TOPAZ Radiofrequency Coblation For Lateral Epicondylitis: A Retrospective Study

Dan Sumko, Russell Wagner M.D., Michael Sumko D.O.
Department of Orthopedic Surgery, Texas College of Osteopathic Medicine, University of North Texas Health Science Center, Fort Worth, Texas

Abstract

This is a retrospective study involving patients with chronic lateral epicondylitis of the elbow. From 1996 through 2012, 108 elbows in 87 patients underwent TOPAZ (radiofrequency ablation) applied to the lateral epicondyle. Patients were contacted by phone and data collected which showed 86% excellent results with follow-up ranging from 2-18 years. This minimally invasive procedure proved to be an effective modality, with no significant complications, for the treatment of chronic tennis elbow.

Purpose

To evaluate outcomes of TOPAZ radiofrequency coblation for recalcitrant lateral epicondylitis.

Methods

The pool of subjects ranged in age from 41 to 72 and had a history of at least 3 months of conservative treatment to include NSAIDs, activity modification, bracing, night splints, and at least 3 steroid injections. All of these had failed to give any long term relief. Subjects were prepared for surgery by marking out the tender area on the skin in a usual rectangular shape. After adequate anesthesia, varying from local with sedation to general, a longitudinal incision was made in the mid-area of the pre-op delineated rectangular area. Most were done without the aid of a tourniquet. The radio-frequency (TOPAZ) tip was touched to the surface of the tendon every 3-4 mm, and every third touch penetrated the tendon surface to a depth of 3-4 mm. When the area of the tendon corresponding to the rectangular skin markings was treated, (making a checkerboard pattern) the wound was closed with subcuticular 3’0 monocryl suture and steri-stripped. A dressing of a simple fluff was held in place with a curlex roll and coban. The patient was instructed to keep the dressing dry until the first post op visit at day 7-10, with no excessive lifting (greater than one pound for 1 week and then no greater than 8 pounds for an additional 2 weeks). Return to normal activities was permitted at week 6 weeks.

87 patients who had undergone TOPAZ radiofrequency coblation therapy for lateral epicondylitis by the same surgeon during a period from 1996-2012 were contacted via telephone. In addition to eliciting the Numeric Pain Scale for the operative elbow, the patients were also asked a series of additional questions pertaining to their satisfaction and results of the procedure seen below.

1. Was the procedure performed on your right or left elbow? Or Bilaterally?*
2. How would you rate the overall results of your procedure on a scale of 0-10, 10 being a perfect outcome?
3. Does your elbow have a negative impact on your daily activities? Never, Occasionally, Always?
4. How would you rate the appearance of the scar from the procedure, on a scale of 0-10, 10 being a perfect scar that is hardly noticeable?
5. How would you rate your pain since the procedure, on a scale of 0-10, 10 being excruciating?
6. Postoperatively, do you experience a decreased range of motion?
7. Postoperatively, do you experience any weakness on that side?
8. How would you rate your overall relief of previous pain: Total, Partial, or None?

*If both elbows were operated on, questions 2, 4, & 5 were asked for both sides separately.

**Results**

Of the 87 patients surveyed, 21 had received TOPAZ bilaterally accounting for 108 total elbows.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>45%</td>
</tr>
<tr>
<td>Female</td>
<td>55%</td>
</tr>
<tr>
<td>Age Mean: 56 years old</td>
<td>(s=7.85)</td>
</tr>
<tr>
<td>Years Since Procedure</td>
<td>Mean: 9.2 years (s=3.39)</td>
</tr>
<tr>
<td>Left Elbow</td>
<td>43%</td>
</tr>
<tr>
<td>Right Elbow</td>
<td>57%</td>
</tr>
<tr>
<td>Bilateral TOPAZ</td>
<td>24%</td>
</tr>
<tr>
<td>Overall Satisfaction</td>
<td>Mean: 8.6 (s=2.17)</td>
</tr>
<tr>
<td>Negative impact on ADLs?</td>
<td>No: 86% Yes: 8% Partially: 7%</td>
</tr>
<tr>
<td>Appearance of Scar</td>
<td>Mean: 7.50 (s=2.31)</td>
</tr>
<tr>
<td>Pain Since Surgery</td>
<td>Mean: 1.70 (s=2.81)</td>
</tr>
<tr>
<td>Experience decreased ROM</td>
<td>None: 98% Partial: 2% Complete: 0%</td>
</tr>
<tr>
<td>Experience weakness</td>
<td>Never: 87% Sometimes: 11% Always: 2%</td>
</tr>
<tr>
<td>Relief of symptoms</td>
<td>Total: 86% Partial: 10% None: 4%</td>
</tr>
</tbody>
</table>

**Background**

Lateral epicondylitis (LE) is estimated to occur in 1.3% of the population. Its occurrence is equal across genders and the peak age of diagnosis is 35-54 years of age. The pathogenesis of LE was at one time considered to be inflammatory (thus epicondylitis), but lack of histologic indicators of inflammation have resulted in LE being classified as a chronic tendonosis. Numerous risk factors for LE have been identified including smoking, obesity, repetitive movement for at least 2 hours per day, and regular lifting of heavy loads. Initial management of LE consists of a brief period of rest and anti-inflammatory agents. Conservative treatment options are numerous and include physical therapy, shock-wave treatment, laser therapy,
acupuncture, topical nitrates, epicondylar elbow straps, botulinum toxin, and injections of corticosteroid, botulinum toxin, autologous blood, or platelet-rich plasma.5

Although LE is considered by many to be a self-limited condition with some studies showing 89% of cases resolving in less than one year, other studies indicate that 25-50% of those with chronic tendonopathies will undergo surgical modalities of treatment.6,7,8 Options for surgical treatment are also numerous, but thus far, no single procedure has been shown to be superior and a relatively small amount of data on the subject is available.5,9

Radiofrequency coblation (RFC) technology is a newer approach to treating chronic tendonoses. While little data exists about RFC’s use in tendonoses, it has been shown to be a safe and effective treatment for LE.10 Lin et al used RFC to treat 34 patients with recalcitrant LE and found that 85% had significant pain reduction through two years.11 RFC ablates tissue via ionized particles which generate a plasma field.12 This ablation stimulates an angiogenic response.13 Pain relief also occurs through an anti-nociceptive effect via destruction small nerve endings which regenerate over approximately 90 days. The result is a healing response and pain relief without compromising the strength or function of the tendon.14,15

Conclusion

TOPAZ has been shown to be an effective, minimally invasive modality for treatment of recalcitrant lateral epicondylitis.