

**CoreFlow Soft Stent® used as a Persistent Catheter Substitute for 11 Months Waiting for Surgery: Spontaneous Micturition and Full Continence without UTI Resulted**

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**Abstract**

Benign Prostatic Hyperplasia (BPH) is a worldwide health problem with increasing numbers of patients waiting for active treatment relieving symptoms due to outflow obstruction. A recent international survey identified insufficiency of treatment resources all over the world. Especially old and fragile patients with heavy prostate enlargement risk ending up with Clean Intermittent Self Catheterization (CISC) or in chronic catheter care as a final offer. CoreTherm Concept® (PLFT®) is a Swedish further developed, FDA approved microwave temperature feedback heat ablation, performed as an outpatient procedure in local anaesthesia. Prostate volume is not an issue, and this minimally invasive treatment can replace in hospital open enucleation surgery. Long term outcome treating heavily enlarged prostates has been excellent. In most cases a median lobe is no contraindication to this treatment when there is a vertical opening in the bladder neck ventrally to the median lobe seen at cystoscopy. A broad median lobe (“sorrow mouth”) without this ventral passage cannot be treated successfully by CoreTherm alone. The CoreFlow Soft Stent® can be used as an alternative to an indwelling catheter in acute and chronic urinary retention while waiting for an active treatment irrespective of available treatment method. This case report describes successful use of the “stent test” as a diagnostic urodynamic evaluation before active treatment decision and the repeated use of a temporary stent replacing a catheter while waiting for final treatment.

**Introduction**

Patients in persistent urinary retention due to the combination of heavy prostate enlargement >100 cc and a pronounced median lobe has traditionally been operated with open transabdominal prostate enucleation [1]. Old and fragile patients with multiple diseases are often refused major surgery due to increased anaesthetic risks, classified ASA 3 and 4, and have regularly been doomed to lifelong persistent catheter care [2-4]. A two-step

procedure combining CoreTherm Concept®feedback microwave ablation of the side lobes and a TURP resection of the median lobe per se has been a viable option in our clinic. The microwave treatment cannot necrotize a heavy “sorrow mouth” median lobe alone but has regularly been the first step to ablate the side lobes (**Figure 1 and 2**). In many cases the microwave treatment though rendered a sufficient obstruction relief alone [3-6]. The consecutive TURP has been added if catheter removal failed. During Corona Pandemic waiting time for surgery has been long and increasing for benign indications. We have instead of a persistent catheter used the CoreFlow Soft Stent® (**Figure 3**), a temporary silicone stent approved for 29 days (CE-marked) permitting spontaneous voiding while waiting for TURP. An easy urodynamic “stent test” mimicking the postoperative obstruction relief was performed before treatment decision [7]. This temporary stent also permits antegrade self-catheterization by pulling a blue thin “fish-line” hanging out the urethra. If the detrusor is initially weak and distended the stent can, by deformation of the soft balloon and the bladder neck per se, be moved downwards up to 15 mm by pulling the blue thread. Opening of the external sphincter is achieved while the traction is maintained.

