**Table. Supplemental Digital Content 13. Disease states and association with low rectal perception thresholds in female patients (n=1481); N (% of disease state; % of low perception threshold) , univariate and multivariate analysis, data presented as odds ratio (95% confidence interval) with indication of p-value (no indication if p≥0.05).**

|  | **Low threshold to first perception****90/1481 (6%)** | **Low threshold to urge perception****106/1481 (7%)** | **Low threshold to maximal tolerated perception****557/1481 (38%)** | **At least 1 low perception threshold (London)****597/1481 (40%)** | **At least 2 low perception thresholds****120/1481 (8%)** | **Low threshold to all three perceptions****36/1481 (2%)** |
| --- | --- | --- | --- | --- | --- | --- |
| **Univariate analysis** | **Multivariate analysis** | **Univariate analysis** | **Multivariate analysis** | **Univariate analysis** | **Multivariate analysis** | **Univariate analysis** | **Multivariate analysis** | **Univariate analysis** | **Multivariate analysis** | **Univariate analysis** | **Multivariate analysis** |
| **Reason for performing perception testing** |
| **Symptoms of constipation****N=568/1481 (38%)** | N=26 (29%;5%)0.64(0.39-1.02) |  | N=31 (29%;6%)0.65\*(0.42-0.99) | 0.52\*(0.29-0.94) | N=166 (30%;29%)0.55\*\*\*(0.44-0.69) | 0.65 \*\*(0.49-0.87) | N=183 (31%;32%)0.57\*\*\*(0.46-0.71) | 0.69\*(0.52-0.93) | N=33 (28%;6%)0.59\*(0.39-0.89) | 0.45\*\*(0.26-0.78) | N=7 (19%;1%)0.38\*(0.17-0.87) | 0.17\*\*(0.05-0.52) |
| **Symptoms of fecal incontinence****N=781/1481 (53%)** | N=56 (62%;7%)1.51(0.98-2.35) | 2.05\*(1.13-3.71) | N=70 (66%;9%)1.81\*\*(1.19-2.76) |  | N=338 (61%;43%)1.68\*(1.35-2.07) | 1.63\*\*(1.18-2.24) | N=360 (60%;46%)1.67\*\*\*(1.35-2.06) | 1.74\*\*\*(1.26-2.39) | N=78 (65%;10%)1.74\*\*(1.18-2.57) |  | N=26 (72%;3%)2.38\*(1.14-4.96) |  |
| **Assessment following obstetric injury****N=260/1481 (18%)** | N=20 (22%;8%)1.37(0.82-2.29) |  | N=15 (14%;6%)0.76(0.43-1.34) | 0.15\*\*\*(0.05-0.39) | N=100 (18%;39%)1.04(0.79-1.38) |  | N=109 (18%;42%)1.08(0.83-1.42) |  | N=20 (17%;8%)0.93 (0.57-1.54) | 0.17\*\*\*(0.06-0.43) | N=6 (17%;2%)0.94(0.39-2.28) | 0.23\*\*(0.8-0.68) |
| **Rome diagnosis** |
