

## Postpartum Treatment of Urinary Incontinence with Microablative Fractional Laser CO<sup>2</sup>

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### Abstract

**Objective:** The use of microablative fractional laser CO<sup>2</sup> in the treatment of urinary incontinence of women in postpartum period after vaginal delivery.

**Materials and methods:** 31 women, who suffered of urinary incontinence in early postpartum period after a normal vaginally delivery, underwent 3 microablative fractional laser CO<sup>2</sup>. They were followed 2 months after the treatment, and both, the VAS (visual analog scale) and the VHI (vaginal health index) were used for the evaluation of the symptoms.

**Results:** The mean age of women was 29 ±7 years. At 2 months of follow-up following the third treatment, 82% of the patients (14 of 17 patients) experienced an improvement in the urinary incontinence. The vaginal health index at baseline was 17.7 ±1.6 (range 15-20). Average treatment duration 5.7 min. Mean discomfort/pain level of the procedure was 1.57 ±1.39. Common expected immediate responses included: burning (20%) and itching (20%) sensations, which resolved within 2 days. Other immediate responses included: swelling(4%), bruising (4%) and purpura (2%), which resolved in 1 day. 81% of subjects reported an improvement in sexual gratification. 100% reported satisfaction with treatment and 94% would recommend the procedure.

**Conclusions:** Treatment of urinary incontinence with fractioned CO<sup>2</sup> laser should be taken into account for its high degree of effectiveness and also for its safety in the treatment of urinary incontinence in women after vaginal delivery.

**KEYWORDS:** urinary incontinence, laser CO<sup>2</sup>, microablative

### Introduction

Postpartum urinary incontinence is an important and often overlooked form of maternal morbidity. In this issue Chiarelli and Cockburn (p 1241)<sup>1</sup> highlight and confirm the work of other investigators who have shown that vaginal delivery induces urinary incontinence, especially the first vaginal birth.<sup>2</sup> Many clinical studies have attempted to discover the particular obstetric event that causes the incontinence. The obvious suspects include large babies and “difficult deliveries” marked by lengthy pushing phases with or without instrumentation. No clear single event has been found to be responsible, suggesting that postpartum urinary incontinence arises from a multifactorial physiological insult. The consequences of this pathophysiology are not limited to urinary incontinence. Pelvic organ prolapse (cystocele, rectocele, and uterine prolapse) and anal incontinence are also troublesome sequelae of vaginal delivery. These prevalent pelvic problems receive even less than the scant attention paid to postpartum urinary incontinence.<sup>3,4</sup>

While the problem is clear, there is no simple solution. Prevention is rarely discussed among caregivers of urinary incontinence possibly because at this time the price of prevention is major surgery. Several studies suggest even this protection may fade with repeated abdominal deliveries.<sup>5</sup> It is understandable that this method of prevention has not been met with widespread support. Avoidance or modification of specific obstetric techniques has not been shown to prevent postpartum urinary incontinence. In this vacuum of scientific uncertainty, emotion rapidly fills the void. Patients and physicians alike respond to the scientific uncertainty with preferences based on their personal convictions.<sup>6</sup>

If we cannot prevent the damage that causes postpartum urinary incontinence, it is reasonable to attempt to mitigate the damage. Chiarelli and Cockburn conducted a randomised trial to see if instructions to patients and postpartum pelvic rehabilitation would be beneficial. They provided new mothers with a comprehensive bladder programme, including enhanced information about healthy bladder habits and teaching with reinforcement regarding muscle training. Although the authors report a slight effect, the reader is struck by the high rates of incontinence even with such conscientious rehabilitation efforts: only 7% of incontinent new mothers reduced symptoms, leaving most symptomatic women untreated. Even these excellent efforts were grossly insufficient for the many new mothers who develop postpartum urinary incontinence, and these young women are likely to continue to experience the indignity of urinary incontinence for many decades to come.<sup>7</sup>

Clearly the risk of postpartum urinary incontinence exists, and abdominal delivery without labour markedly reduces the risk. Ongoing research will give us additional information about individual patients who are particularly susceptible to damage, possibly because of their constitutional make up or their particular obstetric situation.

