and seven with unsuccessful PNE were excluded. All 30 women randomized to SNM and 26 of 28 randomized to perianal injection of bulking with collagen, received the treatment and were eligible for analysis at six months. Baseline demographic did not differ between groups at baseline.

Table 1 Baseline demographic. Values are means (SD) or numbers (percent)

	SNM total N=30	Anal bulking n=28
Age, years	58.5 (12.6)	56.8 (11.1)
BMI, kg/m ²	28.5 (4.8)	26.5 (4.6)
Postmenopausal status	22 (73%)	21 (75%)
Vaginal deliveries	2.7 (1.4)	2.5 (0.8)
EAUS defect score (0-7)	2.1 (1.3)	3.0 (2.1)

Mean (SD) St Mark's score at baseline was 19.0 (2.5) and at six months 7.7 (1.0) in the SNM group versus 16.8 (3.3) and 14.3 (0.9) in the bulking group, with a significant mean difference of 6.6 (95% CI 3.9-9.3) (figure 1). Response defined as a 50% reduction in incontinence episodes was achieved in 28 (93%) in the SNM group compared to nine (35%) in the bulking group (p=0.001). All four domains in Rockwood fecal incontinence QoL scale improved significantly in the SNM group compared to the bulking group at six months, unlike Eq-5D score with an adjusted difference of 5.2 (-14.9-4.5).

Figure 1 St Mark's score at baseline and 6 months. Values are means.



Concomitant urinary incontinence (UI) was found in 74 % (n=43), 90 % (n=27) in the SNM-group compared to 61% (n=16) in the bulking group. Within the SNM group, five (19 %) had 50- 99 % decrease in ICIQ-UI SF score and 37 % (n=10) achieved complete urinary continence at six months compared to no change within the bulking group. Difference in ICIQ-UI SF score at six months adjusted for baseline ICIQ-UI SF score, was 3.0 (0.2-5.9), p=0.04.

Less than half of the women reported sexual activity, 63 % in the SNM group (n=19) and only 31 % (n=8) in the bulking group. At baseline within the SNM group, 14 sexually active women reported problems related to sexual function, mainly fear of FI, compared to six at 6 months (p=0.007). Bothering problems decreased within both groups at six months, without difference between groups.

Interpretation of results

Perianal bulking injections of collagen improved FI in some patients. Considering the low cost and easy applicable treatment, it seems reasonable to suggest bulking before more expensive procedures such as SNM. However, if bulking fails, SNM is superior to bulking Injection of collagen in the treatment of FI following OASIS, including improvement of QoL and concomitant UI.

Concluding message

SNM is superior to perianal bulking injections of collagen in improving FI, concomitant UI and QoL in women with FI following OASIS

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Disclosures

Funding: The Health Authorities of North Norway **Clinical Trial:** Yes **Registration Number:** ClinicalTrials.gov NCT01528995 **RCT:** Yes **Subjects:** HUMAN **Ethics Committee:** The Regional Committee for Medical Research Ethics, North Norway (REK NORD 2011/1300) **Helsinki:** Yes **Informed Consent:** Yes