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Outcomes of Pelvic Organ Prolapse Repair by the Vaginal Route Using Avaulta Plus® in Elderly Women

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Abstract

Objectives: As the population ages, a rise in Pelvic Organ Prolapse (POP) repair is expected. The aim of this study was to evaluate the efficacy and safety of POP repair by the vaginal route using a mixed polypropylene and porcine skin mesh (Avaulta Plus®) in elderly patients.

Methods: Retrospective study conducted at Tenon University Hospital, Paris, France including all women who underwent POP repair using Avaulta Plus® mesh by the transobturator route for POP ≥stage II from September 2008 to December 2017. Pre- and postoperative POP classification, quality of life scores, and complications were evaluated. All parameters were compared between the groups (≥80-year-old vs <80-year-old).

Results: Twenty-one women ≥80 years and 58 women <80 years were included. There was no difference in anatomical success rate for anterior wall prolapse (100% in <80-year-old group and 96.1% in ≥80-year-old group). No differences in postoperative complication rate (p=0.53) or mesh exposure (p=0.19) were noted. An improvement in prolapse-related quality of life (PFDI-20 score) was observed for both groups. At 3 years of follow-up, the recurrence rate was similar in both groups.

Conclusions: Prolapse repair using Avaulta Plus® mesh is effective in elderly patients with similar improvements in symptoms and quality of life as in younger patients. Complication rate, including mesh exposure, does not increase with age.

Keywords: Avaulta Plus® Mesh; Cystocele repair; Elderly patients; Pelvic organ prolapse; Quality of life

Introduction

It is well known that the lifetime risk for a woman to develop Pelvic Organ Prolapse (POP) requiring surgery is as high as 11% [1]. POP is observed in 30-70% of women in routine gynecologic examinations and prevalence increases with age, partly due to alteration of the anatomical pelvic structures and partly due to hormonal deficiency [2,3].

The anterior vaginal wall is the most commonly affected compartment of POP and is the main indication for surgery in up to 80% of cases [4]. A recent prospective study reported objective success rates of 93% for cystocele with a sacrospinous ligament fixation for anterior mesh repair in a cohort of 225 patients over 75 years with a mesh exposure rate of 3.9% [5]. For these authors, age did not emerge as a risk factor for perioperative complications or for mesh erosion. However, conflicting results have been published suggesting an increase in complications related to age-associated co-morbidities [6]. Hence, the benefit of prosthetic vaginal surgery in elderly patients requires further investigation. Moreover, there

is an issue on the type of mesh to use by vaginal route. Among them, the Avaulta Plus® mesh is thought to decrease the rate of complications especially of erosion linked to the association of polypropylene mesh with a central coating of a porous, cellular cross linked porcine collagen.

Therefore, the objectives of this study were to evaluate intra- and postoperative complications and Quality of Life (QOL) using the Avaulta Plus® mesh in POP surgical repair by the vaginal route in women over 80 years old compared to younger women.

Materials and Methods

Study Design

The study was conducted retrospectively in the Department of Gynecology of Tenon University Hospital, Paris, France. All patients undergoing anterior wall prolapse repair using anterior Avaulta Plus® (Bard, France) by the transobturator route from September 2008 to December 2017 were included.

All the patients had POP stage ≥ II according to International Continence Society pelvic organ prolapse quantification system (POPQ) and underwent preoperative pelvic examination to grade POP using the POPQ classification [7,8]. The maximal extent of prolapse was clinically measured during a Valsalva maneuver or coughing and was confirmed by the patient as being the most severe protrusion. Preoperative functional symptoms - including pelvic, urinary and digestive symptoms – were evaluated by the surgeon during a medical interview. Preoperative QOL was evaluated by validated prolapse specific questionnaires: the short version of the Pelvic Floor Distress Inventory (PFDI-20), the Pelvic Floor Impact Questionnaire (PFIQ-7) and Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ-12) [9].

