



Using the CS Fractional CO₂ with PRP Approach™ in the Treatment of Bartholin Cyst and Abscess

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Abstract

Objective: To describe the results of treatment with the CS Fractional CO₂ Approach™ and Platelet Rich Plasma (PRP) for Bartholin gland cysts.

Methods: Bartholin gland cysts were treated with Fractional CO₂ and PRP as an outpatient's setting in our medical clinic. Skin incisions were performed with a fractional CO₂ laser. The capsule of the cyst was opened to drain mucoid content, followed by internal vaporization of the impaired capsule. This was followed by injection of PRP into the base of the cyst as well as the edges of the skin incision.

Results: There were no complications. Five patients had recurrence of the cyst and were submitted to a second and successful treatment session.

Conclusion: CS Fractional CO₂ Approach therapy was effective in treating Bartholin gland cysts/abscess with minimal or no complications and can be easily and safely performed in an outpatient setting.

Keywords: Bartholin's Glands/Pathology; Vulvar Vestibulitis/Therapy; Lasers; Gas/Therapeutic Use

Background

Bartholin glands are located one on each side of the labia minora at the 4 and 8 O' Clock position at the opening of the vagina.

These glands are responsible for part of the lubrication to the vagina especially during intercourse. The Bartholin ducts connect to the Bartholin gland and are approximately 2.5 cm in length. Most Bartholin cyst or abscesses are caused by an obstruction proximal to the Bartholin duct. This situation accounts for 2% of gynecological appointments per year of women at child-bearing age.

The most common clinical symptoms are pain and discomfort. If the cyst evolves to an abscess.

The diagnosis is made based on clinical physical examination, observing a fluctuating mass at the 4 or 8 O' Clock position on the inner labia minora. An infection of the Bartholin cyst can result in a Bartholin abscess which requires a course of antibiotic treatment and medical intervention.

The most likely causal factors for a Bartholin cyst or abscess formations is the backup and accumulation of fluid behind a Bartholin duct obstruction. This obstruction is most commonly caused by an infection or trauma.

There is an association although small with *Neisseria gonorrhoeae* and *Chlamydia trachomatis*, but in most cases, the causative

organisms are from the mixed vaginal flora such bacteroides, *Escherichia coli*, and *Staphylococcus aureus*.

FCO₂ + PRP

Fractional CO₂ and PRP can be used to vaporize the Bartholin gland and cyst. This surgical procedure is simple and quick. It may be performed in an outpatient setting, with minimal discomfort for the patient in the intra- and post-operative periods.

This was a descriptive study that included approximately 81 patients that we treated using FCO₂ and PRP to treat either primary or recurrent Bartholin cyst. Our study demonstrated that this novel surgical approach is both safe and simple. The procedure can be performed in a very short time in an office type setting under local anesthesia. The average procedure time was 30 minutes, including the time needed to spin the PRP. We rated our pain scale based on a numerical scale, a verbal pain scale was offered to rate a patient's pain from 0 to 10 or to place a mark on a line indicating your level of pain. Zero indicates the absence of pain, while 10 represents the most intense pain possible.

The objective of the study done by Ghozland, *et al.* was to describe the conservative surgical technique with FCO₂ and PRP to evaluate its success, complication rate, and adverse events. Our study demonstrated that combined FCO₂ and PRP for treatment of Bartholin cyst can be safely used as an office based procedure and should be used as a mainstay treatment for both primary and recurrent Bartholin cyst. Our study showed an overall very high patient satisfaction rate, very low recurrence rate of approximately 5%, with minimal to no complication rates and or adverse events.

The analysis of 81 patients with Bartholin cysts submitted to combined FCO₂ and PRP treatment showed a mean age of 32 years. All candidates for the procedure received antibiotic therapy (Cephalexin) and there were zero recorded post procedure infections associated with the combination of PRP and FCO₂. A retro analysis showed a 95% cure rate and nearly 100% cure rate if a second repeat treatment was offered to the 5% of patients that did have a recurrence based on our calculated data within our pool of patients.

Our study included an initial history and physical examination followed by the procedure and typically 2 post-procedure follow-ups in our medical clinic. Our patients were asked not to indulge in strenuous exercise for 2 weeks and not to partake in sexual activity for 6 weeks.

Objective of the Study

To describe the results of treatment with combined Fractional CO₂ and PRP for Bartholin gland cyst.

Methods

During the period from August 29, 2017 to November 10, 2020, a total of 81 patients diagnosed with Bartholin gland cysts or abscess were seen in my private medical practice in Los Angeles, California. All patients had a clinical physical examination with the presence of a swollen bartholin cyst or abscess at the 4 or 8 O' Clock position. The total sample size in my study was 81 patients, the mean age of the group was 32 years old ranging from 19 to 53 years old. The exclusion criteria was that a bartholin cyst that was not palpable on physical examination and or less than 2 cm or grape size was not approved for the study regardless of imaging studies showing probable presence of a bartholin cyst.

The sample group was divided among 2 groups of patients. The first group which totalled 73 patients or 90% of patients had undergone prior procedures and or treatments for Bartholin cyst/abscess. The second group of 8 patients (10%) sought our procedure as a first-line treatment.

