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Editorial

Prevalence, Treatments and Risk Factors of Pelvic Organ Prolapse and Urinary Incontinence

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Pelvic floor disorders which also known as stress urinary incontinence (SUI) and pelvic organ prolapse (POP), are widely acknowledged as prevalent conditions that significantly impact the female population and exhibit an increased prevalence with age. Numerous studies have reported varying prevalence rates for these disorders due to differences in study populations, disease state definitions, survey methodologies, and severity distributions. For instance, the lifetime risk of POP has been documented as 20% at 80 years of age [1], while the incidence of urinary incontinence ranges from 13% to 50%, and the incidence of POP ranges from 3% to 41% [2]. In low-middle-income countries, the mean prevalence rates for POP and urinary incontinence were reported as 19.7% (ranging from 3.4% to 56.4%) and 28.7% (ranging from 5.2% to 70.8%), respectively [3]. These conditions exert a significant impact on the life quality of affected individuals, causing personal suffering and imposing substantial societal costs.

In 1948, Dr. Kegel [4] reported significant improvements in women with SUI through pelvic muscle training. Subsequently, various physical therapeutic techniques, such as biofeedback, electrical stimulation, and the use of weighted vaginal cones, have been developed for the treatment of SUI, each with different reported success rates. A study conducted by Horng *et al*. [5] demonstrated that a three-month Kegel exercise program, combined with a home-based pelvic muscle training device, resulted in improved urinary incontinence frequency, severity, and quality of life in patients with SUI. These findings suggest that the device has the potential to serve as a non-invasive alternative treatment for SUI [5].

The consensus regarding the use of transvaginal mesh for correcting POP and SUI varies among experts in different countries. In 2016, the Food and Drug Administration (FDA) elevated the risk classification of transvaginal mesh for POP from class II to III. Subsequently, in 2019, the use of transvaginal mesh for POP was banned. However, mid-urethral slings and trans-abdominal mesh procedures retained a class II risk classification, with mid-urethral slings considered safe. Risks associated with transvaginal mesh included mesh erosion, dyspareunia, and voiding difficulties. Consequently, the use of transvaginal mesh has been restricted in countries such as the United States, the United Kingdom, Australia, and New Zealand, while it remains permitted in certain Asian countries, including Taiwan, Hong Kong, and South Korea.

In 1996, Ulmsten *et al*. [6] introduced the tension-free vaginal tape (TVT), the first midurethral sling, which quickly became the gold-standard treatment for SUI, replacing the autologous fascial sling and Burch colposuspension. Subsequently, in 2001, Delorme developed the trans-obturator sling, which demonstrated similar efficacy to TVT while reducing the risk of bladder perforation and hematoma. However, this approach was associated with an increased incidence of chronic pelvic pain and inguinal pain. To maintain efficacy and minimize complications, mini-slings were developed. These devices aimed to reduce groin discomfort, avoid penetration of the adductor muscles, and decrease the risk of obturator neuropathy. Chao *et al*. [7] conducted a retrospective study on the adjustable mini-sling known as "I-stop-mini" and demonstrated that it achieved comparable objective success rates and subjective cure rates when compared to Obtryx, another commonly used sling. Notably, women with a specific subtype of SUI called intrinsic sphincter deficiency (ISD) often experience more severe symptoms. Chao *et al*. [8,9] also demonstrated that I-stop-mini had similar cure rates for ISD compared to Obtryx [10].

These advancements in SUI treatment, encompassing pelvic floor muscle exercises and the development of slings and mini-slings, have significantly improved the options for patient management. Continued research and evaluation of these techniques are crucial to further enhance treatment outcomes and provide tailored solutions for individuals with SUI.

Numerous studies have aimed to find out the risk factors of POP and SUI. Chang *et al*. [11] conducted the retrospective study to investigate the risk factors for persis-

tent SUI 12 months after childbirth in women who developed new-onset SUI during pregnancy [12]. It concluded that the incidence rate of persistent postpartum SUI at 12 months following vaginal delivery was 16.5%. It identified three independent risk factors, namely advanced maternal age, gestation of more than 40 weeks, and severe perineal lacerations. Tsui *et al*. [13] also examined the incidence of SUI and POP after vaginal delivery (1.6/1000 and 1.5/1000 person-years, respectively), which were higher compared to cesarean delivery (0.8/1000 and 0.6/1000 person-years, respectively). Vaginal delivery was associated with an increased risk of SUI and POP (Hazard Ratio (HR): 2.79 and 1.96, respectively) compared to cesarean delivery.

Larsudd-Kåverud *et al*. [14] found that women who had vaginal deliveries were more commonly represented in both the prolapse surgery and incontinence surgery groups, with relative risks of 1.23 and 1.17, respectively ($p < 0.001$). The absolute risk of undergoing prolapse surgery was significantly lower after cesarean delivery (0.09/1000 women) compared to vaginal delivery (2.11/1000 women), indicating a 23-fold difference. Furthermore, the absolute risk of both prolapse and incontinence surgery increased progressively with parity after vaginal delivery, while it did not show the trend in cesarean delivery.

These findings suggest that the parity might be one of the risk factors for SUI regardless of the delivery mode [15]. Moreover, they prompt us to consider whether SUI and POP may have different etiologies and should be regarded as distinct and separate conditions. In addition to parity, other etiological factors have also been identified as risk factors for SUI. Alasmi *et al*. [16] reported a prevalence of 30% for SUI. Risk factors for SUI, apart from parity, were found to include advanced age, underlying chronic diseases such as diabetes mellitus, hypertension, thyroid disease, asthma, and obesity ($p < 0.05$). Given the urgency and the prevalence of POP and SUI as common health issues in our society, further investigation into the risk factors for these conditions is warranted. Through this special issue, our objective is to offer valuable insights and approaches regarding the prevention, management, prevalence, and risk factors associated with urinary incontinence and pelvic organ prolapse.

Author Contributions

WTC designed and wrote the manuscript. PHW and HCH designed the manuscript. All authors reviewed and approved the final version of the manuscript.

Ethics Approval and Consent to Participate

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Conflict of Interest

The authors declare no conflict of interest. Wei-Ting Chao and Huann-Cheng Horng are serving as Guest editors of this journal. Peng-Hui Wang is serving as one of the Editorial Board members/Guest editors of this journal. We declare that Wei-Ting Chao, Huann-Cheng Horng and Peng-Hui Wang had no involvement in the peer review of this article and has no access to information regarding its peer review. Full responsibility for the editorial process for this article was delegated to Michael H. Dahan.

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