



Detrusor Pre- Leak Point Pressure-A more reliable parameter to predict the risk to the upper urinary tracts ?

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ABSTRACT

- Detrusor Leak Point Pressure (DLPP) is a relatively established urodynamic parameter to predict the risk to the upper urinary tracts in patients of Neurogenic Bladder Dysfunction. However the parameter is not sufficiently standardised till date. Besides there are potential technical errors in its measurement due to the presence of urodynamic pressure catheter in the urethra during measurement.
- We at our centre, have designed a method of measuring the leak point pressure by withdrawing the catheter at the point of leakage and reintroducing it as the leak stops. The pressure measured at this point is the natural bladder pressure to which the upper urinary tracts are exposed to prior to leakage. We called this pressure Detrusor Preleak Point Pressure (DPLPP).
- Measuring both DLPP and DPLPP in 42 consecutive patients of Neurogenic Bladder Dysfunction, we are able to correlate our findings to the upper tract damage and suggest revised parameters to predict the risk to the renal function in these cases.
- Although logically DPLPP promises to be closer to the natural leakage of urine, its place in predicting upper tract damage remains to be established

METHODS

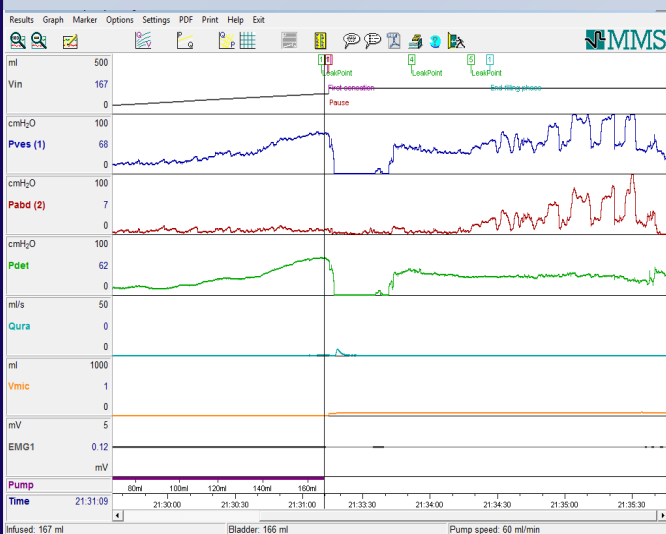
This is a prospective study of 42 consecutive cases of neurogenic bladder dysfunction, who were referred for Urodynamics evaluation to our Centre between July 2016 and December 2017.

Maximum Voided Volume was estimated from the Frequency / Volume Chart. Where Frequency / Volume Chart was not available, bladder capacity was noted from the latest USG report.

A 6F bilumen catheter was introduced after voiding. Residual urine volume was drained and recorded. Filling rate was calculated as (Maximum voided volume / 10) mls / minute of Normal saline at room temperature in supine position. Two persons determined the DLPP by watching the for leak as the appearance of the fluid drop at the meatus and the pressure simultaneously. This was recorded as the DLPP.

The bilumen catheter was then gently removed without disconnecting it from the pressure transducer. Fluid from the urethra was then allowed to leak freely onto the flow transducer below. As the leak stopped, the bilumen catheter was reintroduced into the bladder and the pressure at that instant was measured and recorded.

We called this point DPLPP (Detrusor Pre-leak Point Pressure) and attempted to correlate its values with the conventional DLPP as well as with the upper tract deterioration.



RESULTS AND DISCUSSION

All forty two patients revealed leakage of some degree after removal of the bilumen catheter. Thus the Detrusor Preleak Point pressure was found to be consistently lower than the conventional DLPP.

The DLPP varied from 29 to 84 with mean DLPP of 52.5 cms

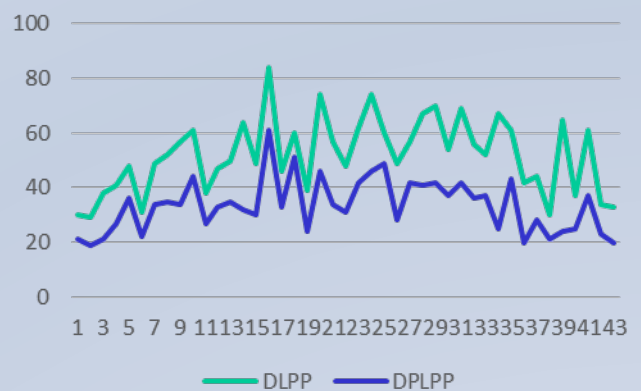
Detrusor Preleak Point Pressure ranged from 19 to 61 with mean of 33.7 cms

ICS defines DLPP as the lowest detrusor pressure at which leak occurs, in the absence of active detrusor contraction or increased abdominal pressure. Logically the detrusor pressure after the leak stops can be labelled as "Detrusor Pre-leak Point Pressure" beyond which the leak occurs under the most natural conditions.

It potentially eliminates the artefacts arising from the presence of the intraurethral catheter and its effects on the dynamics of the urethra.

Among all other variables, DPLPP promises to be the most constant parameter and has an advantage of eliminating the artefacts arising from the presence of the intraurethral catheter. The fact that it also allows such wide differences in the readings with and without catheter, may suggest a wide fluctuation in the readings produced by catheter artefacts.

Comparison of DLPP and DPLPP in 42 patients



CONCLUSIONS

DPLPP is just one more parameter. It promises to have a closer correlation to sustained bladder pressure and volume than the upper urinary tracts are exposed to. However when used in conjunction with other important parameters like detrusor compliance, vu reflux, detrusor overactivity and bladder capacity; it may potentially add accuracy in prediction of the upper urinary tract deterioration in patients with neuropathic bladders.

REFERENCES

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