Surgical procedure

The procedure consisted of applying an antiseptis with a solution of topical povidone-iodine followed by 10cc injection directly into the Bartholin cyst using a 27G needle with local anesthesia of 1% premixed Lidocaine and epinephrine. A few minutes were given for the local anesthetic to take effect. During that time, the patient's blood was drawn and prepared for PRP extraction. The Blood drawn for PRP is placed in a centrifuge for a "soft spin". Transfer the supernatant plasma containing platelets into another sterile tube (without anticoagulant). Centrifuge the tube at a higher speed (a hard spin) to obtain a platelet concentrate. The lower 1/3rd is PRP and the upper 2/3 is platelet-poor plasma (PPP). Prior to starting the procedure, the localized area was tested using a sharp pickup to make sure the anesthetic was in full effect. Using a Fractional CO₂ laser device set at 15 continuous watts mode, a longitudinal incision was made with Fractional CO₂ to open the capsule of the cyst. The lateral borders of the incision were maintained under tension with Alice clamps for exposure of the cavity, with subsequent drainage of the content and cleaning of the interior with sterile saline solution. Destruction of the capsule tissue was

performed with vaporization using the Fractional CO₂ device on 15 continuous watts mode. Once this is accomplished, 4cc of PRP was injected into the base of the cyst as well as the incisional borders of the initial incision. At this point, the initial incision is approximated using a 4-0 Vicryl in 3 interrupted sutures. Patients were instructed to ice regularly for the first 24 hours and to abstain from strenuous physical activity for 2 weeks and intercourse for 6 weeks. Patients were also instructed to do sitz baths with a solution of povidone-iodine diluted in water up to 3 times a day starting day 3 post procedure. Antibiotics such as a first-generation cephalosporin and analgesics were prescribed for patients.

Results

The CS fractional CO₂ Approach with PRP procedure was performed with local anesthesia in an outpatient procedure room within a medical clinic. All patients reported minimal discomfort overall with the exception of mild discomfort with the initial local anesthetic injection and the sensation of heat and warmth during the use of the Fractional CO₂ laser.

The patients were evaluated 1 - 2 weeks post-procedure and 30 days after the treatment. Most patients appreciated mild swelling for the first 72 hours and mild mucous drainage for the first 1 - 2 weeks. Most patients were fully back to normal activities by week 4, with no discomfort or swelling.

Four patients experienced Bartholin cysts recurrence within one year after the treatment performed in our office using a combination of Fractional CO₂ and PRP. These patients underwent a secondary procedure using Fractional CO₂ and PRP. After the second phase of treatment, there were zero recurrences.

In the 81 patients who underwent the procedure in our office, none reported complications, scar tissue retractions or dyspareunia.

Discussion

Treatments using non ablative Fractional CO₂ lasers are based on photothermolysis, creating many microscopic areas of necrosis within the treated tissue, inducing wound-healing with subsequent new collagen and elastin fiber formation. Treatment using Fractional CO₂ also aims to induce neocollagenesis, by fibroblastic activation and also induces vascularization, which restores elasticity and moisture levels at the level of the mucosa as discussed by

Histologic and Clinical Changes in Vulvovaginal Tissue After Treatment With a Transcutaneous Temperature Controlled Radiofrequency Device Monique J. Vanaman Wilson, MD,* Joanna Bolton, MD,† Isabela T. Jones, MD,‡ Douglas C. Wu, MD, PhD, x Antoanella Calame, MD, k¶ and Mitchel P. Goldman, MDx¶ [2].

In Italy, a similar technique using fractional CO₂ laser has been used and published by several authors Benedetti Panici P, Mancini N, Bellati F, Di Donato V, Marchetti C, Calcagno M, *et al.* CO₂ laser therapy of the Bartholin's gland cyst: surgical data and functional short- and long-term results. *J Minim Invasive Gynecol.* 2007;14(3):348-51 with similar outcomes to our RF and PRP treatment. The recurrence rate in our survey was similar to that of the Italian studies using Fractional CO₂ lasers [1].

It is therefore determined that treating Bartholin cyst with CO₂ laser or our CS Fractional CO₂ with PRP protocol proved effective for resolution of the disease and of post-treatment comorbidities, such as pain and scars in the affected area. The advantage of adding PRP in addition to Fractional CO₂ in our protocols is to benefit from the proven medical benefits of PRP. PRP has been shown to improve wound healing and recovery post procedures by stimulating the body's natural healing processes. PRP contains a high concentration of platelets. Platelets contain a large reservoir of growth factors – substances required for the stimulation of growth in living cells.

Growth factors and special proteins contained in PRP can enhance tissue recovery, healing, formation of new blood vessels, connective tissue repair, and wound healing. It is the author's impression that the positive benefits of PRP, coupled with Fractional CO₂ in the treatment of Bartholin cyst, therefore add to not only low recurrence rates, but also faster recovery in comparison to Fractional CO₂ laser treatments alone without the addition of PRP. The CS

Fractional CO₂ with PRP procedure proved to be an effective method with low morbidity.

We noted, with this technique, that healing was rapid, with minimum fibrosis and very little to no post procedural pain.

The procedure is performed in an outpatient setting, and no general anesthesia was needed to perform these procedures.

Therefore, our procedure allows for an outpatient setting instead of a hospital, minimizing cost and anesthesia risks.

Since there is no hospitalization, the patient is discharged home after the procedure, and quickly returns to her daily activities.

It is the author's opinion that the study has some weaknesses such as lack of a parallel comparison group as well as a relatively small pool of patients. In addition, further information in regards to the type of microflora that caused the infectious process [3-8].

Conclusion

The Bartholin cyst approach using CS Fractional CO₂ laser coupled with PRP allows for a simple outpatient procedure. The technique described of opening of the cyst, drainage of the content, and vaporization of the capsule, can be used as an effective conservative treatment with low rates of recurrence, complications, and great patient satisfaction.

It is therefore our opinion, based on our pool of patient samples and feedback, that this CS Fractional CO₂ with PRP may serve as a potential first-line treatment for patients suffering from Bartholin cyst and/or abscess.

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