The PFDI-20 assesses the presence and amount of distress caused by 20 symptoms related to pelvic floor disorders. It is composed of three sub-questionnaires; the Pelvic Organ Prolapse Distress Inventory (POPDI-6), the Colon Rectal Anal Distress Inventory (CRADI-8) and the Urinary Distress Inventory (UDI-6).

The PFIQ-7 assesses the impact of symptoms on activities of daily living. It is composed of three sub-questionnaires: The Pelvic Organ Prolapse Impact Questionnaire (POPIQ-7), the Colon Rectal Anal Impact Questionnaire (CRAIQ-7) and the Urinary Impact Questionnaire (UIQ-7).

The PISQ-12 assesses the impact of symptoms on sexual satisfaction.

Intra- and postoperative complications were recorded and analyzed according to the Clavien-Dindo classification [10].

Postoperative clinical examination and functional symptoms were evaluated by the surgeon at 1- and 6-month postoperative visits and then every year. Anatomical recurrence was defined by POPQ stage ≥ II. Questionnaires were collected by postal or telephone interviews. Anatomical and functional outcomes, quality of life and complications were compared between patients over and younger than 80 years old.

Ethics Committee approval was obtained for this prospective study by the College National des Gynecologist et Obstetricians Francis (CNGOF CEROG-2010-011).

Surgery

The Avaulta Plus® mesh used is a four-armed, monofilament, polypropylene mesh with a central coating of a porous, cellular cross linked porcine collagen. The central coating functions as a barrier and contains apertures enabling ingrowths of tissue and capillary vessels.

In accordance with previous reports, the POP repair was preceded, when required, by a vaginal hysterectomy according to the modified Heaney technique [11]. The anterior wall prolapse was dissected centrally and laterally while keeping the Halban pubocervical fascia lying on the vaginal wall. Four skin incisions were made on the genitocrural crease to insert cannula-equipped guides. The mesh was placed with the porcine component facing the vaginal skin between the bladder and the anterior vaginal wall and secured bilaterally by four arms across the obturator foramen according to the technique previously described [12]. A Foley catheter was left in place for 24 hours.

Statistical Analysis

Statistical analyses were performed using the RStudio Version 1.1.442 software freely available online. Continuous variables were summarized by mean and standard deviation. Scores were summarized by median and range. Qualitative variables were compared using the Chi2 test or the Fischer's exact test for independent samples and using McNemar's test for paired data. PFDI-20, PFIQ-7 and PISQ-12 were compared using the Wilcoxon signed-rank paired test for paired samples and using the Wilcoxon signed-rank paired test for independent samples. All tests were two-sided. A value of $p<0.05$ was considered to denote a significant difference.

Results

Epidemiological Characteristics (Table 1)

Seventy-nine patients underwent pelvic reconstruction surgery with placement of Avaulta Plus® vaginal mesh during the study period. Patients had a mean age of 74.2 years and a median age of 76 years. Twenty-one patients (26.6%) were ≥80 years old and 58 were (73.4%) <80 years old. No difference in epidemiological characteristics was found between the groups, except for parity.

