

Urethral pressure and EUS-EMG measurements

Objectives

- measuring intraurethral pressure
- measuring the external urethral sphincter activity by electromyogram (EUS-EMG)
- performed in **anaesthetised** animals in either **normal** or **pathophysiological** animal models
- useful to investigate the effect of a drug for pathology associated with alteration of urethral function such as lower urinary tract symptoms / benign prostatic hyperplasia, neurogenic detrusor overactivity associated with detrusor sphincter dyssynergia and mixed or stress urinary incontinence
- useful to investigate the effect of a drug targeting ejaculatory dysfunctions such as premature ejaculation, anejaculation or retrograde ejaculation
- the measurement of urethral, EUS-EMG and vesical pressures can be performed simultaneously in order to assess the coordination between the detrusor and the sphincter

Species: rat, guinea pig

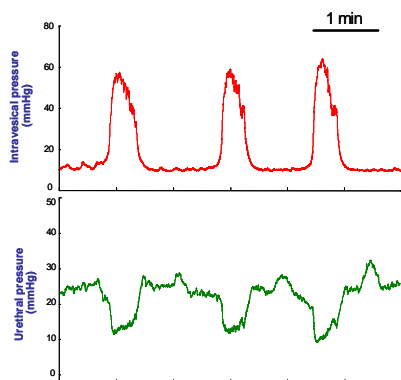


Figure 1: Representative recording of intravesical pressure and urethral pressure during reflex bladder contractions in urethane anesthetized female rat.

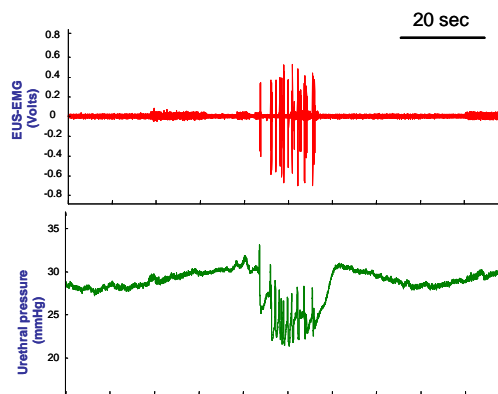


Figure 2: Representative recording of urethral pressure and EUS-EMG during an ejaculatory response induced by systemic p-chloroamphetamine in urethane anesthetized male rat

Summarized methodology:

Two catheters are inserted via the bladder dome. One allows the measurement of intravesical pressure and the perfusion of the bladder (50 µl/min) (**isovolumetric cysometry**); the other is inserted into the proximal urethra and allows the measurement of urethral pressure and urethral perfusion (75 µl/min). For experiments in female rats, the separation of the bladder and urethral lumen is performed by a ligature of the urethra by placing a tie just distal to the bladder neck. For EUS-EMG measurement, electromyogram electrodes are placed into the periurethral striated muscle.

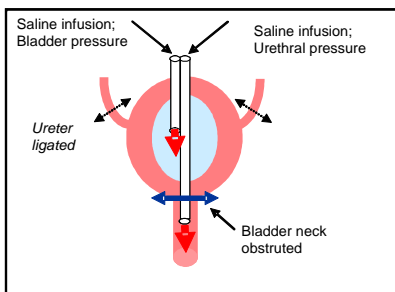


Figure 3: Schematic representation of the experimental method used for measuring both bladder and urethral pressure.

Endpoints:

Urethral function:

- Frequency of urethral relaxation
- Amplitude of urethral relaxation

EUS activity:

- Amplitude (µvolts) and frequency of bursts
- Duration of the bursting period

Bladder function:

- Frequency of bladder contractions (indicator for afferent function of the micturition reflex)
- Amplitude of bladder contraction (indicator for smooth muscle function)

NB: Pelvipharm will gladly study the feasibility of evaluating urethral pressure and EUS-EMG measurement experiments in other experimental models to meet its client's need.

Related Pelvipharm bibliography:

Non disclosable information for confidentiality reasons

Links to applicable therapeutic areas / targeted disorders:

- Lower urinary tract

- * BPH (Benign prostatic Hyperplasia)
- * SU1 (Stress Urinary Incontinence)
- * SCI (Spinal Cord Injury)

- * NDO (Neurogenic Detrusor Overactivity)
- * OAB (Overactive Bladder)
- * IC (Interstitial Cystitis)