

Supplemental Online Content

Li FG, Maheux-Lacroix S, Deans R, et al. Effect of Fractional Carbon Dioxide Laser vs Sham Treatment on Symptom Severity in Women With Postmenopausal Vaginal Symptoms. *JAMA*. Published online October 12, 2021. doi:10.1001/jama.2021.14892

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This supplemental material has been provided by the authors to give readers additional information about their work.

eTable 1 - Primary and secondary outcomes from baseline to 12 months

		Laser group							Sham group							Laser vs. Sham	
Time (months)		0 (n = 42)	1	2	3	6 (n = 42)	12 (n = 38)	Mean difference at 12 months	0 (n = 41)	1	2	3	6 (n = 40)	12 (n = 40)	Mean difference at 12 months	Difference*	p [^]
Visual Analogue Scale (VAS)	Overall vaginal symptoms (/100)	51 (41, 60)	54 (45, 62)	43 (34, 52)	35 (26, 44)	35 (26, 44)	33 (23, 43)	-17.2 (-44.4, 9.9)	59 (51, 67)	53 (44, 62)	40 (31, 49)	35 (27, 42)	38 (29, 47)	36 (26, 45)	-26.6 (-54.6, 1.4)	9.4 (-28.7, 47.5)	.66
	Most severe symptom (/100)	79 (73, 85)	75 (67, 82)	61 (51, 71)	58 (49, 67)	53 (42, 63)	55 (44, 65)	-24.5 (-45.1, 3.8)	77 (70, 84)	70 (61, 79)	65 (56, 75)	54 (44, 64)	56 (45, 67)	59 (48, 70)	-20.4 (-41.1, 0.3)	-4.1 (-32.5, 24.3)	.73
	Dyspareunia (/100)	69 (60, 78)	69 (60, 79)	59 (50, 69)	59 (49, 68)	50 (39, 61)	54 (43, 65)	-28.8 (-67.7, 10.0)	70 (60, 80)	70 (61, 79)	65 (55, 75)	52 (42, 62)	56 (44, 67)	67 (56, 78)	-4.0 (-35.3, 27.4)	-24.9 (-73.3, 23.6)	.75
	Vaginal dryness (/100)	68 (59, 76)	68 (60, 77)	59 (50, 68)	55 (46, 64)	49 (39, 59)	49 (40, 59)	-18.0 (-38.6, 2.5)	71 (62, 79)	71 (64, 79)	64 (56, 71)	52 (43, 61)	52 (43, 62)	59 (49, 69)	-12.0 (-38.3, 14.4)	-6.1 (-38.5, 26.3)	.54
	Vaginal burning (/100)	35 (26, 44)	28 (18, 38)	15 (8, 23)	15 (9, 21)	19 (10, 27)	9 (4, 13)	-21.9 (-45.7, 1.9)	31 (22, 41)	33 (22, 43)	27 (17, 36)	14 (8, 19)	21 (12, 30)	17 (9, 24)	-16.0 (-45.6, 13.6)	-5.9 (-42.7, 30.9)	.46
	Vaginal itching (/100)	21 (13, 29)	23 (14, 32)	13 (7, 19)	12 (7, 18)	13 (6, 19)	6 (2, 10)	-15.4 (-34.6, 3.7)	25 (17, 32)	23 (15, 30)	22 (14, 29)	18 (12, 24)	16 (9, 23)	14 (8, 19)	-8.3 (-24.8, 8.3)	-7.2 (-31.7, 17.4)	.16
	Dysuria (/100)	15 (7, 23)	14 (6, 23)	9 (3, 16)	7 (2, 12)	9 (3, 14)	4 (0, 7)	-11.4 (-26.6, 3.8)	8 (3, 13)	14 (7, 21)	6 (4, 8)	7 (3, 11)	4 (2, 5)	8 (3, 12)	2.2 (-9.3, 13.7)	-13.6 (-32.2, 5.1)	.34

Data presented as Mean (95% Confidence Interval). Visual analogue scale (VAS) from 0 to 100 for vaginal symptoms, with 0 being no symptoms and 100 being maximal symptom severity.

*Difference in the mean difference from baseline to 12-months, between laser and sham groups

[^]p-value for comparison of sham and laser through time (baseline to 12-months).

