**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.