

Postpartum pelvic floor dysfunction : we have to face it



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女性三部曲之三。終章



Supreme Court Justice Brenda Hale: 'Gone are the days when it was thought that, on becoming pregnant, a woman lost, not only her capacity, but also her right to act as a genuinely autonomous human being.'

The UK Supreme Court powerfully affirmed on 11th, March, 2015 Women's right to autonomy in childbirth

in the case of *Montgomery v Lanarkshire Health Board*.


Allowing the appeal from the Scottish courts by a woman whose baby suffered shoulder dystocia in labour, the Supreme Court held that

Women have a right to information about 'any material risk' in order to make autonomous decisions about how to give birth.

For diabetic women, the risk of the occurrence of shoulder dystocia is about 9-10%

And the consequent risk of serious injury to the baby is less than 1%.

However, shoulder dystocia poses a variety of serious risks to the woman's health, including post-partum hemorrhage (11%) and 4th degree perineal tear (3.8%).



A major barrier to effective prevention of pelvic floor disorders is **the inability to identify “at risk”** women to target prevention programs.

Childbirth is among the most important and consistent risk factor for pelvic floor disorders;

However, in most women, clinically relevant symptoms and treatment occur decades later in life

The Supreme Court of the UK announced judgment in her favour in March 2015. The ruling overturned a previous decision by the House of Lords, which had been law since at least the mid 1980s.

It established that, rather than being a matter for clinical judgment to be assessed by professional medical opinion, ***a patient should be told whatever they want to know, not what the doctor thinks they should be told.***

GYNECOLOGY

Predicting risk of pelvic floor disorders 12 and 20 years after delivery



J. Eric Jelovsek, MD; Kevin Chagin, MS; Maria Gyhagen, MD, PhD; Suzanne Hagen, PhD; Don Wilson, MD; Michael W. Kattan, PhD; Andrew Elders, MSc; Matthew D. Barber, MD, MHS; Björn Areskoug, PhD; Christine MacArthur, PhD; Ian Milsom, MD, PhD

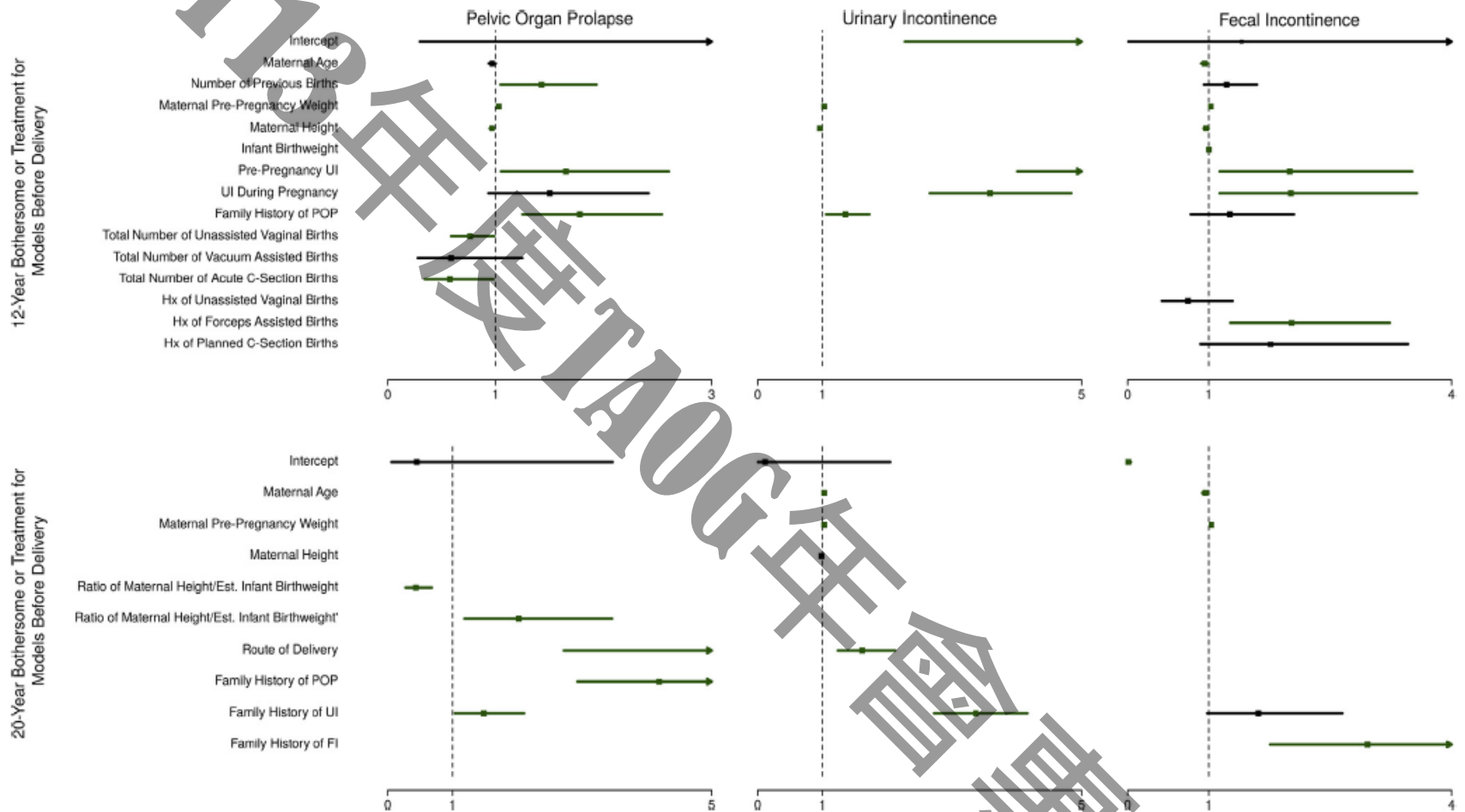
The Prolapse and Incontinence Long-term (ProLong) study