		Laser group							Sham group							Laser vs. Sham	
Time (months)		0 (n = 42)	1	2	3	6 (n = 42)	12 (n = 38)	Mean difference at 12 months	0 (n = 41)	1	2	3	6 (n = 40)	12 (n = 40)	Mean difference at 12 months	Difference*	p^
Vulvovaginal Symptom Questionnaire (VSQ)	Overall score (/20)	7.6 (6.3, 8.9)	7.3 (6.0, 8.7)	5.8 (4.5, 7.2)	5.7 (4.3, 7.1)	4.9 (3.7, 6.1)	4.3 (3.1, 5.6)	-3.1 (-6.3, 0.1)	7.1 (5.7, 8.4)	7.4 (6.0, 8.7)	5.9 (4.7, 7.1)	4.8 (3.8, 5.9)	4.9 (3.4, 6.3)	5.0 (3.5, 6.5)	-1.6 (-4.9, 1.6)	-1.5 (-5.9, 3.0)	.91
	Symptoms domain (/7)	2.5 (1.9, 3.0)	2.3 (1.8, 2.9)	2.0 (1.4, 2.5)	1.9 (1.3, 2.4)	1.8 (1.3, 2.3)	1.3 (0.8, 1.8)	-1.2 (-2.4, 0.1)	2.5 (2.0, 3.0)	2.8 (2.2, 3.4)	2.2 (1.7, 2.7)	1.8 (1.3, 2.3)	1.8 (1.2, 2.4)	1.9 (1.3, 2.5)	-0.5 (-1.5, 0.6)	-0.7 (-2.3, 0.9)	.49
	Emotions domain (/4)	1.6 (1.2, 2.0)	1.6 (1.2, 2.0)	1.0 (0.6, 1.4)	0.9 (0.5, 1.3)	1.0 (0.6, 1.4)	0.8 (0.4, 1.1)	-1.0 (-2.0, 0.1)	1.4 (1.0, 1.8)	1.4 (1.0, 1.8)	1.0 (0.6, 1.4)	0.9 (0.6, 1.1)	0.8 (0.5, 1.2)	0.9 (0.5, 1.3)	-0.5 (-1.4, 0.5)	-0.5 (-1.8, 0.9)	.71
	Life-impact domain (/4)	1.1 (0.8, 1.5)	1.2 (0.8, 1.6)	1.0 (0.6, 1.3)	1.1 (0.7, 1.5)	0.7 (0.4, 1.0)	0.6 (0.3, 0.9)	-0.8 (-1.6, 0.1)	1.0 (0.6, 1.3)	0.9 (0.6, 1.2)	0.8 (0.4, 1.2)	0.6 (0.4, 0.9)	0.8 (0.4, 1.1)	0.6 (0.2, 0.9)	-0.3 (-1.2, 0.6)	-0.5 (-1.7, 0.8)	.32
	Sexual- impact domain (/5)	2.3 (1.7, 2.8)	2.1 (1.6, 2.7)	1.9 (1.4, 2.4)	1.9 (1.4, 2.4)	1.5 (1.0, 2.0)	1.7 (1.2, 2.2)	-0.2 (-1.6, 1.1)	2.3 (1.7, 2.9)	2.3 (1.8, 2.9)	1.8 (1.3, 2.4)	1.6 (1.2, 2.1)	1.5 (1.0, 2.0)	1.8 (1.3, 2.4)	-0.4 (-1.7, 0.9)	0.2 (-1.6, 2.0)	.93

Data presented as Mean (95% Confidence Interval). Vulvovaginal Symptom Questionnaire (VSQ) is a 21-item validated instrument to measure vulvovaginal symptoms in postmenopausal women. This assessed 4 domains (symptoms, emotions, life-impact and sexual-impact) with possible scores of 0-20, where 0 indicated no symptoms, and 20 indicated severe symptoms.

*Difference in the mean difference from baseline to 12-months, between laser and sham groups

^p-value for comparison of sham and laser through time (baseline to 12-months).