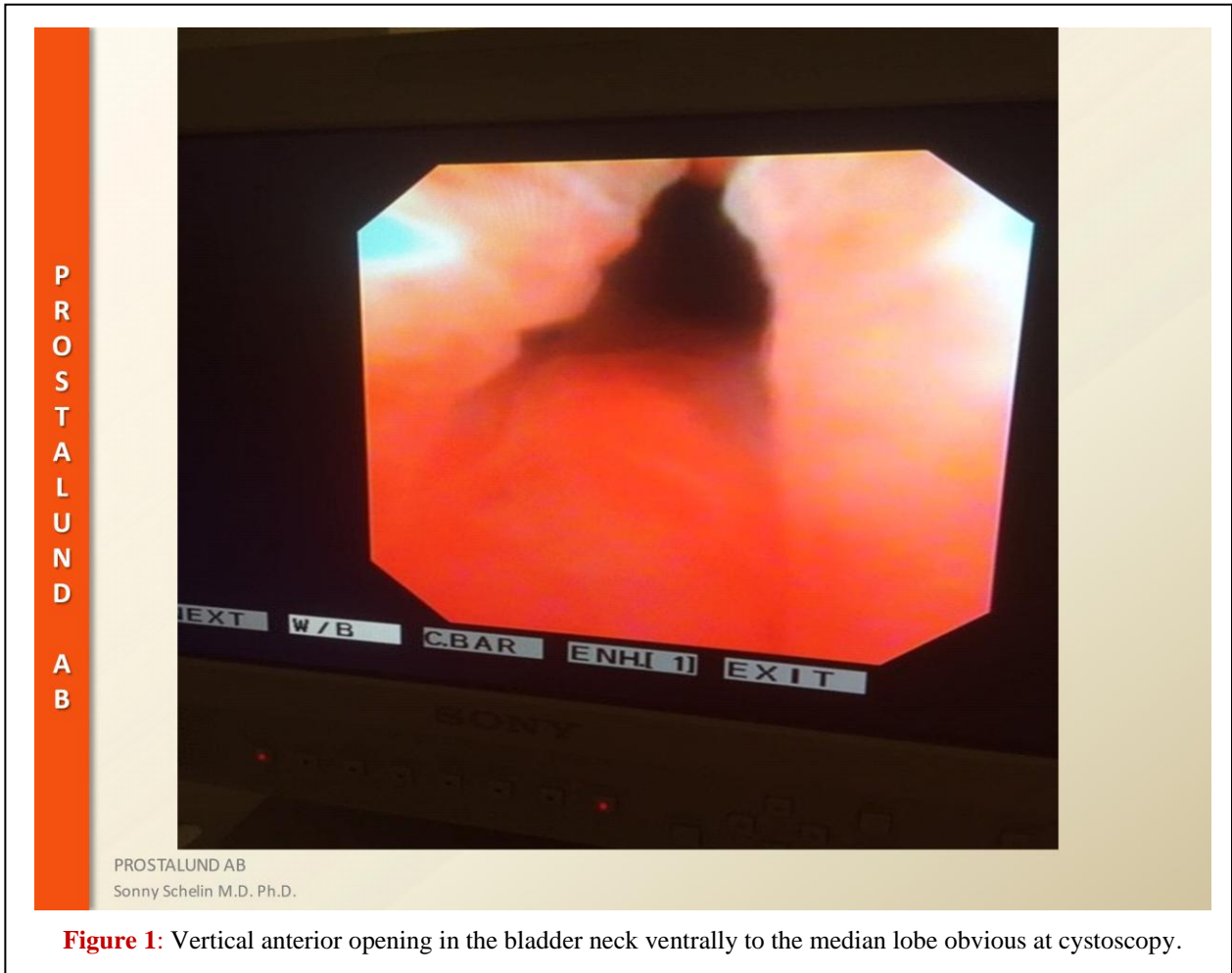
### **Case Presentation**

A 78-year-old man with a history of stroke and partial sequela after hemiplegia 5 years ago, chronic atrial fibrillation and medication for heart insufficiency was referred for chronic urinary retention during autumn 2020. On examination he was found to have a benign 112 cc prostate enlargement including a pronounced median lobe. Cystoscopy showed a broad “sorrow mouth” opening to the bladder and no anteriorly open bladder neck (**Figure 1 and 2**). The patient was unable to void spontaneously on catheter removal.

A “stent test” was performed:

- A 50 mm CoreFlow Soft Stent® catheter was introduced.
- The bladder was filled with Saline slowly until heavy micturition desire (>300 ml).
- The stent was activated, and the patient was advised to move and walk in the room for several minutes and no leakage was registered.
- The patient then was allowed trying to void standing, by help of the stent in place.
- He was then able to initiate spontaneous micturition and could empty most of his bladder with a good stream.

The stent test showed two things: a competent external sphincter and a normal neuromuscular voiding control after the stroke episode. The patient accepted and preferred a two-step treatment plan including an outpatient minimally invasive microwave feedback ablation in local anaesthesia and a secondary TURP resection procedure of the pronounced median lobe (**Figure 3**).

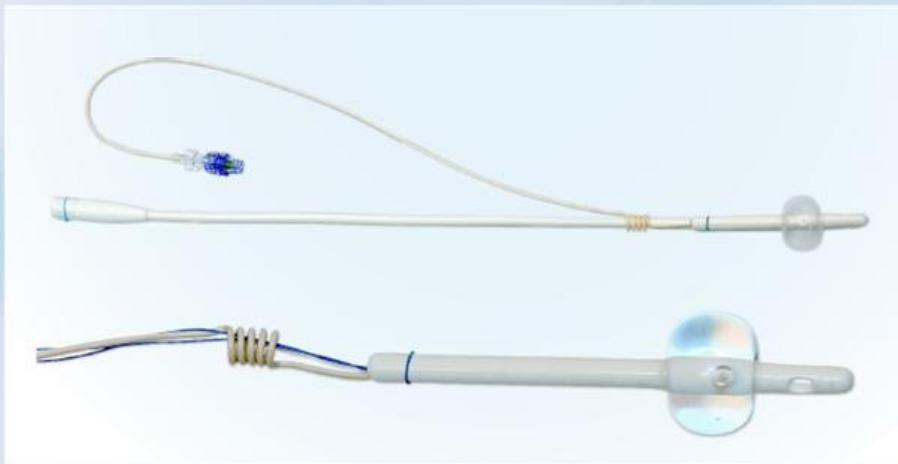




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**Figure 2:** Broad “sorrow mouth” passage to the bladder neck with no anterior vertical opening.