aimed to determine whether delivery mode was predictive of pelvic floor disorders in 10,989 primiparous and multiparous women 12 years after the index birth.

The Swedish Pregnancy, Obesity and Pelvic Floor (SwePOP) study.

The aim of SwePOP was to compare the prevalence of pelvic floor disorders in a cohort of 10,117 primiparous women identified from the Swedish Medical Birth Register 20 years after 1 delivery.

FIGURE 3
Odds ratios



Odds ratios for predictors in the models that predict bothersome pelvic organ prolapse, urinary or fecal incontinence, or the need for treatment for these conditions 12 and 20 years after delivery. Each *box* indicates the odd ratio of each variable that was included in the model; the *horizontal line* indicates the 95% confidence interval. If the horizontal line and box are *green* then the variable was significant at a level of .05. An *arrow* indicates that the line or the odd ratio extend off of the plot.

C, cesarean; FI, fecal incontinence; POP, pelvic organ prolapse; UI, urinary incontinence.

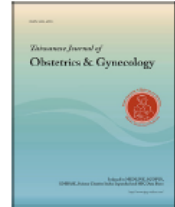
Jelovsek et al. Risk of pelvic floor disorders after delivery. *Am J Obstet Gynecol* 2018.



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Original Article

Factors determining the persistence of prenatal stress urinary incontinence 12 months postpartum



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At 12 months postpartum, **16.5% (n = 50) of women had persistent postpartum SUI**, with 83.5% (n = 253) experiencing resolution of SUI symptoms.

Maternal age > 35 years (OR = 2.62; 95% CI, 1.4–4.87, P = 0.002),

Gestational age at birth > 40 weeks (OR = 2.21; 95% CI, 1.12–4.37, P = 0.022), and

Severe perineal lacerations (OR = 2.32; 95% CI, 1.27–4.45, P = 0.013)

were independent risk factors for persistent postpartum SUI for women following vaginal delivery at 1-year follow-up.

The role of elective cesarean delivery in the prevention of pelvic floor disorders remains *controversial* and, given the potential maternal and fetal risks, is unlikely to be an effective prevention strategy for most women.

It has been estimated, for instance, **that approximately 9 cesarean deliveries would be necessary to prevent urinary incontinence in 1 primiparous woman of average risk.**

However, **a strategy of offering cesarean delivery to women who are at substantially higher than average risk for pelvic floor disorders** may be a more appropriate and effective prevention strategy.



"It is your body, Bella. Yours to use freely."