Time (months)		Laser group						Sham group						Laser vs. Sham			
		0 (n = 42)	1	2	3	6 (n = 42)	12 (n = 38)	Mean difference at 12 months	0 (n = 41)	1	2	3	6 (n = 40)	12 (n = 40)	Mean difference at 12 months	Difference*	p [^]
Assessment of Quality of Life (AQoL-6D)	Total standardized score (/100)	75 (70, 80)	-	-	-	78 (74, 82)	81 (78, 84)	6.3 (-1.3, 13.8)	79 (75, 82)	-	-	-	81 (79, 84)	78 (74, 83)	1.4 (-3.4, 6.2)	4.8 (-3.9, 13.5)	.58
	ADL domain (/15)	4.3 (3.5, 5.0)	-	-	-	4.3 (3.5, 5.1)	3.8 (3.3, 4.2)	-0.6 (-1.6, 0.5)	4.1 (3.6, 4.7)	-	-	-	4.1 (3.2, 4.9)	4.1 (3.4, 4.8)	-0.1 (-0.7, 0.6)	-0.5 (-1.7, 0.7)	.73
	Relationships domain (/20)	7.0 (6.2, 7.8)	-	-	-	6.1 (5.3, 7.0)	5.7 (5.1, 6.2)	-1.2 (-2.6, 0.1)	6.2 (5.5, 6.8)	-	-	-	5.5 (4.8, 6.2)	6.3 (5.6, 7.0)	0.1 (-0.9, 1.0)	-1.3 (-2.9, 0.3]	.40
	Emotions domain (/20)	10.2 (9.2, 11.2)	-	-	-	9.2 (8.1, 10.3)	8.8 (7.9, 9.6)	-1.4 (-3.3, 0.4)	9.3 (8.4, 10.1)	-	-	-	8.5 (7.6, 9.5)	9.2 (8.3, 10.1)	-0.1 (-1.1, 1.0)	-1.4 (-3.4, 0.7)	.34
	Coping domain (/15)	7.1 (6.3, 7.9)	-	-	-	6.8 (6.1, 7.5)	6.4 (5.9, 6.9)	-0.8 (-2.1, 0.5)	6.6 (5.9, 7.2)	-	-	-	6.2 (5.5, 6.9)	6.7 (6.0, 7.4)	0.1 (-1.0, 1.2)	-0.9 (-2.6, 0.8)	.34
	Pain domain (/15)	5.8 (5.1, 6.6)	-	-	-	5.2 (4.4, 6.0)	5.0 (4.5, 5.5)	-0.8 (-1.9, 0.4)	5.7 (5.0, 6.4)	-	-	-	5.2 (4.5, 5.9)	5.3 (4.5, 6.0)	-0.7 (-1.9, 0.4)	-0.0 (-1.6, 1.6)	.93
	Communication domain (/15)	5.3 (4.9, 5.8)	-	-	-	5.5 (5.1, 5.9)	5.5 (5.1, 5.8)	-0.1 (-1.0, 0.8)	5.3 (4.9, 5.6)	-	-	-	5.1 (4.6, 5.6)	5.3 (4.8, 5.8)	-0.1 (-1.0, 0.8)	0.0 (-1.2, 1.3)	.39

Data presented as Mean (95% Confidence Interval). Assessment of Quality of Life 6D (AQoL-6D) is a self-reported instrument to assess health-related quality of life. Scoring is calculated using the 'standardized' scoring model (converted to score out of 100), where higher scores indicated better quality of life.

*Difference in the mean difference from baseline to 12-months, between laser and sham groups

[^]p-value for comparison of sham and laser through time (baseline to 12-months).