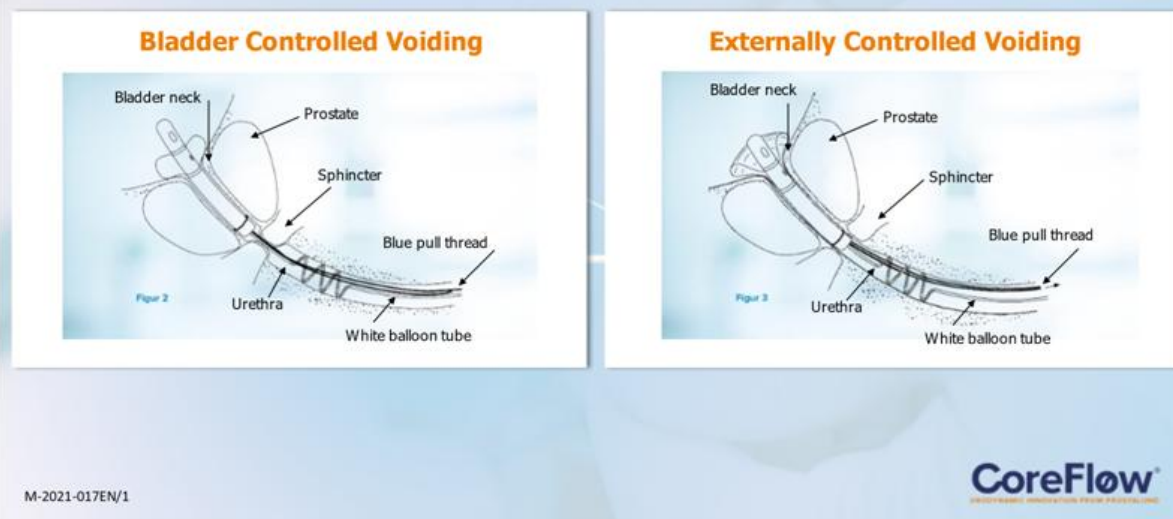
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**Figure 3:** The CoreFlow Soft Stent® functions like a Folley Nelaton catheter initially when the blue thread anchors the outer catheter part to the inner stent part together. By releasing the outer thread connection, the stent can be activated, and the external sphincter may close between the distal stent end and the silicone coil.

A CoreTherm Concept feedback microwave ablation treatment was performed December 2020 of the side lobes without complications. Catheter removal failed afterwards as expected and the patient was planned for a consecutive complementary TURP resection of the median lobe within three months. However elective surgery paused since the pandemic started 2020 and the stent, allowed for 29 days, had to be exchanged every month 11 times while the patient was waiting for his operation. The patient was symptom free and satisfied, voiding spontaneously for almost 1 year by help of the stents relieving the obstruction. Not a single retention episode or UTI was registered during the stent period. TURP resection of the median lobe was performed, and catheter-free voiding was achieved 1 year after primary admission (**Figure 4**).



**Figure 4:** Antegrade self-catheterization can be used by the patient pulling the blue thread outside urethra. The soft balloon and the bladder neck will be deformed by pulling the blue thread, and the end of the stent thereby can be moved downwards to open the external sphincter.

## Discussion

This temporary stent offers several valuable applications and improvements concerning new diagnostic and therapeutic options for BPH patients in chronic retention. Patients with a neurological disease, such as Parkinson, history of stroke, pelvic surgery, and spinal trauma etc. often have an insufficient external sphincter function or control and risk heavy leakage after surgery destructing the autonomic internal sphincter bladder neck continence. Micturition control with coordinated neuromuscular activation of detrusor and relaxation of the external sphincter apparatus can be tested, quick and easy by a stent test, performed by the urologist in the office. The temporary stent resolves the obstruction immediately and mimics the postoperative situation. The CoreTherm Concept® - a Swedish microwave temperature feedback treatment performed after sterile intraprostatic injections of local anaesthetics, by help of the Schelin Catheter®, can successfully treat also very large prostate glands in a minimally invasive outpatient setting [3,4,6]. The CoreFlow Soft Stent® is regularly used replacing an indwelling catheter for 3 – 4 weeks in the post treatment period. Patient discomfort and serious infections are seldomly experienced. Voiding spontaneously, by help of the stent, presumably will prevent UTI by a normal antegrade flushing of the urethra repeatedly. Recently the stent is used successfully as a catheter substitute 7 – 10 days after water vapour treatment in Europe [7].

## Conclusion

This catheter stent has several unique functions and offers both diagnostic and therapeutic complements to the established BPH armamentarium. Especially patients in chronic urinary retention can benefit from an easy and quick urodynamic micturition and continence test performed by the urologist in the office. The stent can also abolish the indwelling catheter discomfort and reduce the UTI risk while waiting for an active treatment.

## Acknowledgements

The author is the inventor of the CoreFlow soft stent®, The Schelin Catheter® and the CoreTherm Concept® microwave feedback treatment. He is also a company board member and shareholder in Prostalund AB Sweden.

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