Characteristic	≥80-year-old group, n = 21	<80-year-old group, n = 58	p-value
Age (years, mean ± SD)	82.5 ± 2.8	71.2 ± 6.8	< 0.001
Weight (kg, mean ± SD)	62.1 ± 10.5	66.5 ± 12	0.12
Body Mass Index (kg/m^2, mean ± SD)	24.5 ± 3.7	26.3 ± 4.3	0.12
Body Mass Index > 30 (kg/m^2), n (%)	1 (4.8)	10 (17.2)	0.16
Patient with comorbidities, n (%)	16 (76.2)	36 (62.1)	0.24
Parity (mean ± SD)	2.1 ± 1.7	3.3 ± 2.4	0.014
Nulliparous, n (%)	1 (4.8)	4 (6.9)	0.73
Vaginal delivery, n (%)	20 (95.2)	54 (93.1)	0.73
Cesarean section delivery, n (%)	0 (0)	3 (5.2)	0.29
Hormonal replacement therapy, n (%)	5 (23.8)	5 (8.6)	0.07
Prior abdominal surgery, n (%)	14 (66.7)	41 (70.7)	0.73
Prior hysterectomy, n (%)	5 (23.8)	10 (17.2)	0.51
Laparotomy, n (%)	4 (19)	3 (5.2)	0.05
Laparoscopy, n (%)	1 (4.8)	4 (6.9)	0.73
Vaginal route, n (%)	0 (0)	3 (5.2)	0.29
Prior surgery for POP, n (%)	3 (14.3)	8 (13.8)	0.95
y: Years ; kg: Kilograms ; POP-Q: Pelvic Organ Prolapse-Quantitation ; SD: Standard Deviation			

Table 1: Epidemiological and clinical characteristics.

Surgical Characteristics and Complications

Associated procedures to POP repair including hysterectomy, bilateral sacrospinous fixation and transobturator midurethral tape placement did not differ between the groups (Table 2). The mean operating time and the median hospital stay were similar in both groups.

Characteristic	≥ 80-year-old group, n = 21	<80-year-old group, n=58	p-value
Operative time (minutes, mean ± SD)	74.7 ± 31.9	84.3 ± 34.5	0.42
Associated procedure to POP cure			
Hysterectomy, n (%)	16 (76.2)	45 (77.6)	0.12
Bilateral sacrospinous fixation, n (%)	8 (38.1)	31 (53.4)	0.23
Transobturator midurethral tape, n (%)	7 (12.1)	23 (39.6)	0.61
Uterine conservation, n (%)	0 (0)	3 (5.2)	0.29
Hospital stay (days, mean ± SD)	2.6 ±1.2	3.1 ± 2.3	0.19
SD: Standard Deviation			

Table 2: Surgical characteristics.

No difference in intra- or postoperative complications was found between the groups (p=0.37) (Table 3). Two intraoperative complications occurred: one bladder injury requiring the mesh placement to be abandoned and one rectal injury during the sacrospinous fixation which did not result in abandoning the mesh placement. Both complications occurred in the <80-year-old group.

	≥80-year-old group n=21	**<80-year-old group n=58**	**p value**
Complications, n (%)	5 (23.8)	20 (34.5)	0.37
Intra-operative complication, n (%)	0 (0)	2 (3.4)	0.59
Bladder injury with abandon of mesh placement, n (%)	0 (0)	1	0.55
Rectal injury during the sacrospinous fixation, n (%)	0 (0)	1	0.55
Post-operative complication, n (%)	5 (23.8)	18 (31)	0.53
Voiding dysfunction, n (%)	2 (9.5)	8 (13.8)	0.61
Urinary infection, n (%)	2 (9.5)	5 (8.6)	0.9
Vaginal mesh exposure, n (%)	0 (0)	6 (10.3)	0.19
Hematoma, n (%)	0 (0)	3 (5.2)	0.56
Abscess, n (%)	0 (0)	2 (3.4)	0.59
Vesicovaginal fistula, n (%)	0 (0)	1 (1.7)	0.55
Additional surgery for complication, n (%)	0 (0)	7 (12.1)	0.09
Mesh exposure, n (%)	0 (0)	4	0.23
Hematoma, n (%)	0 (0)	2	0.39
With mesh removal, n (%)	0 (0)	1	0.55
Abscess, n (%)	0 (0)	1	0.55
Postoperative prolonged bladder drainage, n (%)	2 (9.5)	10 (17.2)	1
Duration of bladder drainage (days, mean ± SD)	5 ± 1.4	9.1 ± 8.7	0.28

Table 3: Intra- and postoperative complications of POP repair using the Avaulta Plus® mesh.

