What is the effect of body mass index on subjective outcome following vaginal hysterectomy for prolapse?
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Introduction: It is estimated that a woman has a 12.6% lifetime risk of undergoing surgery for pelvic organ prolapse (POP). Despite the rise in prevalence of body mass index (BMI) worldwide, little is known about the relationship between the outcomes for surgery in this field and BMI. Researchers have identified obesity (BMI equal or greater than 30kg/m²) as a risk factor for the progression of POP. Obesity has also been found to be the strongest identified risk factor for post-hysterectomy vaginal vault prolapse. The authors of this study identify few studies that have been done to assess the subjective outcomes for vaginal hysterectomy in the presence of obesity.

Aim: “...to compare subjective outcomes of surgery in women of normal weight, overweight, and obesity, undergoing vaginal hysterectomy for POP [uterine] using prospectively collected data from a validated pelvic floor symptom questionnaire.”

Study Design: Cross-sectional

Methods:
Population and Sample: All women undergoing vaginal hysterectomy at Sheffield Teaching Hospital NHS Foundation Trust, NK who completed the electronic Personal Assessment Questionnaire-Pelvic Floor (ePAQ-PF) post-operatively and 3mo post op, with documented BMI, and patient consent during a 3-year period.
Measurements: ePAQ is web-based interactive questionnaire which provides evaluation of PF sx and impact on health related QOL (HRQOL). Covers dimensions of vaginal, sexual, urinary and bowel health. For this study, 4 questions about POP sx were used (see pg 137) graded on 0 to 3 scale to derive score between 0 and 100 (see p 137 for calculation methods). These produced the Prolapse Symptom Domain Scores (related to: awareness of something coming down, vaginal laxity, awareness of vaginal bulge or lump). A vaginal symptom QOL (VS-QOL) score was generated pre and post-surgery using the responses to 3 questions using 0 to scale. Subjects also answered an assessment of ‘overall change in condition’ question using a validated 7-point scale. See details in study.
Surgery: described in study. No mesh used. Depending on scores of POP-Q, anterior wall and/or posterior wall repairs may also have been done at time of surgery.
Data Analysis: pre and post-operative symptom scores were compared using a repeated mixed ANOVA test for BMI as a categorical variable (normal:18-24.9, overweight 25-29.9, and obese 30-35 kg/m2). Spearman rank order correlation test was used to evaluate BMI as a continuous variable.

Results
- A total of 60 women who underwent surgery for uterine prolapse grade 2 or greater (based on POP-Q test) completed the ePAQ-PF post-operatively and 3 months post-op placing 20 women in each of the 3 BMI groups: normal, overweight, and obese. Average age of cohort was 63 with range 37 to 88 yrs. Average parity of cohort was 2.4. Using Student t-test, authors found no significant difference between BMI groups in age, parity, or grade of prolapse. Of the cohort, 56 of the women underwent vag-hys with anterior or posterior repair, 2 of whom also underwent sacrospinous ligament fixation: four women underwent vag-hys without vaginal wall repair. See Table 1.
• VS-QOL Scores: pre-op VS-QOL scores were significantly less (P=0.026) in women with obesity compared to normal and overweight. All groups reported improvement post-operatively, no significant different found between BMI groups (P=0.012)

• Overall Change in Condition: Seventy-seven percent of cohort answered global rating of outcome question where 93% reported improvement. One woman responded, ‘no change’ and 2 felt condition to be ‘a little worse.’ Analyzing BMI as a continuous variable, authors found it was significantly correlated with global rating of outcome. Using Spearman rank-order correlation, authors found women with high BMI to report poorer overall outcome.

• Prolapse Symptoms Domain Scores: Significant improvement noted for cohort of 60 at 91%, scores improved from 55±18 to 6± (P<0.0005). No significant correlation between pre/post-operative prolapse impact scores and BMI. See Table 3.

• Prolapse Symptom Scores: Most commonly reported sx of prolapse were: ‘awareness of something coming down’ and ‘awareness of a lump’ being reported by 97% and 95% respectively. ‘Vaginal laxity’ reported by 48% of cohort. Additional analysis demonstrated no significant difference between BMI groups in improvement of individual prolapse symptoms. See Table 4.

Discussion
• Primary finding in this study is that patient-reported perception of their overall improvement in their condition after hysterectomy for uterine prolapse is negatively correlated with increasing BMI.

• Authors suggest that delaying surgery for POP in obese women may have ‘potential merits.’ They discuss the theoretical mechanism of the increased intra-abdominal pressure associated with abdominal girth applying pressure on the pelvic floor contributing to POP. That said, they state that the impact on weight loss on POP remains unclear. For example, the data gathered from 16,608 women over 5 years in the Women’s Health Initiative reported an association between weight gain and POP progression however, weight loss was not associated with regression of prolapse and in fact reported borderline worsening of uterine prolapse. Results of bariatric surgery on POP also have conflicting results. Authors contrast this with findings from studies on stress UI and weight loss reporting strong evidence for significant improvement in SUI with decreasing weight.

• Rationale for weight loss prior to prolapse surgery. First, concern for surgical complications but based on results of other research, authors report that evidence for significant increase in risk of immediate surgical complications with prolapse surgery is lacking. Second reason for weight loss prior to prolapse surgery is to reduce chance of recurrence. Again, studies produce conflicting results but 2015 systematic review found higher BMI was a significant risk factor for primary POP however, it was not a significant factor for reoccurrence.

• Authors discuss studies that examine how higher BMI affects perception of general health where obesity is associated with poor levels of subjective health status and impaired health related QOL. For this study, authors state that ‘Women with obesity may perceive change in their condition differently to women of normal weight.’

• Interestingly, women with higher BMI tend to report less impact from prolapse on their VS-QOL preoperatively perhaps because obese women are less likely to be physically active.

• Limitations include short follow up period of only 3 months post-op and a lack of pre and post objective data including POPQ scores. Reporting bias may have occurred with the dropout of patients who were unsatisfied with their post-op progress and not completing the post-op questionnaire. However, the cohort of 60 women with 20 in each BMI group did provide for a detailed comparison of post surgical satisfaction with QOL.

Summary
The results of this study suggest that increasing BMI is associated with less satisfaction for the outcome of uterine prolapse surgery. The authors suggest this information may be beneficial for counseling patients preoperatively. They recommend additional research to include the impact of obesity on assessing both subjective and objective surgical outcomes, the impact of obesity on outcomes for surgery to include both anterior and posterior compartment prolapse, and also suggest more study on prolapse reoccurrence.

Clinical Application

1. What else would you want to know about the women in this study? From a PT perspective, what measurements do you think should be included in a more long-term study assessing for reoccurrence of prolapse?
2. Many factors contribute to the degree to which a woman is bothered by prolapse. These authors found that despite equal improvement in prolapse symptoms post-op, women with increasing BMI are more likely to report lower levels of satisfaction following surgery. Have you found this to be true with the results of therapy as well?
3. Do you counsel your prolapse patients about weight loss? About physical activity in general?