

A decade of Erbium-Yag laser - Evolution and clinical practice in a single centre

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Abstract

Urinary incontinence amongst women is prevalent. The treatments are pelvic floor muscle training, medications and or mid-urethral tape surgery.

The Erbium-Yag laser is a recent innovation. We report our 10-year experience using the Erbium-Yag laser for the treatment of urinary incontinence at Raffles Hospital, Singapore.

The Erbium-Yag laser was first used in 2016. The initial cohort of 28 women were treated and followed for ten years.

All 28 women underwent a standardized treatment protocol. There was no surgical complication. Overall incontinence scores all improved.

Though the improvement deteriorated with time, only three patients were sufficiently distressed to repeat treatment two to three years after their initial treatment.

Post-surgery, deterioration in efficacy was so gradual, many patients could cope using conservative options without repeat surgery. This accounts for low re-treatment.

The Erbium-Yag laser is a useful addition for urinary incontinence treatment.

Keywords: Urinary incontinence; Laser; Pelvic floor muscle training; Mid-urethral tapes.

Abbreviations: PFMT: Pelvic Floor Muscle Training; MUT: Mid Urethral Tapes; SUI: Stress Urinary Incontinence; UUI: Urge Urinary Incontinence; MUI: Mixed Urinary Incontinence.

Introduction

Urinary incontinence amongst women is highly prevalent and the prevalence increases with age. The commonest causes of urinary incontinence amongst women are Stress Urinary Incontinence (SUI), Urge

Urinary Incontinence (UII) and Mixed Urinary Incontinence (MUI). The mainstays of treatment for SUI are pelvic floor muscle training and mid urethral tapes insertion surgery, while the mainstay of treatment for UII is medication.

In recent years, the Erbium-Yag laser has been shown to be an effective therapeutic option for all three forms of urinary incontinence [1,2]. However, a general consensus on its value and its place in clinical practice remains lacking. We report our single centre 10-year experience using the Erbium-Yag laser for the treatment of urinary incontinence at the Raffles Urology Centre, Raffles Hospital, Singapore.

Methodology

The Erbium-Yag laser was first used in 2016. The initial cohort of 28 women were treated and followed up for ten years. Pre-operative clinical assessment with history taking, physical examination including kidney and bladder ultrasonography, trans-introital ultrasonography and vaginal speculum examination were performed. Questionnaires i.e. ICIQ-short form, UDI6 and IIQ7 were completed pre-surgery and then post-surgery at 3-, 6-, 9- and 12- months and thereafter yearly or at end of study. Investigation with urine analysis and urine culture was performed. Additional tests with CT-urogram scan and cystoscopy were performed when indicated. Treatment included antibiotics for urinary tract infections when indicated and mandatory pre-surgery pelvic floor muscle training. All patients underwent two sessions of Erbium-Yag laser treatment separated by a one-month interval using the Fotona Smooth XS Dynamis (with G-runner) machine and the Incontilase protocol. There was no exclusion criteria for using the Erbium-Yag laser for the treatment of urinary incontinence.

Results

All 28 women had SUI or MUI. There was no surgical complication reported. Overall incontinence scores all improved. At the final review, up to 73% reduction from pre-op ICIQ-SF scores was noted. 25% patients reported <30% improvement. Also, up to 100% reduction from pre-op UDI6+IIQ7 scores was noted. 33% patients reported <30% improvement. Significant improvement was defined as greater or equal to 30% improvement in scores from pre-treatment baseline. Though the improvement slowly deteriorated with time, only three patients were sufficiently distressed to undergo a repeat course of treatment with three sessions of Erbium-Yag laser treatment two to three years after their initial course of treatment. For patients undergoing a repeat course of treatment, three sessions of Erbium-Yag laser treatment spaced at one-monthly intervals were performed according to the updated protocol.

Discussion

Erbium-Yag laser is an effective treatment option for urinary incontinence with a gradual decline in efficacy with time. Nevertheless, the deterioration in the efficacy was so gradual, that many patients were able to cope using conservative therapeutic options such as pelvic floor muscle training without resorting to a repeat course of Erbium-Yag laser treatment. Thus, the re-treatment rate is very low.

Conclusion

The Erbium-Yag laser has effectively shifted surgical treatment of urinary incontinence away from an invasive, once-off treatment towards a non-invasive treatment with the potential for repeat when the need arises. We conclude that the Erbium-Yag laser is a game changer for SUI and MUI treatment. And we thus support its use in clinical practice.

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