

# Hsin-I Liang 梁心怡 (Y23)



## Exposure to Polycyclic Aromatic Hydrocarbons and Its Relationship with Increased Human Epididymal Secretory Protein 4

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**Objectives:** Ovarian cancer is the most lethal gynecologic malignancy, and early detection of ovarian cancer is important for prognosis. Human epididymal secretory protein 4 (HE4) elevation has been studied as a crucial biomarker for ovarian cancer. There are currently many organic pollutants in the environment, including polycyclic aromatic hydrocarbons (PAHs). The purpose of our study was to determine relationships among PAH exposure, HE4 levels and ovarian cancer.

**Materials and methods:** Our study enrolled 799 participants over the age of 20 from U.S. National Health and Nutrition Examination Survey (NHANES) datasets (2001 and 2002) with complete data for multivariable analysis consisting of urinary PAH metabolites. A multivariable linear regression model was used to investigate the associations between PAH metabolites and HE4 in ovarian cancer.

**Results:** Multivariable linear regression analysis showed that except for 2-hydroxyphenanthrene, PAH metabolites correlated positively with ln(HE4) after adjustment for relevant covariates (all  $P < 0.05$ ). Higher quartiles of PAH metabolites tended to be associated with higher HE4 levels, with statistical significance in quartile-based analysis. A dose-dependent relationship between PAH metabolites and HE4 was found (all  $P$ -trends  $< 0.05$ ).

**Conclusions:** Exposure to PAH was found to be associated with elevated HE4 levels and a higher risk of ovarian cancer, and epidemiological evidence revealed the influential impact. This result will alert gynecologists and public health experts to pay more attention to the potential role of PAH metabolites in the tumorigenesis of ovarian cancer.

*Hsiao-Fen Wang* 王孝棻  
(Y24)



**Robotic or laparoscopic treatment of cesarean scar defects or cesarean scar pregnancies with a uterine sound guidance**

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**Objective:** To evaluate the feasibility and effectiveness of robotic/laparoscopic repair of cesarean scar defects or cesarean scar pregnancies with a uterine sound.

**Materials and methods:** All consecutive women with cesarean scar defects or cesarean scar pregnancies who underwent robotic/laparoscopic repair with a bent uterine sound guidance were reviewed. Subjective changes in symptoms and objective changes in the depth and width of cesarean scar defects after surgery were reviewed.

**Results:** A total of 20 women underwent robotic (n =3) or conventional laparoscopic (n =17) repair of cesarean scar defects, which included postmenstrual vaginal bleeding associated with cesarean scar defects (n= 15), cesarean scar pregnancies (n = 3), accumulated pus in the cesarean scar defect (n = 1) and an incomplete abortion incarcerated in the cesarean scar defect (n =1). Bladder perforation occurred in one woman during robotic adhesiolysis. All women with cesarean scar defects (n = 15) reported an improvement in postmenstrual vaginal bleeding after surgery. Follow-up sonography showed a decrease in the depth and width of the cesarean scar defect and an increase in the residual myometrial thickness.

**Conclusion:** Robotic or laparoscopic repair with a uterine sound guidance seems to be a feasible and effective method in the treatment of cesarean scar defect or cesarean scar pregnancy

# Hao-Ting Lien 連顥庭 (Y25)



## Transvaginal natural orifice transluminal endoscopic surgery (vNOTES) for benign adnexal surgery

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**Objective:** To show the benefit of transvaginal natural orifice transluminal endoscopic surgery (vNOTES) in different kinds of benign adnexal surgery.

**Materials and Methods:** This retrospective study analyzed the medical records of selected patients who underwent vNOTES for adnexal surgery from June 2018 to August 2021 at Kaohsiung Chang Gung Memorial Hospital. Those selected patients were received adnexal surgery as following: enucleation, unilateral salpingectomy for tubal ectopic pregnancy, salpingo-oophorectomy. All surgeries were performed by a single experienced surgeon (Dr. Fei-Chi Chuang). The data of these study population included age, parity, body mass index (BMI), the largest dimension of the mass on ultrasound, duration of surgery, the presence of intra- and postoperative complications, hospitalization days after surgery day (days), postoperative numerical rating scale (NRS) pain scores at the 24th hours, and final pathology results.

**Results:** 31 patients underwent vNOTES for the benign adnexal surgery were collected. These surgeries including cystectomy in 17, unilateral salpingo-oophorectomy in 6, bilateral salpingo-oophorectomy in 7, and salpingectomy due to ectopic pregnancy in 1. Among all these patients, the mean postoperative numerical rating scale (NRS) pain scores at 24th hour after operation was 2.84 (range, 1-6). All patients discharged from hospital within 3 days post-operation, 45.2% patients (14/31) discharged on post-operative day 1. There was no blood transfusion case, no conversion to laparoscope, nor bowel injury or bowel perforation. There was only 1 patient reported delay vaginal bleeding during immediate back to work, but she was completely cured with conservative treatment.

