BACKGROUND

No SUI
bladder neck and urethra supported, leading to no involuntary leakage

SUI
bladder neck and urethra poorly supported, leading to unwanted leakage

Stress urinary incontinence (SUI) is involuntary urine leakage upon physical exertion (e.g. laughing, coughing, sneezing)

Risk factors include pregnancy, age, and high physical activity

1 in 3 women in the US experience symptoms of SUI\(^1\)

Only 45% seek treatment due to embarrassment and social stigma\(^2\)

NEED

Females with SUI need an accessible way of supporting the bladder neck during periods of increased abdominal pressure in order to reduce involuntary urine leakage.

ANATOMY TO MATHEMATICAL MODELING

The pessary is a ring-shaped device that provides support to the bladder neck and urethra to prevent leakage, but it is associated with negative stigma and requires fitting consultations by providers.

To effectively control leakage, pessaries must exert a certain force on the bladder neck and urethra:

\[ F_{\text{pessary}} / A > 1 / \sin(\theta) \times (P_{\text{detrusor}} + IAP - UCP) \]

Range = 1.46 N to 8.59 N

\( F_{\text{pessary}} \) = pessary force
\( IAP \) = intrabdominal pressure
\( P_{\text{detrusor}} \) = detrusor pressure
\( UCP \) = urethral closure pressure
\( \theta \) = \(10^\circ \leq \theta \leq 50^\circ\)
\( A \) = 1 cm\(^2\)

OUR SOLUTION

An over-the-counter orthotic device, the Tampessary, that provides support to the bladder neck and urethra to prevent involuntary leakage

\[ \text{Tampessary} = \text{Tampon} + \text{Pessary} \]

Our device provides:

- Effective control of leakage
- Destigmatizing, tampon-like structure
- Easy insertion and removal
- Reusable
- Discreet
- Sanitary

COMPRESSION FORCE TESTING

Through benchtop testing, the Tampessary is able to provide greater support to the bladder neck and urethra, demonstrating greater effectiveness in preventing involuntary leakage.

NEXT STEPS

- Refine design and functionality
- Conduct patient studies
- File for provisional patent