| **Irritable bowel syndrome****N=504/1481 (34%)** | N=32 (36%;6%)1.07(0.68-1.67) |  | N=37 (35%;7%)1.04(0.68-1.57) |  | N=208 (37%;41%)1.26\*(1.00-1.57) | 1.54\*\*\*(1.18-2.01) | N=224 (38%;44%)1.29\*(1.04-1.60) | 1.54\*\*\*(1.18-2.01) | N=42 (35%;8%)1.04(0.70-1.54) |  | N=11 (31%-2%)0.84(0.41-1.73) |  |
| **Chronic constipation****N=351/1481 (24%)** | N=17 (19%;5%)0.74(0.43-1.28) |  | N=25 (24%;7%)0.98(0.62-1.57) |  | N=114 (21%;33%)0.74\*(0.58-0.96) |  | N=120 (20%;34%)0.71\*\*(0.55-0.91) |  | N=29 (24%;8%)1.02(0.66-1.57) |  | N=7 (19%;2%)0.78(0.34-1.81) |  |
| **Functional defecation disorder (symptoms)****N=745/1481 (50%)** | N=40 (44%;5%)0.76(0.49-1.17) |  | N=48 (45%;6%)0.79(0.53-1.17) |  | N=272 (49%;37%)0.91(0.74-1.13) |  | N=292 (49%;39%)0.91(0.74-1.12) |  | N=55 (46%;7%)0.81(0.56-1.18) |  | N=13 (36%;2%)0.54(0.27-1.08) |  |
| **Fecal incontinence****N=727/1481 (49%)** | N=47 (52%;7%)1.14(0.74-1.75) |  | N=63 (59%;9%)1.60\*\*\*(1.06-2.41) |  | N=306 (55%;42%)1.49\*(1.20-1.86) |  | N=324 (54%;45%)1.44\*\*\*(1.17-1.78) |  | N=68 (57%;9%)1.47(0.99-2.16) |  | N=24 (67%;3%)2.00(0.99-4.04) |  |
| **Background medical condition/ medications** |
| **Inflammatory bowel disease (quiescent)****N=18/1481 (1%)** | N=4 (4%;22%)4.57\*\*(1.47-14.19) | 5.14\*(1.25-21.18) | N=4 (4%;22%)3.81\*(1.23-11.79) |  | N=5 (1%;28%)0.63 (0.23-1.79) |  | N=8 (1%;44%)1.19(0.47-3.03) |  | N=3 (3%;17%)2.30(0.66-8.06) |  | N=2 (6%;11%)5.25\*(1.16-23.75) |  |
| **Connective tissue disease****N=28/1481 (2%)** | N=4 (5%;14%)2.65(0.89-7.8) |  | N=7 (7%;25%)4.56\*\*\*(1.89-10.98) | 5.13\*\*\*(1.91-13.73) | N=14 (3%;50%)1.68(0.79-3.54) |  | N=18 (3%;64%)2.72\*(1.25-5.93) |  | N=6 (5%;21%)3.20\*(1.27-8.06) | 3.82\*\*(1.39-10.54) | N=1 (3%;4%)1.50(0.19-11.36) |  |
| **Diabetes mellitus****N=32/1481 (2%)** | N=0 (0%;0%)NA |  | N=0 (0%;0%)N |  | N=12 (2%;38%)0.99(0.48-2.05) |  | N=12 (2%;38%)0.89(0.43-1.83) |  | N=0 (0%;0%)NA |  | N=0 (0%;0%)NA |  |
| **Neurological disorder****N=13/1481 (1%)** | N=0 (0%;0%)NA |  | N=1 (1%;8%)1.08(0.14-8.39) |  | N=6 (1%;47%)1.43(0.48-4.27) |  | N=6 (1%;46%)1.28(0.43-3.80) |  | N=1 (1%;8%)0.94(0.12-7.33) |  | N=0 (0%;0%)NA |  |
| **Multiple sclerosis****N=8/1481 (1%)** | N=0 (0%;0%)NA |  | N=0 (0%;0%)NA |  | N=1 (0.2%;13%)0.24(0.29-1.92) |  | N=1 (0.2%;13%)0.21(0.03-1.71) |  | N=0 (0%;0%)NA |  | N=0 (0%;0%)NA |  |