Twenty-three patients (29.1%) experienced a postoperative complication: 23.8% in the ≥80-year-old group and 31% in the < 80-year-old group (p=0.53). All women who underwent surgery for a complication were in the < 80-year-old group. Distribution of postoperative complications according to the Clavien-Dindo classification is summarized in Table 4. No difference in the degree of complications was found between the groups (p=0.56). All grade III complications occurred in the <80-year-old group.

	≥80-year-old group n=21	**<80-year-old group n=58**	**p value**
Clavien Dindo classification			0.56
Grade I	0 (0)	1 (1.7)	

Grade II	5 (23.8)	10 (17.2)	
Grade III			
Grade IIIa	0 (0)	0 (0)	
Grade IIIb	0 (0)	7 (12.1)	
Grade IV-V	0 (0)	0 (0)	

Table 4: Distribution of postoperative complications according to Clavien-Dindo classification.

Functional and Anatomical Results

The mean follow-up was 3.2 years in the ≥80-year-old group and 2.8 years in the <80-year-old group (p=0.4). Five patients (23.8%) in the ≥80-year-old group and seven (12.1%) in the <80-year-old group were lost to follow-up (p= 0.29).

No differences in pre- and postoperative symptoms were found between the groups except for stress urinary incontinence which was more frequent postoperatively in the ≥80-year-old group (p=0.03). An improvement in pelvic symptoms after surgery was observed in both groups but with a greater improvement in vaginal discomfort (p<0.001) and pelvic heaviness (p<0.001) in the <80-year-old group. Pre- and postoperative stress urinary incontinence and urgency were more frequent in the ≥80-year-olds (p=0.045 and p=0.03, respectively). Voiding dysfunction was improved only in the <80-year-old group (p=0.01). Postoperative constipation was worse in the <80-year-old group (p=0.03). No differences in other digestive symptoms were noted between the groups (Table 5).

	≥80-year-old group n=21	**<80-year-old group n=58**	**p value**
Duration of follow-up (years) Mean ± SD	3.2 ± 1.2	2.8 ± 1.8	0.4
Loss of follow-up, n (%)	5 (23.8)	7 (12.1)	0.29
Symptom results	**n=16**	**n=51**	
Vaginal discomfort, n (%)			
Preoperative	16 (100)	51 (100)	0.2
Postoperative	1 (6.25)	2 (3.9)	0.79
p-value	< 0.001	<0.001	
Pelvic heaviness, n (%)			
Preoperative	11 (68,8)	31 (60.8)	0.77
Postoperative	1 (6.25)	2 (3.9)	0.56
p-value	0.004	<0.001	
Pelvic pain, n (%)			
Preoperative	0 (0)	5 (9.8)	0.33
Postoperative	1 (6.25)	3 (5.9)	0.96
p-value	0.32	0.18	
Stress urinary stress incontinence, n (%)			
Preoperative	6 (37.5)	20 (39.2)	0.9

Postoperative	10 (62.5)	15 (29.4)	0.03
p-value	0.045	0.25	
Urgency, n (%)			
Preoperative	1 (6.25)	17 (33.3)	0.051
Postoperative	6 (37.5)	15 (29.4)	0.55
p-value	0.03	0.62	
Nicturia, n (%)			
Preoperative	1 (6.25)	13 (25.5)	0.16
Postoperative	6 (37.5)	15 (29.4)	0.55
p-value	0.29	0.59	
Voiding dysfunction, n (%)			
Preoperative	3 (18.8)	11 (21.6)	1
Postoperative	0 (0)	2 (3.9)	1
p-value	0.08	0.01	
Constipation, n (%)			
Preoperative	6 (37.5)	10 (19.6)	0.18
Postoperative	5 (31.2)	16 (31.4)	1
p-value	0.32	0.03	
Anal incontinence, n (%)			
Preoperative	0 (0)	1 (2)	1
Postoperative	2 (12.5)	2 (3.9)	0.24
p-value	0.16	0.56	

Table 5: Changes in symptoms after POP repair using the Avaulta Plus® mesh surgery.

