

Pelvic Physical Therapy Distance Journal Club

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The effect of pessary treatment on puborectalis muscle function. Manzini C, van den Noort F, Grab AT et al. Int Urogyn J 2021;32:14091417. Doi: 10.1007/s00192-021-04766-2.

Introduction: Below is a paraphrased copy of my email to the GYN Providers at Mayo Clinic

SITUATION: As physical therapists, we may recommend pessary to improve pelvic floor muscle function. We believe that a pessary may shorten the genital hiatus which improves the length-tension relationship of the PFMs. This then can often immediately improve muscle contraction. The purpose then differs from the typical GYN strategy for recommending pessary solely for symptomatic relief. We are also exploring the potential benefit of pessary as a proactive perineal and pelvic organ support strategy for our many patients with EDS/HSDs. (approximately 30% of our patients with pelvic floor disorders also have hypermobility spectrum disorders)

BACKGROUND: Prior to the on boarding of new colleagues in the PM&R and GYN Departments, we had scheduled a meeting (July 2021) to discuss physical therapist recommendations for pessary fittings to optimize pelvic floor muscle function. This meeting was deferred in order to wait for everybody to come on board. There had been questions from providers in regards to PT recommendations for pessary fitting.

ASSESSMENT: Our team of providers has a varying and possibly inconsistent range of recommendations regarding pessary fittings. Sometimes, when physical therapists are referring and recommending pessary fitting, the providers are not in agreement.

RECOMMENDATION: Meeting was held on Feb 2 2022 to develop an algorithm for pessary fitting decision making to improve PFM function .

Aim/Primary Aim: The objective of the Manzini study was to assess if **puborectalis muscle (PRM) function changes** in women with pelvic organ prolapse (POP) undergoing pessary treatment.

Study Design/Study Format: This was a prospective cohort study of women with symptomatic POP choosing pessary treatment

Methods: data used in the current study were collected as a subset within the GYNecological Imaging using 3D UltraSound (GYNIUS) project on the **assessment of pelvic floor contractility with TPUS**. An interview, clinical examination and 3D/4D transperineal ultrasound were performed at baseline and at 3-month follow-up. 34 women were included (see Fig 1 p1412)

Exclusion criteria were: women already using a pessary at baseline; pessary fitting started more than 4 weeks after base- line assessment; women not attending the 3-month follow up; women undergoing pelvic floor muscle training (PFMT) in combination with pessary treatment during the study period. POP stage was not an inclusion/exclusion criterion.

POP was assessed using the Pelvic Organ Prolapse Quantification system (POPQ). At baseline, pessary fitting was performed Based on clinical examination, a ring pessary of appropriate size

(without or with support) was inserted at the initial fitting. If a ring pessary was not suitable, Gellhorn, donut or cube pessaries were tried. The following appointment was scheduled after 2–4 weeks to assess if the first pessary fitting trial was successful. A fitting trial was considered successful if the woman decided to continue using the pessary she was fitted with. If not, a different pessary size or type could be tried, and another pessary fitting trial was performed.

The TPUS was performed in supine position with an empty bladder without pessary inserted. Resting hiatal area was measured. Women were instructed to perform maximal pelvic floor contraction and maximal Valsalva maneuver. Presence of avulsion was assessed by a blinded assessor at a later stage by the first author on baseline volumes obtained at maximum contraction. Complete avulsion was defined as a levator–urethra gap of ≥ 25 mm on the three central slices on the right side, on the left side (unilateral) or both sides (bilateral), as shown in Appendix 2 [23]. Avulsion was defined based on the presence of **complete unilateral or bilateral avulsion**.

Parameters compared between baseline and follow-up were: hiatal area at rest (HArest), maximal contraction (HActx), and maximal Valsalva maneuver (HVal), displacement in contraction (DISPL-ctx, i.e., relative difference between HArest and HActx), and displacement in Valsalva (DISPL-Val, i.e., relative difference between HVal and HArest). Parameters were compared in women with and those without complete avulsion. Assessors were blinded.