《2023 Poor Things, by Yorgos Lanthimos》

Pelvic floor disorders (PFDs)

Pelvic floor disorders (PFDs) are a series of conditions related to weakening of the pelvic muscles and endopelvic fascia, related to life style, and to hormonal or obstetric factors.

They include Genital prolapse, Urinary incontinence, Anal incontinence, and Sexual dysfunction.

PFDs during pregnancy have been described in up to **86%** of patients, with very wide ranges.

They affect 23%–49% of women in general, with an increasing incidence estimate to 43.8 million cases in 2050 in developed and developing countries, resulting in negative repercussions (emotional and physical) on women's quality of life (QoL).

Questionnaire/validation article/country	Domains – questions	Identified categories	Translation	Freq (%)	Articles in which the questionnaire was used
PFDI-20/Barber et al, 2004 ⁴⁴ USA	Urinary – 6 POP – 6 Colorectal-anal – 8	Symptom Bother	English, ^{44a} Spanish, ⁴⁵ Greek, ⁴⁶ Swedish, ⁴⁷ Turkish, ⁴⁸ Brazilian Portuguese, ⁴⁹ Korean, ⁵⁰ French, ⁵¹ Danish, ⁵² Norwegian, ⁵³ Japanese, ⁵⁴ Afrikaans, ⁵⁵ Sesotho, ⁵⁵ Dutch, ⁵⁶ Tigrigna, ⁵⁷ Hebrew, ⁵⁸ Finnish ⁵⁹	10 (30.3%)	Lockhart et al, 2018 ¹² Keshwani et al, 2018 ¹³ Yohay et al, 2016 ²¹ Gagnon et al, 2016 ²³ Rikard-Bell et al, 2014 ³¹ Adaji and Olajide, 2014 ³⁴ Geller et al, 2014 ³⁶ Crane et al, 2013 ³⁹ Tin et al, 2010 ⁴¹ Geller et al, 2007 ⁴²
PFIQ-7/Barber et al, 2004 ⁴⁴ USA	Urinary – 7 POP – 7 Colorectal-anal – 7	QoL	English, ^{44a} Spanish, ⁴⁵ Greek, ⁴⁶ Swedish, ⁴⁷ Turkish, ⁴⁸ Brazilian Portuguese, ⁴⁹ Korean, ⁵⁰ French, ⁵¹ Danish, ⁵² Norwegian, ⁵³ Afrikaans, ⁵⁵ Sesotho, ⁵⁵ Dutch, ⁴⁵ Tigrigna, ⁵⁷ Hebrew, ⁵⁸ Finnish, ⁵⁹ Chinese ⁶⁰	9 (27.3%)	Gagnon et al, 2016 ²³ Cyr et al, 2016 ²⁴ Leeman et al, 2016 ²⁵ Rogers et al, 2014 ³³ Geller et al, 2014 ³⁶ Tin et al, 2010 ⁴¹ Geller et al, 2007 ⁴² Lockhart et al, 2018 ¹² Keshwani et al, 2018 ¹³
ICIQ-VS/Price et al, 2006 ⁶¹ UK	Vaginal – 9 Sexual – 5	Symptom QoL Bother	English, ^{61a} German, ⁶² Portuguese, ⁵⁹ Greek, ⁶⁴ Danish, ⁶⁵ Sinhala and Tamil (Sri Lanka) ⁶⁶	8 (24.2%)	Araujo et al, 2018 ¹¹ Kruger et al, 2017 ¹⁵ Abdool et al, 2017 ¹⁷ Kolberg Tennfjord et al, 2016 ²² Cyr et al, 2016 ²⁴ Tennfjord et al, 2015 ²⁶ van Delft et al, 2015 ²⁷ van Delft et al, 2014 ³²
PFQ/Baessler et al, 2010 ⁶⁷ Baessler et al, 2009 ⁶⁸ Australia	Bladder – 15 Bowel – 12 POP – 5 Sexual – 10	Symptom QoL Bother	English, ^{67,68a} German, ⁶⁹ French, ⁷⁰ Serbian ⁷¹	4 (12.1%)	Durnea et al, 2017 ¹⁸ Fritel et al, 2015 ²⁸ Laterza et al, 2015 ³⁰ Durnea et al, 2014 ³⁷
PFDI-46/Barber et al, 2001 ⁷² USA	Urinary – 28 POP – 16 Colorectal-anal – 17 ^b	Symptom Bother	English, ^{72a} Chinese, ⁷³ Spanish ⁷⁴	3 (9.1%)	Ng et al, 2017 ¹⁹ Chan et al, 2014 ³⁵ Chan et al, 2012 ⁴⁰
PFIQ-31/Barber et al, 2001 ⁷² USA	Urinary – 31 POP – 31 Colorectal-anal – 31	QoL	English, ^{72a} Chinese, ⁷³ Spanish ⁷⁴	3 (9.1%)	Ng et al, 2017 ¹⁹ Chan et al, 2014 ³⁵ Branham et al, 2007 ⁴³
PFBQ/Peterson et al, 2010 ⁷⁵ USA	Urinary – 5 POP – 1 Bowel – 2 Sexual – 1	Bother	English, ^{75a} Turkish, ⁷⁶ Arabic, ⁷⁷ Portuguese ⁷⁸	3 (9.1%)	Halperin et al, 2017 ¹⁴ Desseauve et al, 2017 ²⁰ Lipschuetz et al, 2015 ²⁹
ePAQ-PF/Radley et al, 2005 ⁷⁹ UK	Urinary – 35 Bowel – 33 Vaginal – 22 Sexual – 28	Symptom QoL Bother	English ^{79a}	1 (3%)	Elenskaia et al, 2013 ³⁸
PFD in pregnancy and postpartum Metz et al, 2017 ¹⁶ Germany	Bladder – 16 Bowel – 11 POP – 5 Sexual – 9 Postpartum – 9	Symptom QoL Bother	German ^{16a}	1 (3%)	Metz et al, 2017 ¹⁶