The overall anatomical success rate for anterior vaginal prolapse including patients with no prolapse and residual stage I POP, was 100% (16/16 patients) for the ≥80-year-old group and 96.1% (49/51 patients) for the <80-year-old group. In intention to treat, the overall anatomical success rate was 76.2% (16/21 patients) for the ≥80-year-old group and 84.5% (49/58 patients) for the <80-year-old group (Table 6).

	≥80-year-old group	**<80-year-old group**	**p value**
Duration of follow-up (years) Mean ± SD	3.2 +/- 1.2	2.8 +/-1.8	0.4
Lost to follow-up, n (%)	5 (23.8)	7 (12.1)	0.29
POP anterior recurrence, n (%)	0 (0)	2 (3.4)	0.39
Preoperative POPQ stage prolapse	n = 16	n = 51	
Anterior wall prolapse, n (%)			

No prolapse	0 (0)	0 (0)	1
Stage I	0 (0)	0(0)	0.88
Stage II	5 (31.2)	17 (33.3)	1
Stage III	11 (68.8)	32 (62.7)	0.77
Stage IV	0 (0)	2 (3.9)	1
Apical vaginal prolapse, n (%)			
No prolapse	0 (0)	5 (9.8)	0.33
Stage I	2 (12.5)	7 (13.7)	1
Stage II	2 (12.5)	11 (21.6)	0.72
Stage III	9 (56.3)	14 (27.5)	0.07
Stage IV	3 (18.7)	14 (27.5)	0.74
Posterior wall prolapse, n (%)			
No prolapse	2 (12.5)	12(23.5)	0.49
Stage I	3 (18.7)	18 (35.3)	0.35
Stage II	8 (50)	10 (19.6)	0.02
Stage III	3 (18.7)	6 (11.8)	0.44
Stage IV	0 (0)	5 (9.8)	0.33
Postoperative POPQ stage prolapse			
Anterior wall prolapse, n (%)			
No prolapse	15 (03.7)	38 (74.5)	0.16
Stage I	1 (6.3)	11 (21.6)	0.27
Stage II	0 (0)	2 (3.9)	1
Stage III	0 (0)	0 (0)	1
Stage IV	0 (0)	0 (0)	1
Apical vaginal prolapse, n (%)			
No prolapse	16 (100)	50 (98)	1
Stage I	0 (0)	0 (0)	1
Stage II	0 (0)	1 (2)	1
Stage III	0 (0)	0 (0)	1
Stage IV	0 (0)	0 (0)	1
Posterior wall prolapse, n (%)			
No prolapse	13 (81.2)	42 (82.4)	0.72
Stage I	1 (6.3)	4 (7.8)	1
Stage II	1 (6.3)	4 (7.8)	1

Stage III	1 (6.3)	1 (2)	1
Stage IV	0 (0)	0 (0)	1

Table 6: Changes in POP stage prolapse after POP repair using the Avaulta Plus® mesh surgery.

Two patients (2.5%) experienced anterior prolapse recurrence at 3 years (Table 6). Recurrences occurred in the <80-year-old group: one of these required mesh removals and the other presented a stage II anterior wall prolapse at 20 months. None of the patients underwent a second surgery.

Quality of life results (Table 7)