**Conclusions:** Our experience showed vNOTES for different kinds of benign adnexal surgery is a safety, scarless and quick recovery strategy.

*Aileen Ro* 羅艾琳  
(Y26)



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**Immunochemical and urodynamic outcomes after polypropylene mesh  
explant from the pelvic wall of rats**

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**Objective:** To analyze the immunochemical and urodynamic outcomes after partial versus complete excision of transvaginal polypropylene mesh (PPM) from pelvic walls of rats.

**Materials and Methods:** Forty-eight female Sprague-Dawley (SD) rats were randomly distributed into seven groups: control, mesh total removal 60 days (M-T 60D), mesh total removal 180 days (M-T 180D), mesh partial removal 60 days (M-H 60D), mesh partial removal 180 days (M-H 180D), sham 60 days (Sham 60D), and sham 180 days (Sham 180D). In the mesh groups, PPM was inserted and partially (0.3 × 0.3 cm) or completely removed 30 days later. In the Sham group, the space between the vagina and bladder was dissected without placing or removing the synthetic mesh at day 1 and day 30 later. Urodynamic studies, immunochemical analysis, and Western blot were done at days 60 and 180.

**Result:** The M-T 60D voiding pressure was significantly decreased compared to the Sham 60D and M-H 60D. The voiding interval of M-T 60D was significantly shorter than that of M-H 60D. In the M-T 60D and M-T 180D groups, the leak point pressure was significantly less than in their corresponding sham groups. IL-1 and TNF- $\alpha$  were significantly more intense in M-T 60D compared to M-H 60D and Sham 60D. NGF was significantly greater in M-T 60D compared to Sham 60D. There were no significant differences in MMP-2 and CD-31s throughout the group.

**Conclusion:** Total mesh excision incites a host inflammatory response and transitory lower urinary tract dysfunction. Despite the good outcomes after total excision, the invasiveness and surgical risk associated with repeated procedures should not be underestimated.

*I-San Chan* 陳綺珊  
(Y27)



**Maintenance dienogest therapy combined with adjuvant gonadotropin-releasing hormone agonist treatment after uterus-sparing surgery in adenomyosis: A retrospective cohort study**

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**Objective:** Adenomyosis is a complex estrogen-dependent disease. The role of long-term maintenance therapy after uterus-sparing surgery to prevent the recurrence of adenomyosis is undetermined. The objective of this study was to investigate the safety and efficacy of combined adjuvant gonadotropin-releasing hormone agonist (GnRH-a) treatment followed by maintenance dienogest (DNG) therapy after uterus-sparing surgery, which included adenomyomectomy and cytoreductive surgery for adenomyosis.

**Material and methods:** A total of 190 women with severe symptomatic adenomyosis underwent uterus-sparing surgery between January 2010 and June 2020. Of these women, 90 were eligible for this historical cohort study. Forty-six women (reference group) received adjuvant 6-month GnRH-a therapy alone after uterus-sparing surgery, and 44 women (maintenance group) received postoperative 6-month GnRH-a treatment followed by maintenance DNG therapy (2 mg per day orally). The median period of follow-up was 18 months.

**Results:** At baseline, the characteristics of women were comparable between groups. Women in the maintenance group had a more significant decrease in visual analog scale score of dysmenorrhea ( $\beta = -2.87$ ; 95% CI, -3.84 to -1.90;  $P < 0.001$ ) and a significantly higher hemoglobin level ( $\beta = 1.10$ ; 95% CI, 0.36-1.84;  $P = 0.004$ ) from baseline to 18 months after uterus-sparing surgery than the reference group. Compared to the reference group, the decline in uterine volume was more significant in the maintenance group ( $\beta = -90.85$ ; 95% CI, -152.75 to -28.95;  $P = 0.004$ ) from baseline to 18 months postoperatively. However, no significant differences were found between groups in terms of CA-125 levels at the 18-month follow-up ( $P = 0.198$ ). The symptom recurrence rate was significantly lower in the maintenance group than in the reference group (4.6% vs 37.0%,  $P < 0.001$ ).

**Conclusion:** Combined adjuvant GnRH-a treatment and maintenance DNG therapy provided a safe and more effective long-term therapy than GnRH-a only after uterus-sparing surgery for adenomyosis.

*Min Feng* 馮敏  
(Y28)



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**De novo detrusor overactivity and urgency after mid-urethral slings for urodynamic stress incontinence**

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**Introduction:** The objective was to identify incidence and risk factors of de novo urgency and detrusor overactivity (DO) following mid-urethral slings (MUS) in patients with urodynamic stress incontinence (USI) without urgency.