Results:

Table 1- explanation of parameters

Table 2- mean and interquartile ranges of parameters

Table 3- one-sample t test assessing the relative difference between follow-up and baseline of changes in parameters

Table 4 Comparison of Parameters of the avulsion and no-avulsion groups were

Figure 1: A total of 162 women were assessed and 34 were included. Mean age =64 years, mean BMI =24 kg/m². 31 had cystocele, 8 had uterine prolapse, 12 had a posterior compartment prolapse. Twenty-one women (61.8%) had a POP stage II, and 13 (38.2%) a POP stage III. Ring pessaries were most frequently used (97%).

- **In the entire group a statistically significant increase in DISPL-ctx was observed (mean difference 2.1%, p = 0.017).**
- **In the no avulsion group HArest and DISPL-ctx increased significantly (mean difference 4.1%, p = 0.016 and 2.7%, p = 0.016 respectively) and the increase in DISPL-ctx was higher than in the avulsion group (mean difference 2.7% vs 0.2%, p = 0.056).**

Discussion: A statistically significant increase in DISPL-ctx (relative difference between HArest and HActx), was observed 3 months after successful pessary fitting. *This result is consistent with the hypothesis that pessary treatment is associated with changes in PRM function.* Authors note that DISPL-ctx was “more driven by an increase in HArest than by a decrease in HActx, which is also confirmed by the statistically significant increase in HArest in the no-avulsion group.

Whether the changes observed can be interpreted as a regain of PRM function or not is questionable. A possible explanation for these findings is that women with POP try to relieve their POP symptoms by contracting the PRM, which counteracts the abnormal pressure gradient originating during development of POP”

- “Contraction hypothesis” Vaginal pessaries, by supporting POP, could reduce the need for this continuous contraction, allowing the PRM to relax (which was measured as an increase in HAreSt). From this perspective, the increase in DISPL-ctx is the result of a more physiological resting position.
- “Relaxation hypothesis” a progressive relaxation of the resting tone occurs in women with POP undergoing pessary treatment
- The difference between the two hypotheses lies in the baseline resting tone of the PRM, which is not fully relaxed in the “contraction hypothesis,” whereas it is fully relaxed in the “relaxation hypothesis.”

At baseline and follow-up, women with complete avulsion had significantly lower DISPL-ctx than those in the no-avulsion group. No significant change in DISPL-ctx was observed during pessary treatment in the avulsion group. These findings are more consistent with the contraction hypothesis” and can be explained by the impaired ability to contract of women with complete LAM avulsion.

Strengths: all scans by one clinician, blinded assessors for all clinical data

Limitations: no control group, results may not apply to all pessaries, most had ring pessary, HA is Measured differently in different studies: genital hiatus is the distance between the middle, of the external urethral meatus and the posterior margin of the hymen, whereas the levator HA on TPUS is the area encircled by the pubic bone and PRM. Genital hiatus- Distance from the insertion of the pubovisceralis muscle (PVM) and the symphysis pubis (PVM-symphysis gap) (DeSilva 2016 cadaver study)

Conclusion/Summary: pessary treatment is associated with changes in HA and PFM function. Change in HA imply changes in length tension relationship of PFM.

Clinical Application: Pessary may improve PFM function, This may be important for women with perineal descent / POP and poor PFM function. Women with EDS/HSD may benefit from pessary for improved support/ reducing HA and PFM function

Discussion questions: Do you think that pessaries improve pelvic floor muscle contraction in some patients? How do you assess this? Do you refer patients for pessary fitting? Do you assess for avulsion prior to referral for pessary fitting? Do your patients report satisfaction and functional improvement after pessary fitting?

Other Reference: Boyd SS, Subramanian D, Propst K, O'Sullivan D, Tulikangas P. Pelvic Organ Prolapse Severity and Genital Hiatus Size With Long-Term Pessary Use. *Female Pelvic Med Reconstr Surg*. 2021 Feb 1;27(2):e360-e362. doi: 10.1097/SPV.0000000000000937. PMID: 32910077.

- CONCLUSION: Pessary use by women with pelvic organ prolapse causes a change in vaginal anatomy over time as seen by decreasing stage and point GH.