What the tool
We have to
Evaluate PFDs
In pregnant and
Postpartum
Women ?

Lea Tami Suzuki Zuchelo, (2018)
Questionnaires to evaluate pelvic
floordysfunction in the postpartum
period: a systematic review,
International Journal of Women's
Health, , 409-424,

The questionnaires for pelvic floor dysfunction in pregnancy and postpartum

PFDI-20, PFIQ-7, and ICIQ-VS are useful tools in research, but each one only assesses certain aspects of PFD and/or QoL. PFDI-20 and PFIQ-7 have some questions that address vaginal symptoms, but without emphasis on sexual factors, and ICIQ-VS is not able to assess bladder and bowel functions.

Among the questionnaires included in this review, **ePAQ-PF, FPFQ, and PFBQ** can evaluate all these domains, but there are some limiting factors for wide use in literature

The international literature reveals that PFD tools developed specifically for women in [postpartum period still need to be better explored and developed](#), allowing early treatment and comprehensive approach by the gynecologist and health care providers.

There is still [no questionnaire that is highly recommended](#) for this purpose by ICI. They encourage researchers to raise the standard of outcome assessment and trial methodology in these fields in the forthcoming years.

2012 Pelvic floor disorders after childbirth :

Effect of episiotomy, perineal laceration, and operative birth

Among parous women, **cesarean birth** reduces the odds of pelvic floor disorders later in life

The Mothers' Outcomes after Delivery study is a **prospective cohort study** of pelvic floor outcomes in women **recruited 5–10 years after delivery of their first child**

Frequencies of Pelvic Floor Disorders at Enrollment* Among 449 Vaginally Parous Women

	Stress Urinary Incontinence n=71 (16%)	Overactive Bladder n=45 (10%)	Anal Incontinence n=56 (12%)	POP _{xx} n=19 (4%)	POP _{exam} n=64 (14%)
Operative birth[†]	(P=0.239)	(P=0.006)	(P=0.250)	(P=0.056)	(P=0.065)
Never (n= 324)	47 (14)	24 (7)	37 (11)	10 (3)	43 (13)
Vacuum only (n=49)	7 (14)	6 (12)	5 (10)	2 (4)	4 (8)
Forceps (n= 76)	17 (22)	15 (20)	14 (18)	7 (9)	17 (22)
Episiotomy[†]	(P= 0.470)	(P= 0.718)	(P= 0.925)	(P= 0.249)	(P= 0.999)
Never (n= 176)	32 (18)	17 (10)	21 (12)	8 (5)	25 (14)
One (n= 205)	31 (15)	23 (11)	27 (13)	6 (3)	29 (14)
Two or more (n= 68)	8 (12)	5 (7)	8 (12)	5 (7)	10 (15)
Spontaneous laceration[†]	(P= 0.901)	(P= 0.036)	(P= 0.560)	(P= 0.750)	(P= 0.021)
Never (n= 193)	32 (17)	25 (13)	28 (15)	8 (4)	22 (11)
One (n= 168)	25 (15)	17 (10)	19 (11)	6 (4)	21 (13)
Two or more (n= 88)	14 (16)	3 (3)	9 (10)	5 (6)	21 (24)