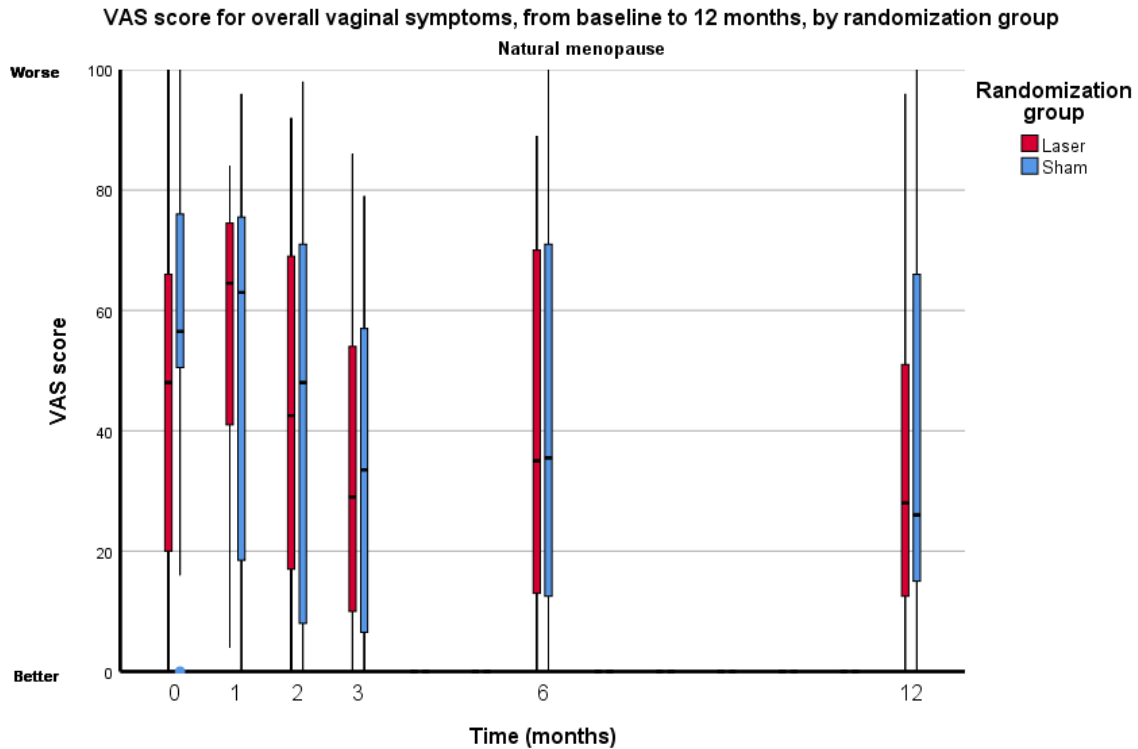
		Laser group						Sham group						Laser vs. Sham			
Time (months)		0	1 (n = 42)	2	3	6 (n = 42)	12 (n = 38)	Mean difference at 12 months	0	1 (n = 41)	2	3	6 (n = 40)	12 (n = 40)	Mean difference at 12 months	Difference*	p [^]
Vaginal Health Index (VHI)	Overall (/25)	-	13.0 (11.9, 14.0)	13.1 (12.1, 14.1)	14.1 (13.1, 15.2)	14.0 (13.0, 15.0)	14.3 (12.9, 15.8)	0.9 (-2.2, 4.0)	-	13.7 (12.6, 14.9)	14.3 (13.1, 15.5)	14.2 (13.1, 15.2)	14.3 (13.2, 15.3)	14.7 (13.0, 16.4)	1.3 (-1.4, 4.0)	-0.4 (-4.3, 3.6)	.38
	Elasticity (/5)	-	2.8 (2.6, 3.1)	2.7 (2.5, 2.9)	2.9 (2.7, 3.2)	3.0 (2.7, 3.3)	3.1 (2.7, 3.4)	0.2 (-0.6, 0.9)	-	2.8 (2.5, 3.0)	2.9 (2.7, 3.2)	2.9 (2.6, 3.1)	2.9 (2.6, 3.2)	3.1 (2.8, 3.4)	0.4 (-0.2, 1.1)	-0.2 (-1.2, 0.8)	.95
	Fluid volume (/5)	-	2.7 (2.4, 3.1)	2.6 (2.3, 2.9)	2.9 (2.6, 3.2)	3.1 (2.8, 3.3)	3.0 (2.7, 3.4)	0.2 (-0.6, 1.0)	-	2.7 (2.5, 3.0)	3.0 (2.7, 3.3)	2.9 (2.6, 3.2)	3.0 (2.7, 3.3)	3.1 (2.8, 3.5)	0.4 (-0.4, 1.2)	-0.2 (-1.3, 0.9)	.42
	pH (/5)	-	1.6 (1.2, 1.9)	1.5 (1.2, 1.9)	1.7 (1.3, 2.0)	1.5 (1.2, 1.8)	1.8 (1.4, 2.3)	0.1 (-0.7, 1.0)	-	1.7 (1.4, 2.0)	1.7 (1.4, 2.1)	1.6 (1.3, 1.9)	1.6 (1.3, 1.8)	2.2 (1.7, 2.7)	0.6 (0.0, 1.3)	-0.5 (-1.5, 0.5)	.30
	Epithelial integrity (/5)	-	3.1 (2.8, 3.4)	3.3 (3.0, 3.7)	3.5 (3.2, 3.9)	3.5 (3.2, 3.7)	3.4 (2.9, 3.9)	0.1 (-0.8, 1.1)	-	3.6 (3.3, 3.9)	3.5 (3.2, 3.8)	3.6 (3.4, 3.9)	3.7 (3.4, 4.0)	3.2 (2.7, 3.7)	-0.4 (-1.2, 0.5)	0.5 (-0.7, 1.7)	.36
	Moisture (/5)	-	2.8 (2.5, 3.0)	2.9 (2.7, 3.1)	3.1 (2.9, 3.4)	3.0 (2.7, 3.3)	3.1 (2.7, 3.4)	0.2 (-0.6, 1.0)	-	3.0 (2.7, 3.2)	3.2 (2.9, 3.4)	3.2 (2.9, 3.4)	3.1 (2.8, 3.4)	3.1 (2.7, 3.5)	0.2 (-0.5, 0.9)	0.1 (-1.0, 1.1)	.52

