

2/3D ULTRASOUND ABNORMALITIES AND PELVIC FLOOR SYMPTOMS PERSISTENCE ONE YEAR AFTER DELIVERY: IS THERE A CORRELATION?

Hypothesis / aims of study

Pelvic floor morbidity in the medium and long term after delivery is receiving growing attention. The role of imaging and particularly 2 and 3 Dimensional transperineal ultrasound (2/3D-US) in the assessment of pelvic floor after delivery is gaining increasing popularity. In fact the prevalence of Levator Ani Muscle (LAM) Avulsion detectable at ultrasound ranges 12-36% after delivery, being almost absent in nulliparae[1]. Recent report on ultrasound in primiparous women describe a 33% incidence of LAM ballooning and 29% of LAM avulsion 12 month after delivery[2]. Data on the correlation between symptoms and ultrasound findings after delivery are sparse and sometimes inconsistent.

We aimed at defining the prevalence of detectable 2/3D-US abnormalities and compare them with symptoms one year after delivery in a population of puerperae symptomatic for PFDs 3 month postpartum.

Study design, materials and methods

This prospective observational cohort study on PFDs after delivery received IRB approval. It focused on 2/3D-US and symptom assessment 12 months after delivery in a subset of women symptomatic for PFDs 3 months postpartum.

All the women ≥ 32 weeks gestational age who delivered between July and December 2014 in an Italian Tertiary Referral Maternity Hospital were invited to a Pelvic Floor Clinic (PFC) follow-up 3 month after delivery. Six-hundred-eighty-five puerperae out of 1293 eligible women actually attended the PFC 3 month after delivery. Among them we had 19.1% of operative vaginal deliveries by Vacuum extraction (no forceps adoption) and a Caesarean Section rate of 21.3%. Two-hundred-thirty-eight/685 women complained of pelvic floor symptoms according to the criteria reported in table 1.

Table 1: Selection criteria for PFDs 3 and 12 months after delivery[3]

PFDs	Measurement tool	Cut off
Urinary incontinence (UI)	ICI-Q SF	≥ 1
Anal Incontinence (AI)	Wexner score	≥ 1 solid/liquid &/or ≥ 2 gas
Prolapse	POP q staging criteria	≥ 2
Pain/Dyspareunia	Pain &/or dyspareunia VAS	> 0
Perineal Testing	Oxford score (0-5)	≤ 2

Quality of Life (QoL) was also assessed with validated questionnaires (IQOL for UI, F-IQOL for AI and FSFI for Dyspareunia). As part of the prospective observational study all the 238 women symptomatic 3 months after delivery were invited for a 12 month postnatal PFC follow-up and assessed adopting the abovementioned criteria. At that time 2/3D-US scan was also performed according to the methodology described in the literature[2] and the following parameter were measured: Bladder Neck (BN) Hypermobility, Recto-Vaginal Septum Defect (RVSD), Levator Ani Muscle (LAM) ballooning, LAM Avulsion.

A specifically designed database was adopted and descriptive statistical analysis performed. Software Stata 9.0 was adopted (Stata Corporation, College Station, Texas, USA) and a p value < 0.05 was considered for significance.

Results

One-hundred-and thirty-nine puerperae actually attended the 12 month postnatal PFC (comparable to those who missed it for demography, obstetrical parameters and symptoms severity 3 month postpartum – Fisher's exact test or Sum-rank test $p > 0.05$). In 9 cases (6.5%) 2/3D-US scan was not performed (missing data). Data on pelvic floor Ultrasound one year after delivery are therefore available for 130 women symptomatic for PFDs 3 months postpartum. At 12 months assessment 65 women were asymptomatic. Positive findings at 2/3D-US scan were observed in 59/130 (45.4%) women. In table 2 the correlation of at least one 2/3D-US finding with the presence of PFDs symptoms or more than one symptom are tested.

Table 2.: At least one 2/3D-US finding 12 months after delivery compared with the presence of PFDs symptoms or more than one PFDs symptom.

At least one 2/3D-US finding	PFDs Symptoms		>1 PFDs Symptom	
	N (%)	Value of p *	N (%)	Value of p *
Yes (n° =59)	39/59 (66.1)	$p=0.005$	20/39 (51.3)	$p=0.167$
No (n° = 71)	30/71 (42.3)		11/30 (36.7)	

*Fisher's exact test

In table 3 the prevalence of different 2/3D-US scan findings is reported. In the same table each us 2/3D-US abnormality is compared with the presence of at least one symptom and more than one symptom.

Table 3.: Prevalence of 2/3D-US findings 12 months after delivery and correlation with PFDs symptoms or more than one PFDs symptom

2/3D-US 130 women (%)	PFDs Symptoms		>1 PFDs Symptom	
	N (%)	Value of p *	N (%)	Value of p *
BN Hypermobility Yes n° = 31 (23.8)	21/31 (67.7) 48/99 (48.5)	<i>p=0.047</i>	11/21 (52.4) 20/48 (41.7)	<i>p=0.287</i>
RVSD Yes n° = 17 (13.1)	12/17 (70.6) 57/113 (50.4)	<i>p=0.097</i>	8/12 (66.6) 23/57 (40.4)	<i>p=0.089</i>
LAM Ballooning Yes n° =43 (33.1)	31/43 (72.1) 38/87 (43.7)	<i>p=0.002</i>	15/31 (48.4) 16/38(42.1)	<i>p =0.390</i>
LAM Avulsion Yes n° =11 (8.5)	7/11 (63.6) 62/119 (52.1)	<i>p=0.341</i>	5/7(71.4) 26/62 (41.9)	<i>p=0.139</i>

*Fisher's exact test

Despite a clear correlation between the presence of symptoms and pathological findings at ultrasound, QoL assessment was statistically not different (Sum-rank test $p>0.05$) irrespective from the observed alterations at 2/3D-US.

Interpretation of results

In women symptomatic for PDFs 3 month after delivery, pelvic floor morphological abnormalities can be detected at 2/3D-US one year after delivery in 45.4% of cases. This finding highly correlates with the persistence of symptoms. In our study LAM ballooning is the most frequently observed 2/3D-US finding and together with BN Hypermobility they are significantly associated with the persistence of symptoms. Contrary on what reported in the literature we observed a low rate of LAM Avulsion (8.5%). After checking for methodological bias we are wondering whether differences in obstetrical management in our setting could explain this discrepancy.

Concluding message

We confirm that 2/3D-US pathological findings are strongly associated with PFDs one year after delivery. In our series LAM Avulsion is scarcely reported and we are wondering whether this might be the result of differences in obstetrical management. Further studies are needed to determine the clinical relevance of 2/3D-US in the management of postpartum PFDs.

References

1. Aust N Z J Obstet Gynaecol 2013; 53:220–230
2. Ultrasound Obstet Gynecol. 2015 Sep;46(3):356-62
3. Pelviperineology, 2013;32(3):81-85

Disclosures

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