Postoperative quality of life score	≥80-year-old group n=11 Median (range)	<80-year-old group n=30 Median (range)	p-value (inter-group)
Response rate	11/21 (52.4%)	30/58 (51.7%)	0.96
PFDI-20			
Preoperative	58.3 (20.8-146.7)	70.4 (16.6-225)	0.7
Postoperative	32.3 (0-101)	18.8 (0-143.8)	0.17
p-value (intragroup)	0.01	< 0.001	
POPDI-6			
Preoperative	41.7 (16.7-75)	43.8 (12.5-100)	0.76
Postoperative	0 (0-20.8)	0 (0-62.5)	0.98
p-value (intragroup)	0.004	< 0.001	
UDI-6			
Preoperative	16.7 (0-58.3)	16.7 (0-91.7)	0.46
Postoperative	16.7 (0-75)	10.4 (0-50)	0.35
p-value (intragroup)	0.21	0.002	
CRADI-8			
Preoperative	6.3 (0-21.8)	6.25 (0-50)	0.88
Postoperative	12.5 (0-34.4)	1.6 (0-46.9)	0.16
p-value (intragroup)	0.18	0.63	
PFIQ-7			
Preoperative	42.8 (14.3-123.8)	42.9 (4.8- 198.4)	1
Postoperative	19.2 (0-109.5)	0 (0-136.8)	0.052
p-value (intragroup)	0.2	< 0.001	
POPIQ-7			
Preoperative	38 (9.5-47.6)	26.2 (0-66.7)	0.66
Postoperative	0 (0-14.3)	0 (0-33.3)	0.23
p-value (intragroup)	0.004	<0.001	

UIQ-7			
Preoperative	9.5 (0-33.3)	14.3 (0-88.9)	0.33
Postoperative	14.3 (0-90.5)	0 (0-72.2)	0.09
p-value (intragroup)	0.27	0.006	
CRAIQ-7			
Preoperative	0 (0-9.5)	0 (0-52.4)	0.78
Postoperative	0 (0-19)	0 (0-31.3)	0.17
p-value (intragroup)	0.42	0.7	

Table 7: Quality of life scores.

There was a similar response rate to the symptom questionnaires: 52.4% in the ≥80 years-old group and 51.7% <80 years-old group (p=0.96). QOL scores were available for 11 patients (52.4%) in the ≥80-year-old group and for 30 (59%) in the ≥80-year-old group.

PFDI-20 was improved in both groups mainly related to the improvement of pelvic symptoms evaluated by the POPDI-6 score (p=0.004 in the ≥80-year-old group and p<0.001 in <80-year-old group). Pelvic symptoms evaluated by the POPIQ-7 score was improved in both groups (p=0.004 in the ≥80-year-old group and p<0.001 in the <80-year-old group). The PFIQ-7 score was significantly improved only in the ≥80-year-old group (p<0.001).

The UDI-6 score and UIQ-7 scores showed urinary function improvements in the ≥80-year-old group only (p=0.002 and p=0.006, respectively).

Only three patients (7.3%) were sexually active before and after surgery which precluded evaluation of the impact of POP repair on sexual function.

Discussion

The current study demonstrates that POP repair by the vaginal route using the Avaulta Plus® mesh is an effective and safe procedure in elderly patients. The resulting improvements in symptoms and QOL for this group (≥ 80 years old) are similar to those observed in younger patients.

Women over 80 years old are the fastest growing segment of society; the number of American women with at least one pelvic floor disorder will increase from 28.1 million in 2010 to 43.8 million in 2050 [13]. Our results underlining the high anatomical success rate of Avaulta Plus® mesh for anterior vaginal prolapse repair, with a success rate of 100% in the ≥80-year-old group (76.2% in intention to treat) and 96.1% in the <80-year-old group (84.5% in intention to treat), are thus particularly relevant. These rates are in agreement with those found in previous studies reporting anatomical success rates ranging from 82% to 91% regardless of patient age [14,15].

Among the eight patients for whom the procedure was a failure (defined by a postoperative POP ≥stage II), two patients in the younger group had persistent anterior prolapse. There was no difference between the groups in the recurrence rate. Allègre, et al. [14] suggested that elderly patients exhibited higher long-term anatomical success than younger patients (p=0.001). Our 3-year recurrence rate of 12.5% in the <80-year-old group and 11.8% in the ≥80-year-old group demonstrates similar high mid-term results. Our data are in agreement with those of de Tayrac, et al. [16] reporting a recurrence rate of 4.5% at 1 year and those of Nieminen, et al. [15] who report a recurrence rate of 13% at 3 years.