Data presented as Mean (95% Confidence Interval). Vaginal Health Index (VHI) was determined at each visit by blinded assessors who score the five parameters: vaginal elasticity; vaginal fluid amount; pH; epithelial integrity; and hydration/moisture. Score range is 5-25, where score <15 was considered vaginal atrophy.

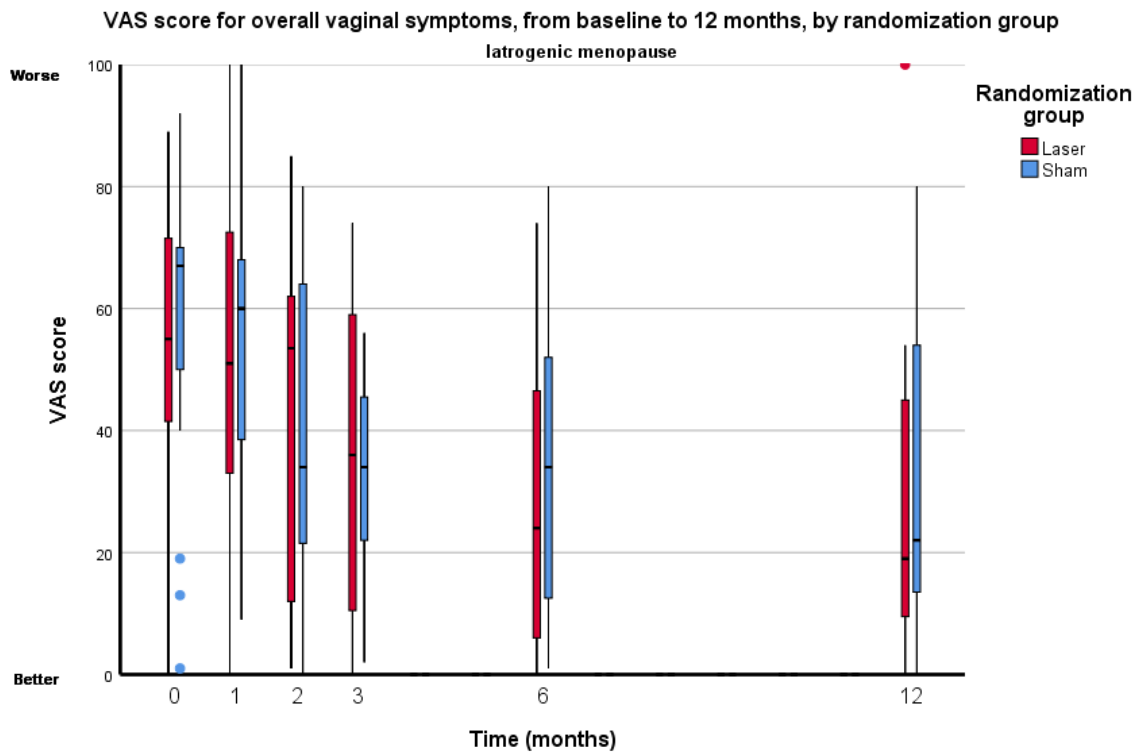
*Difference in the mean difference from baseline to 12-months, between laser and sham groups

[^]p-value for comparison of sham and laser through time (baseline to 12-months).

