VAGINAL DIMENSIONS AND SHAPES IN WOMEN WITH PELVIC ORGAN PROLAPSE USING VAGINAL CASTS

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Acrylic impressioins of prolapsed vaginal cavities

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Introduction

From the early 1700's vaginal pessaries in the shape of a ring and made from a variety of materials have been prescribed. To this day, ring-shaped vaginal pessaries remain the most widely used pessaries and are generally made of silicone or PVC. Compared to prolapse surgery, long-term vaginal pessary use has been poorly studied. In a recent study, 130 of 246 (53%) women fitted with a pessary continued to successfully use a pessary for 5 years. Vaginal pessaries will continue to play an important role in the management of pelvic organ prolapse particularly in elderly patients. However, we believe there is an important unmet need to develop more physiologically shaped pessaries than currently exist. A study of the vaginal dimensions in women with prolapse is likely to provide important insights when developing a more physiologically shaped vaginal pessary. The use of vaginal casts has been studied to compare vaginal shapes in 23 Afro-American, 39 Caucasian and 15 Hispanic women. None of the women in this study were reported as having vaginal prolapse.

Aims

To evaluate the vaginal dimensions and shapes of women with symptomatic pelvic organ prolapse (POP) using vaginal casts. We also aimed to determine whether prior hysterectomy or prolapse surgery altered vaginal dimensions. This study had IRB approval

Methodology

Consecutive women booked for surgery for symptomatic POP were invited to participate in the study. Vaginal casts were taken from 58 women (22 without prior POP surgery or hysterectomy, 15 with prior hysterectomy, and 21 with prior POP surgery) undergoing surgery for POP. Prior hysterectomy and prior POP surgery have been identified as risk factors for failed pessary use. Prior POP surgery using mesh was an exclusion. All participants underwent gynaecologic assessment using a standardized proforma and POP was graded using the ICS POP-Q system. Immediately before participants underwent POP surgery, an impression /cast of the prolapsed vagina was taken using alginate (Alginmax, Major Dental, Italy). Within 24 hours, a dental technician created a mould from the vaginal cast from which an acrylic impression of the prolapsed vaginal cavity was made.

Results

Table 1 details the dimensions of the vaginal casts from Group 1 = no prior hysterectomy or POP surgery; Group 2 = prior hysterectomy but no prior POP surgery; Group 3= prior POP surgery.

Results Cont'd

Table 1: Dimensions of the vaginal casts from the three groups

	Group 1 n=22	Group 2 n=15	Group 3 n=21	P-value* 1 vs 2	P-value* 1 vs 3
Total vaginal length (mm)	95.5	89.8	85.7	0.2	<0.05
Length hymen to anterior fornix (mm)	84.1	87.0	83.5	0.5	0.7
Maximal width (mm)	53.4	51.2	47.7	0.2	<0.01
Levator hiatus width (mm)	39.1	31.4	32.5	<0.0001	<0.01
Volume (ml)	109.1	82.2	78.5	<0.05	<0.01

* Group 1 was compared separately with Group 2 (1 vs 2) and Group 3 (1 vs 3)

Significant differences between Group 1 and 2 were observed in the width of levator hiatus and volume. Significant differences between Group 1 and 3 were observed in the total vaginal length, maximal width, width of levator hiatus and volume

Conclusions

The use of vaginal casts provides accurate information about vaginal dimensions and shapes in women with POP. Vaginal dimensions and shapes were influenced by prior hysterectomy and POP surgery which may help explain why pessaries tend to be less successful in these groups. An understanding of the variation in vaginal shapes and dimensions in women with POP may provide important insights into the development of more physiologically shaped vaginal pessaries.