2012 Pelvic floor disorders after childbirth :

Effect of episiotomy, perineal laceration, and operative birth

The median age was 40 years, and 27% of the women had their delivery after age 35. 16% of them were classified obese.

Episiotomy (artificial) as not significantly associated with any of the pelvic floor disorders considered.

We did not find an association between episiotomy and anal incontinence.

In contrast, Women had experience **multiple spontaneous perineal lacerations** were significantly more likely to have prolapse to or beyond the hymen.

Magnetic resonance imaging (MRI) suggest that **avulsions of the levator ani** from the pubis is associated with prolapse later in life.

For women with a history of at least one **forceps delivery**, the relative odds of OAB were increased almost three-fold (OR= 2.92) and the odds of prolapse to or beyond the hymen were almost doubled (OR = 1.95).

Vacuum delivery did not appear to increase the odds of any pelvic floor disorders.

The relationship between postpartum levator ani muscle avulsion and signs and symptoms of pelvic floor dysfunction

A recent review has shown that this damage, diagnosed on transperineal ultrasound (TPUS) a few months following childbirth, occurs in **13–36%** of women



Figure 1. Normal antenatal levator hiatus in rendered volume, at rest. PB, pubic bone; U, urethra; V, vagina; A, anus; L, levator ani muscle.

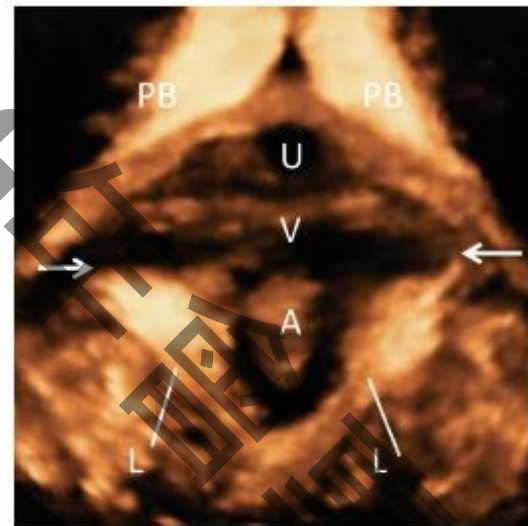


Figure 2. Abnormal postnatal levator hiatus in rendered volume, at rest. PB, pubic bone; U, urethra; V, vagina; A, anus; L, levator ani muscle. Arrows indicate bilateral LAM avulsion.

TPUS at maximum pelvic floor contraction

Minor
(score 1-3)

Major
(score 4-6, or unilateral 3)

The definition using a MR method

The relationship between postpartum levator ani muscle avulsion and signs and symptoms of pelvic floor dysfunction

In all, 269 primigravid women participated at a median of 36 weeks of gestation (range 34–41 weeks) and 71% (n = 191) returned for **follow-up at a median of 13 weeks** (range 10–26 weeks).

- ◆ None of the antenatal women had LAM avulsion
- ◆ LAM avulsion was not found after caesarean section (n = 48).
- ◆ The overall incidence of LAM avulsion following first vaginal delivery was **21.0%** (n = 30, 95%CI 15.1–28.4%); **4.9% for minor LAM avulsion** (n = 7, 95%CI 2.2–9.9%) and **16.1% for major LAM avulsion** (n = 23, 95%CI 10.9–23.0%)

The relationship between postpartum levator ani muscle avulsion and signs and symptoms of pelvic floor dysfunction

◆ **Pelvic floor muscle strength (PFMS) :**

Antenatal and postnatal PFMS were **lower in women with minor and major LAM avulsion** (mean 3.0 and 2.4, respectively), compared with women without LAM avulsion (mean 3.6 and 3.1, respectively; $P < 0.038$)

◆ **Pelvic organ prolapse :**

Women with major LAM avulsion had more **anterior compartment** prolapse following childbirth ($P < 0.024$).