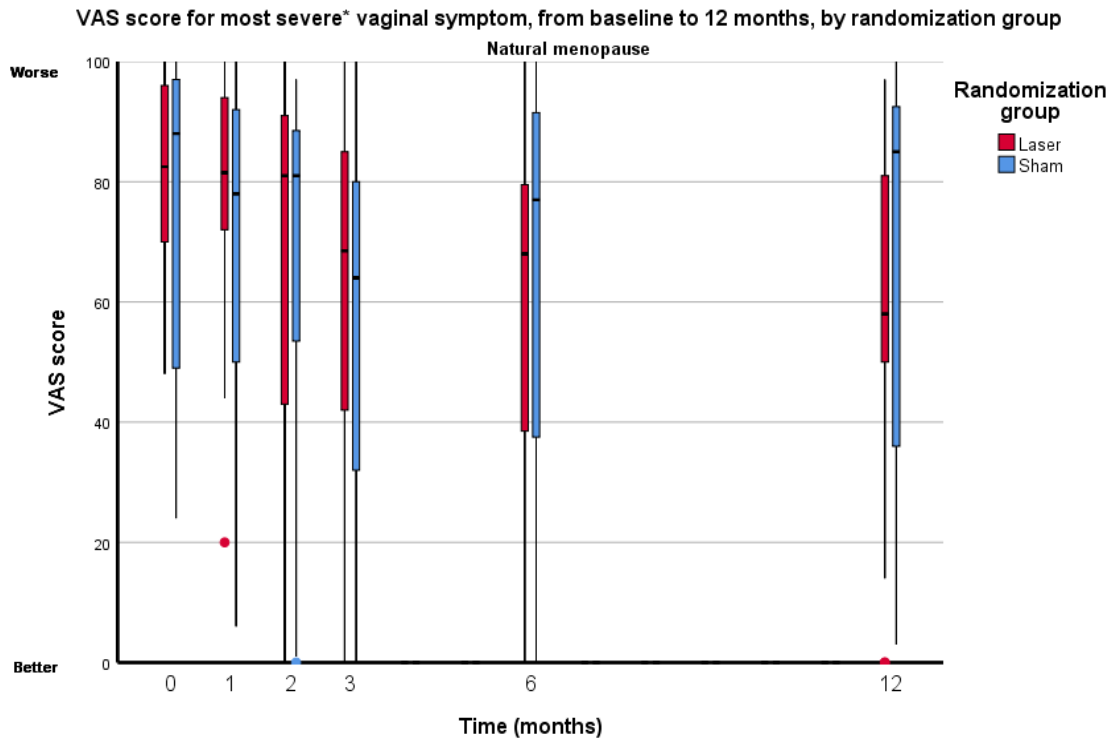
eFigure 1 – Analyses for natural vs. iatrogenic menopause subgroups, from baseline to 12 months