| **Psychiatric Medications****N=168/1481 (11%)** | N=13 (14%;8%)1.35(0.73-2.48) |  | N=13 (12%;8%)1.10(0.60-2.01) |  | N=59 (11%;35%)0.89(0.63-1.23) |  | N=67 (11%;40%)0.98(0.71-1.36) |  | N=14 (12%;8%)1.03 (0.58-1.85) |  | N=4 (11%;2%)0.98(0.34-2.79) |  |
| **Gut-specific neuro-modulatory medications****N=132/1481 (9%)** | N=3 (3%;2%)0.33(0.11-1.08) |  | N=6 (6%;5%)0.59(0.26-1.38) |  | N=55 (10%;42%)1.21(0.84-1.73) |  | N=58 (10%;44%)1.18(0.82-1.69) |  | N=6 (5%;5%)0.52(0.22-1.19) |  | N=0 (0%;0%)NA |  |
| **Previous procedures** |
| **Multipara****N=1207/1481 (82%)** | N=74 (82%;6%)1.1(0.6-1.8) |  | N=84 (79%;7%)0.9(0.5-1.4) |  | N=465 (84%;39%)1.2(0.9-1.6) |  | N=498 (83%;41%)1.2(0.9-1.6) |  | N=97 (81%;8%)0.9(0.6-1.5) |  | N=28 (78%;2%)0.8(0.4-1.8) |  |
| **Obstetrics associated anal sphincter injury****N=290/1481 (20%)** | N=27 (30%;9%)1.84\*\*(1.15-2.94) |  | N=24 (23%;8%)1.22(0.76-1.96) | 3.36\*\*(1.36-8.33) | N=116(21%;40%)1.13(0.87-1.47) |  | N=129 (22%;45%)1.24(0.96-1.60) |  | N=29 (24%;10%)1.34(0.87-2.08) | 2.91\*(1.21-7.01) | N=9 (25%;3%)1.38(0.64-2.97)  |  |
| **Anal surgery****N=95/1481 (6%)** | N=9 (10%;10%)1.69(0.82-3.47) |  | N=11(10%;12%)1.78(0.92-3.45) |  | N=48 (9%;51%)1.76\*\*(1.16-2.67) |  | N=49 (8%;52%)1.63\*(1.07-2.47) |  | N=14 (12%;15%)2.09\*(1.14-3.81) |  | N=5 (14%;5%)2.43(0.92-6.39) |  |
| **Spinal cord injury/surgery****N=49/1481 (3%)** | N=2 (2%;4%)0.65(0.16-2.72) |  | N=3 (3%;6%)0.84(0.26-2.75) |  | N=9 (2%;18%)0.36\*\*(0.17-0.75) |  | N=10 (2%;20%)0.37\*\*(0.18-0.75) | 0.45\*(0.21-0.95) | N=3 (3%;6%)0.73(0.22-2.39) |  | N=1 (3%;2%)0.83 (0.11-6.19) |  |
| **Rectal surgery****N=58/1481 (4%)** | N=4 (4%;7%)1.15(0.41-3.25) |  | N=3 (3%;5%)0.70(0.21-2.27) |  | N=18 (3%;31%)0.74(0.42-1.30) |  | N=20 (3%;35%)0.77 (0.44-1.33) |  | N=3 (3%;5%)0.61(0.19-1.98) |  | N=2 (6%;3%)1.46(0.34-6.23) |  |
| **Colon (non-rectal) surgery****N=27/1481 (2%)** | N=1 (1%;4%)0.59 (0.08-4.39) |  | N=4 (4%;15%)2.31(0.78-6.79) |  | N=9 (2%;33%)0.83(0.37-1.85) |  | N=10 (2%;37%)0.87(0.39-1.91) |  | N=4 (3%;15%)2.01(0.68-5.89) |  | N=0 (0%;0%)NA |  |
| **Hysterectomy****N=297/1481 (20%)** | N=13 (14%;4%)0.66(0.36-1.19) |  | N=25 (24%;8%)1.25(0.78-1.99) | 1.99\*(1.09-3.64) | N=113 (20%;38%)1.02(0.79-1.33) |  | N=116 (19%;39%)0.93(0.72-1.21) |  | N=27 (23%;9%)1.17(0.75-1.83) | 2.06\*(1.16-3.67) | N=8 (22%;3%)1.14(0.51-2.53) |  |