## Methods

Women with urinary tract infection, urge incontinence, mixed incontinence, neuropathic diseases or pelvic muscle diseases, severe stress urinary incontinence, advanced genital prolapse, intake of photosensitive drugs and injury and/or active infection in treatment area were excluded from this study.

A specially designed laser speculum was introduced into women's vagina to serve as a guide for insertion of hand piece with an angular adapter which enables a precise irradiation of anterior vaginal wall. The second phase of the IncontiLase™ procedure is performed on the vestibule and introitus area. No additional therapy was given to all studied women during laser treatment and 6 months after. The IncontiLase™ procedure treatment consisted of two phases; during first phase, before laser treatment, patient's vagina (vestibule, introitus and vaginal canal) was thoroughly washed by antiseptic solution and dried to remove antiseptic solution and mucus. A specially designed laser speculum was introduced into women's vagina to serve as a guide for insertion of hand piece with an angular adapter which enables a precise irradiation of the anterior vaginal wall through delivery of a fractional Er: YAG laser beam. Laser energy is applied along anterior vaginal wall in several longitudinal passes, deposited successively along vaginal canal without overlapping, by simple step by step withdrawal of laser hand piece

outwards from the laser speculum. Laser energy of delivered to each irradiation location according to manufacturer's instructions (MonaLisa Touch, Italy), (Figure 1), producing thermal effect on the mucosa tissue and endo-pelvic fascia of vaginal wall that causes shrinkage of collagen of vaginal mucosa [8]. During the procedure women's discomfort and treatment tolerability, as well as potential adverse events were monitored. No anesthesia was used during laser procedure. 31 women, who suffered of urinary incontinence in early postpartum period after a normal vaginally delivery, underwent 3 microablative fractional laser CO<sub>2</sub>. They were followed 2 months after the treatment, and both, the VAS (visual analog scale) and the VHI (vaginal health index) were used for the evaluation of the symptoms.

## Results

The mean age of women was  $29 \pm 7$  years. At 2 months of follow-up following the third treatment, 82% of the patients (14 of 17 patients) experienced an improvement in the urinary incontinence. The vaginal health index at baseline was  $17.7 \pm 1.6$  (range 15-20). Average treatment duration 5.7 min. Mean discomfort/pain level of the procedure was  $1.57 \pm 1.39$ . Common expected immediate responses included: burning (20%) and itching (20%) sensations, which resolved within 2 days. Other immediate responses included: swelling (4%), bruising (4%) and purpura (2%), which resolved in 1 day. 81% of subjects reported an improvement in sexual gratification. 100% reported satisfaction with treatment and 94% would recommend the procedure. All participants were interviewed by telephone three months after their recruitment into the study. The interviewer was trained by PC and was blind to the group allocation of the women being interviewed. Women were also sent a bladder diary before this interview.

## Conclusions

Treatment of urinary incontinence with fractioned CO<sub>2</sub> laser should be taken into account for its high degree of effectiveness and also for its safety in the treatment of urinary incontinence in women after vaginal delivery.

## Discussion

This is the first study to show that an intervention delivered to women in the immediate and early post partum reduces the likelihood of urinary incontinence three months later. We did not approach women who had had a stillbirth or a baby in neonatal intensive care, women who had a disability that meant that they could not perform pelvic floor exercises. As 79% of the women approached agreed to enter the study, however, bias due to non-consent was minimised. The findings have several important implications. Firstly, many women experienced incontinence after delivery. The data from the usual care group show a prevalence of urinary incontinence of 38.4% among women who had forceps or ventouse deliveries or whose babies had a birth weight of 4000 g or more. Secondly, the intervention seemed to have most effect on women with severe mixed incontinence. Although it is difficult to offer a reason for this outcome, it is important to note that urinary incontinence was based on the symptoms experienced by the women in this study and no urodynamic assessments were carried out. These results could,

however, be the effect of the information regarding good bladder habits that was given to women in the intervention group.

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Figure 1.