**Methods:** A total of 688 women between January 2004 and July 2017 were reviewed retrospectively. De novo urgency was established with a positive response to question 2 on the Urogenital Distress Inventory-6 questionnaire (UDI-6). Objective cure of USI is no involuntary urine leakage during filling cystometry and pad test < 2 g. Subjective cure of stress urinary incontinence (SUI) is defined as a negative response to question 3 on UDI-6. Multivariate logistic regression was used to identify risk factors for failure.

**Results:** Forty-four out of 688 women (6.4%) developed de novo urgency, with 16 out of 688 (2.3%) demonstrating de novo DO. Subjective cure for women with de novo urgency was significantly lower at 35 out of 44 (79.5%) compared with 556 out of 644 (86.3%) in those with no urgency ( $p < 0.001$ ). Objective cure for women with de novo DO was significantly lower at 8 out of 16 (50%) compared with 599 out of 672 (89.1%) in those with detrusor stability ( $p < 0.001$ ). Quality of life improved for all. Age  $\geq 66$  (OR, 1.23; 1.07), increased bladder sensation (OR, 4.18; 3.80), lower bladder capacity (OR, 5.28; 4.97), lower maximum urethral closure pressure (OR, 2.32; 5.20), and pad test > 100 g (OR, 1.08; 1.15) were independent risk factors for de novo urgency and DO. Diabetes (OR, 1.32) was an independent predictor of de novo urgency.

**Conclusion:** Cure is significantly reduced in women who report symptoms of de novo urgency or demonstrate DO after MUS at 1 year. Independent risk factors include age  $\geq 66$ , increased bladder sensation, lower bladder capacity, lower maximum urethral closure pressure, greater pad loss, and diabetes.

Yi-Chun Chou 周怡君  
(Y29)



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**Ultrasonography and clinical outcomes following anti-incontinence procedures  
(Solyx™ tape): a 3-year post-operative review**

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**Introduction and hypothesis:** Our primary objective was to study objective and subjective outcomes of patients with urodynamic stress incontinence (USI) following Solyx™ at 3-year follow-up. Our secondary objective was to evaluate ultrasonographic tape and bladder neck position and mobility.

**Methods:** Records of 88 women who received Solyx™ surgery between September 2015 and December 2017 were reviewed. Ultrasonographic sling evaluation was performed at 6 months and 3 years postoperatively. Primary outcomes were objective and subjective cure of stress incontinence, defined as no involuntary urine leakage during filling cystometry, 1-h pad test < 2 g and negative response to Urogenital Distress Inventory-6 Question 3.

**Results:** Subjective and objective cure rates at 3 years were 85.2% and 87.5%, respectively, with no complications reported. QOL improvements were maintained. Bladder neck position and mobility had no significant change between 6-month and 3-year follow-up. Tape position demonstrated significant shifts in the y-axis at both rest and Valsalva and in the x-axis at Valsalva between 6 months and 3 years; overall mobility was unchanged. Percentile of sling location remained unchanged at 60.1%, as did percentage of urethral kinking (67.9%) achieved. Risk factors for failure were bladder neck hypomobility postoperatively and no urethral kinking postoperatively.

**Conclusions:** There was good sustained objective and subjective cure with improved QOL in women who underwent Solyx™ for USI at 3-year follow-up. Ultrasonographic evaluation showed a tape position shift upwards and backwards with unchanged tape and bladder neck mobility. Percentile of sling location and rates of dynamic kinking were maintained.

## Chieh-Yu Chang 張介禹 (Y30)



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### The Effect of Vaginal Pixel CO2 Laser Treatment on Stress Urinary Incontinence

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**Purpose:** Our study aims to assess the efficacy of a non-invasive CO2 laser (Pixel CO2 laser) for female stress urinary incontinence (SUI).

**Materials and Methods:** Twenty women with SUI were included in the study and completed three vaginal Pixel CO2 laser (by ALMA Laser, Israel) treatment sessions with an interval of thirty days. All subjects had a baseline and post-treatment assessment, including pad tests, lower urinary tract symptoms with questionnaires, and trans-perineal ultrasound.

**Results:** Significant improvements in SUI were found six months after vaginal Pixel CO2 laser treatment compared to the baseline results (Paired t-test,  $P < 0.05$ ). The battery of questionnaires administered to patients, including the OABSS, UDI-6, IIQ-7, and VLQ, all showed significant improvement following therapy (Paired t-test,  $P < 0.05$ ). Proximal urethral rotational angle and urethral kinking angle under trans-perineal ultrasound had significantly decreased after treatment (Paired t-test,  $P < 0.05$ ). The treatment efficacy (including both cured and improved groups) for vaginal CO2 laser for SUI was 85 % at a six-month follow-up. No permanent or severe adverse events were found.

**Conclusions:** The short-term results showed that vaginal Pixel CO2 laser is a safe and efficacious treatment for mild to moderate SUI women.