| **Pelvic (non-rectal) surgery****N=231/1481 (16%)** | N=9 (10%;4%)0.59(0.29-1.18) |  | N=12 (11%;5%)0.67(0.36-1.25) |  | N=95 (17%;41%)1.19(0.89-1.59) |  | N=98 (16%;42%)1.11(0.83-1.47) |  | N=13 (11%;6%)0.64(0.35-1.15) |  | N=5 (14%;2%)0.87(0.33-2.26) |  |
| **Pelvic radiation****N=12/1481 (1%)** | N=1 (1%;8%)1.41(0.18-11.04) |  | N=2 (2%;17%)2.63(0.57-12.12) |  | N=9 (2%;75%)5.04\*(1.36-18.70) | 4.09\*(1.06-15.78) | N=9 (2%;75%)4.49\*(1.21-16.67) |  | N=2 (2%;17%)2.29(0.49-10.57) |  | N=1 (3%;8%)3.72(0.47-29.64) |  |
| **Mood disorder – hospital anxiety and depression (HAD)** |
| **HAD depression abnormal (>7)****N=235/1481 (16%)** | N=9 (10%;4%)0.56 (0.28-1.15) | 0.19\*\*(0.06-0.59) | N=14 (13%;6%)0.81(0.45-1.45) |  | N=92 (17%;39%)1.08(0.81-1.44) |  | N=98 (16%;42%)1.06(0.80-1.41) |  | N=15 (13%;6%)0.75(0.43-1.31) |  | N=2 (6%;1%)0.31(0.07-1.30) | 0.21\*(0.04-0.98) |
| **HAD- anxiety abnormal (>7)****N=501/1481 (34%)** | N=34 (38%;7%)1.19(0.77-1.87) |  | N=40 (38%;8%)1.20(0.79-1.82) |  | N=195 (35%;39%)1.10(0.88-1.38) |  | N=207 (35%;41%)1.08(0.86-1.34) |  | N=70 (58%;8%)1.23(0.83-1.82) |  | N=18 (50%;2%)1.66(0.84-3.28) |  |
| **Anorectal manometry physiology testing** |
| **Paradoxical anal contraction on push****N=977/1481 (66%)** | N=65 (72%;7%)1.36(0.85-2.19) | 1.81\*(1.05-3.10) | N=66 (62%;7%)0.84(0.56-1.26) |  | N=364 (66%;37%)0.95(0.76-1.19) |  | N=397 (67%;41%)1.04(0.83-1.29) |  | N=73 (61%;8%)0.78(0.53-1.15) |  | N=25 (69%;3%)1.17(0.57-2.41) |  |
| **Unable to expel rectal balloon (> 20 sec)****N=481/1481 (33%)** | N=32 (36%;7%)1.15(0.74-1.81) |  | N=26 (25%;5%)0.67(0.42-1.06) | 0.54\*(0.31-0.93) | N=161 (29%;34%)0.76\*(0.61-0.96) | 0.73\*(0.56-0.95) | N=177 (30%;37%)0.80(0.64-1.00) |  | N=34 (28%;7%)0.82(0.54-1.24) |  | N=8 (22%;2%)0.58(0.26-1.27) |  |
| **Unable to expel rectal balloon ( > 60 sec)****N=228/1481 (15%)** | N=15 (17%;7%)1.11(0.62-1.97) |  | N=14 (13%;6%)0.85(0.47-1.51) |  | N=72 (13%;32%)0.73\*(0.54-0.99) |  | N=78 (13%;34%)0.74\*(0.55-0.99) |  | N=18 (15%;8%)0.99(0.58-1.67) |  | N=5 (14%;2%)0.87(0.34-2.27) |  |

\*0.01<p<0.05; \*\*0.001<p<0.01; \*\*\*p<0.001

HAD – hospital anxiety and depression questionnaire; NA- no patients in this subgroup.