The safety of POP repair by the vaginal route using a mesh implies evaluation of the complication rate, the complication grade, and mesh erosion. In the current study, the postoperative complication rate was 29.1% including 8.9% of Clavien-Dindo classification grade III complications. Although there were no differences in the incidence of grade III complications, all occurred in the <80-year-old group for unexplained reasons.

No differences were found between our groups of patients (p=0.37) which supports the safety of mesh placement via the vaginal route in elderly women.

Our rate of 7.6% of mesh exposure in the whole population is close to the rates reported in the literature [16]. In agreement with Tan, et al. no difference in the mesh exposure rate was noted according to patient age (p=0.19) [5]. The effectiveness of a surgical procedure must also be assessed by evaluating changes in functional symptoms and QOL. In the current study, prolapse related symptoms such as vaginal discomfort and heaviness were significantly improved postoperatively in both groups. In accordance with previous studies [14,15], POPDI-6 and POPIQ-7 scores were significantly improved postoperatively in both groups

(p=0.004 and p<0.001 in the <80-year-old group and p=0.004 and p<0.001 in the ≥80-year-old group, respectively).

For urinary symptoms, UDI-6 and UDIQ-7 scores were improved for the <80-year-old group (p=0.002 and p=0.006) but not for the ≥80-year-old group (p=0.21 and p=0.27, respectively). Indeed, stress urinary incontinence (persistent and *de novo* incontinence), urgency and nycturia were not improved or worsened in the ≥80-year-old group. Our results are in agreement with previous series showing no improvement in stress urinary incontinence after cystocele repair with vaginal mesh placement [17,18]. In a series of 72 patients undergoing mesh surgery for POP >stage II, Natale, et al. [19] showed that six of the 40 patients (15%) developed *de novo* stress incontinence. Among the 44 patients with preoperative urgency incontinence, 15 (20.8%) remained incontinent postoperatively. This apparent discrepancy between our results and those of Natale, et al. can be explained by the characteristics of our population: our patients were older by 10 years and hence more prone to urinary incontinence [20]. Our high incidence of postoperative urgency in the ≥80-year-old group can also be explained by the decrease in bladder capacity and the increase in detrusor contractions due to the vesical aging as previously noted by Brocklehurst, et al. [21].

The present study suggests that POP repair does not improve digestive symptoms. Moreover, for the <80-year-old group a worsening in constipation was observed (p=0.03).

For women over 80 years old, pessary is often proposed; a review shows that the probability of choosing pessary treatment over surgery increases with increasing patient age [22]. Surgery appears to be successful for many women and associated with improvements in various clinical parameters, such as decreased sensation of vaginal bulge and enhanced quality of life. Some patients may experience improvements in bladder symptoms, although a small percentage may develop new urinary incontinence, constipation, or other defecation problems [23]. Surgery was preferred over pessary treatment if POP symptoms are more bothersome and affect the general wellbeing of the patient [22].

Some limitations of our study should be highlighted. First, the retrospective nature of the study cannot exclude biases. Second, the high rate of patients lost to follow-up is another limit but can be explained by the mean age of our population with the risk of mortality due to other comorbidities. However, in contrast to previous studies, we decided to focus on very elderly women: ≥80-year-olds represent a subpopulation with a higher incidence of comorbidities potentially a source of postoperative complications.

Conclusion

Despite the limits of the present study, our results suggest that the use of Avaulta Plus® mesh offers a high anatomical success and an acceptable complication rate which are similar in elderly and younger patient. However, although pelvic symptoms are improved, urinary symptoms seem to be worsening in elderly patient. POP surgery with Avaulta Plus® mesh placement is a valuable option provided that patient have to be informed of possible urinary effects.

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Conflicts of Interest: The authors declare that they have no conflict of interest.

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