◆ **Urinary incontinence :**

Women with major LAM avulsion had more urinary incontinence , but no differences in faecal incontinence. No trend was found between faecal incontinence and LAM avulsion severity.

Natural history of levator ani muscle avulsion 4 years following childbirth

Women with **LAM avulsion presenting with symptomatic pelvic organ prolapse** are usually **younger**, and at increased risk of **POP recurrence** after surgical repair.

The impact of **minor** avulsion ? as it has been shown that **50~62% of LAM avulsion are no longer evident at 1-year follow up.**

The impact of **second vaginal delivery** on LAM avulsion and pelvic floor dysfunction ?

In this prospective longitudinal study, 269 nulliparous women were recruited antenatally between January 2011 and May 2012, for 4-year follow up

Natural history of levator ani muscle avulsion 4 years following childbirth

Table 1 Prevalence of levator ani muscle (LAM) avulsion 4 years after first vaginal delivery (VD), overall and according to number of VDs at the 4-year follow-up

Parameter	Total (n = 108)	One VD (n = 55)	Two or more VDs (n = 53)
LAM avulsion present at any timepoint	22	12	10
Major	17*	9	8*
Minor	5†	3	2†
LAM avulsion present at 4 years	14/22 (63.6)	7/12 (58.3)	7/10 (70.0)
Major	12	6	6
Minor	2	1	1
LAM avulsion no longer evident at 4 years	8/22 (36.4)	5/12 (41.7)	3/10 (30.0)
Major	6	3	3
Minor	2	2	0
Prevalence of LAM avulsion at 4 years	14/108 (13.0)	7/55 (12.7)	7/53 (13.2)

Data are given as *n* or *n/N* (%). *In two cases, major avulsion seen at 3 months was no longer evident 1 year after the first VD, but after a second VD a minor avulsion was seen in one case and a major avulsion in the other. †In two cases, minor avulsion deteriorated to major avulsion at 4 years due to a second VD.

Conclusions:

The first VD carries the greatest risk for LAM avulsion, with impact on signs of PFD 4 years later.

A second VD could result in deterioration of LAM avulsion, but no new avulsions were found.

Natural history of levator ani muscle avulsion 4 years following childbirth

- ◆ **No significant difference in symptoms of UI, AI and sexual dysfunction** were observed irrespective of mode of delivery and LAM morphology.
- ◆ **Symptoms of POP** were significantly worse 3 months and 1 year after VD in women with persistent LAM avulsion, However, **this did not remain significant after 4 years** ($P=0.125-0.297$).
- ◆ **Anterior vaginal wall prolapse** was significantly worse 1 year after the first delivery in women with persistent LAM avulsion compared to women with CS and those with VD and intact LAM; However, it did not deteriorate after the second delivery compared to the other groups (delta Ba, -0.1 vs $+0.2, +0.1, 0.0$; $P=0.613-0.973$).
No significant difference in apical and posterior vaginal prolapse was seen.
- ◆ **Pelvic floor muscle strength** was significantly reduced in women with persistent LAM avulsion compared to women with CS, VD with intact LAM and VD with LAM avulsion that was no longer evident (delta MOS, -1.8 vs $+0.1, +0.1$ and -0.3 , respectively; $P<0.001-0.025$)

Schrödinger's cat ?

Dynamic



雲門50
鄭宗龍作品 《波》

Mini commentary on 'The relationship between postpartum levator ani muscle avulsion and signs and symptoms of pelvic floor dysfunction'

HP Dietz

Sydney Medical School Nepean, Nepean Hospital, Penrith, Australia

- ◆ The **definition** of avulsion ? The **modality** for detection ? Which should be **validated with symptoms** and signs
- ◆ It is time to consider maternal birth trauma a key performance indicator of obstetric services. The **long mean latency between trauma and clinical manifestations** is not an excuse for ignoring it.
- ◆ Attempts at improving the performance of obstetric services in this regard will require routine postnatal follow up **by imaging**. This would enable **early intervention**, which is seen as essential in the treatment of musculoskeletal injuries.

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Thanks for listening

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