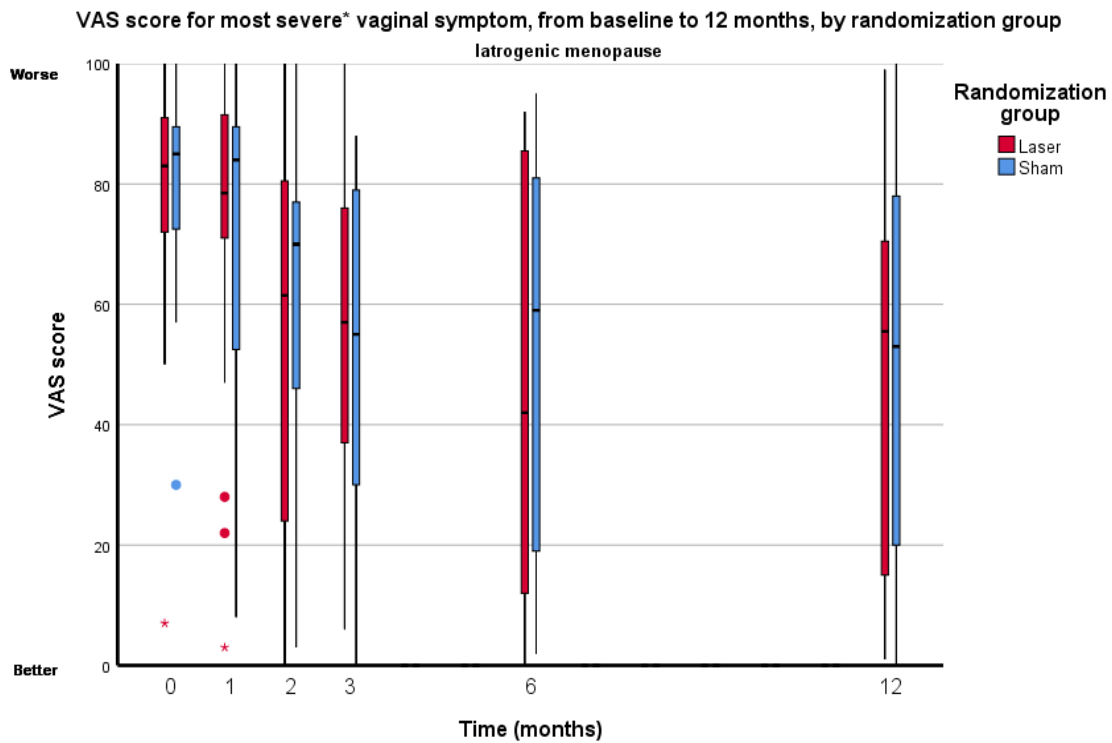
Laser vs. sham p=.85. Visual analogue scale (VAS) from 0 to 100, with 0 being no symptoms, and 100 being maximal symptom severity. In these boxplots, the median is represented by the line; the interquartile range is represented by the bar (75th centile by maximal edge; 25th centile by minimal edge); and the range is represented by the whiskers.



Laser vs. sham p=.62. Visual analogue scale (VAS) from 0 to 100, with 0 being no symptoms, and 100 being maximal symptom severity. In these boxplots, the median is represented by the line; the interquartile range is represented by the bar (75th centile by maximal edge; 25th centile by minimal edge); and the range is represented by the whiskers.



Laser vs. sham $p=.60$. * The highest scoring vaginal symptom at baseline was taken to be the 'most severe' symptom for the participant throughout the trial. Visual analogue scale (VAS) from 0 to 100, with 0 being no symptoms, and 100 being maximal symptom severity. In these boxplots, the median is represented by the line; the interquartile range is represented by the bar (75th centile by maximal edge; 25th centile by minimal edge); and the range is represented by the whiskers.



Laser vs. sham $p=.95$. * The highest scoring vaginal symptom at baseline was taken to be the 'most severe' symptom for the participant throughout the trial. Visual analogue scale (VAS) from 0 to 100, with 0 being no symptoms, and 100 being maximal symptom severity. In these boxplots, the median is represented by the line; the interquartile range is represented by the bar (75th centile by maximal edge; 25th centile by minimal edge); and the range is represented by the whiskers.

eTable 2 - Sexual activity and quality of sexual experience at baseline, 6 and 12 months

		Laser group					Sham group					Laser vs. Sham	
Time (months)		0	6	12	p	Mean difference at 12 months	0	6	12	p	Mean difference at 12 months	Difference*	p [^]
Sexually active	n (%)	22 (52)	23 (56)	19 (51)	.29 [#]	-	20 (49)	20 (50)	23 (58)	.55 [#]	-		-
Female Sexual Satisfaction Questionnaire (FSSQ)	Mean [95% CI]	23 [19, 28]	23 [18, 28]	24 [18, 30]	-	4.7 [-10.6, 20.0]	20 [15, 26]	24 [19, 30]	21 [17, 25]	-	1.9 [-11.5, 15.4]	2.8 [-17.0, 22.5]	.67

[#]Chi-square analysis; p-value for trend within allocated (laser or sham) group through time (baseline to 12-months).

*Difference in the mean difference from baseline to 12-months, between laser and sham groups

[^]p-value for comparison of sham and laser through time (baseline to 12-months).

Monash Women's Health Program Female Sexuality Satisfaction Questionnaire (FSSQ) is a self-reported instrument to evaluate the nature and quality of the female sexual experience for a sexual event. Score range 5-54, where higher scores indicated better quality of sexual experience.