Use of Cooled Radiofrequency Lateral Branch Neurotomy for the Treatment of Sacroiliac Joint Mediated Low Back Pain: A Large Case Series

W. Stelzer, Med. Zentrum SchmerzLOS Linz und Baden/Vienna – Austria; H. Wagner, JK Universität Linz; M. Aiglesberger, D. Stelzer; V. Stelzer, Med. Zentrum SchmerzLOS Linz / Baden/ Vienna – Austria

Background

The prevalence of sacroiliac joint (SIJ) pain among patients with chronic axial low back pain is reported to be between 18% and 30%.[1, 2] Pure SIJ pain may be difficult to diagnose because it can be confused with referred pain from other low back structures. Diagnosis of SIJ pain typically consists of physical examination, including medical history and a series of provocation maneuvers, followed by diagnostic blocks.[3] Some authors have advocated a single diagnostic block, while others have advocated confirmatory (double) diagnostic blocks with anesthetics of different duration of effect.[1, 2, 4–7]

This is the first study to examine the efficacy of Cooled RF LBN in a European population, and also the first study to report study outcomes up to 24 months in duration.

Objective

To retrospectively evaluate the use of Cooled RF lateral branch neurotomy (LBN) to treat chronic SIJ mediated low back pain in a large European study population.

Methods

The charts of 126 consecutive subjects treated with Cooled RF LBN between January 7th, 2008 and May 26th, 2009 were reviewed. To be treated with Cooled RF LBN, patients needed to present the following characteristics: chronic low back pain for longer or equal to 6 months; a visual analogue scale (VAS) pain score of greater or equal to 5; pain localized in the SIJ region; signs and symptoms of SIJ mediated low back pain upon physical examination; previously failed to achieve adequate improvement with conservative non-invasive treatments; and, received 250uL of a single fluoroscopically confirmed intraarticular SIJ injection (2.5mL lidocaine 2% and 1mL Bupivacaine 0.5%, plus 0.5mL (1:1) Jopamine). Cooled RF LBN involved lesioning the L5 dorsal ramus (LDR) and lateral to the S1, S2 and S3 posterior articular apertures. Visual analog scale (VAS) pain scores, quality of life, medication usage, and satisfaction were collected before the procedure, at 3-4 weeks post-procedure (n=97), and once again between 4-24 months post-procedure (n=105).

Results:

- **Demographic and Clinical Characteristics:**
  - **Baseline VAS:**
    - Mean ± SD: 8.15 ± 1.68
  - **VAS at 3-4 Weeks Post Treatment:**
    - Mean ± SD: 5.18 ± 2.74

- **Results:**
  - Mean visual analogue scale (VAS) pain scores at baseline and at 3-4 weeks after treatment with Cooled RF Lateral Branch Neurotomy, for 97 subjects with 3-4 week follow-up data. *p = 0.001 as compared with baseline VAS scores.

Discussion

The prevalence of sacroiliac joint (SIJ) pain among patients with chronic axial low back pain is reported to be between 18% and 30%.[1, 2] Pure SIJ pain may be difficult to diagnose because it can be confused with referred pain from other low back structures. Diagnosis of SIJ pain typically consists of physical examination, including medical history and a series of provocation maneuvers, followed by diagnostic blocks.[3] Some authors have advocated a single diagnostic block, while others have advocated confirmatory (double) diagnostic blocks with anesthetics of different duration of effect.[1, 2, 4–7]

Previously published results on using Cooled RF probes to treat chronic SIJ pain have demonstrated ≥50% pain relief in 50 to 64% of subjects at 3-4 months, respectively[8, 9] A retrospective analysis of a large series of patients found the use of Cooled RF technology to be the only positive predictor of treatment success.[10] Further, a recent evidence-based review of SIJ pain treatment options has recommended Cooled RF LBN for subjects who fail, or receive only short-term effects, from intra-articular injections.[3]

This is the first published study on Cooled RF LBN to report outcomes in a European population and the first to report outcomes up to 24 months in duration. Many regions in Europe have yet to adopt this treatment modality, but these results are encouraging and in line with, if not more positive, than those reported in American studies of Cooled RF LBN.[8, 9] These results further support the recommendation of Cooled RF LBN as the treatment option for subjects who are not able to achieve adequate benefit from conservative medical management or therapeutic SIJ injections.[3] The decreases in chronic pain medication usage, along with the improvement in quality of life and high amount of treatment satisfaction, may justify the use of Cooled RF equipment in a broader population.

Disclosures:

No direct compensation was given to the physicians or staff who performed these procedures

References

1. W. Cohen, S.P., et al., Outcome Predictors for Sacroiliac Joint (Lateral Branch Neurotomy), foraminal and foraminal SIJ joint, at baseline and at 3-4 weeks after treatment with Cooled RF Lateral Branch Neurotomy, for 97 subjects with 3-4 week follow-up data. *p = 0.001 as compared with baseline VAS scores.

2. M. Aiglesberger, D. Stelzer, V. Stelzer, Med. Zentrum SchmerzLOS Linz / Baden/ Vienna – Austria

3. W. Stelzer, Med. Zentrum SchmerzLOS Linz und Baden/Vienna – Austria; H. Wagner, JK Universität Linz; M. Aiglesberger, D. Stelzer; V. Stelzer, Med. Zentrum SchmerzLOS Linz / Baden/ Vienna – Austria

4. Background

   The current results show promising, durable improvements in pain, quality of life and medication usage in a large European study population, with benefits persisting in some subjects at 24 months after treatment. These results are consistent with previous study findings on the use of Cooled RF to treat SIJ mediated low back pain.

5. Methods

   Charts of 126 consecutive subjects treated with Cooled RF LBN between January 7th, 2008 and May 26th, 2009 were reviewed. To be treated with Cooled RF LBN, patients needed to present the following characteristics: chronic low back pain for longer or equal to 6 months; a visual analogue scale (VAS) pain score of greater or equal to 5; pain localized in the SIJ region; signs and symptoms of SIJ mediated low back pain upon physical examination; previously failed to achieve adequate improvement with conservative non-invasive treatments; and, received 250uL of a single fluoroscopically confirmed intraarticular SIJ injection (2.5mL lidocaine 2% and 1mL Bupivacaine 0.5%, plus 0.5mL (1:1) Jopamine). Cooled RF LBN involved lesioning the L5 dorsal ramus (LDR) and lateral to the S1, S2 and S3 posterior articular apertures. Visual analog scale (VAS) pain scores, quality of life, medication usage, and satisfaction were collected before the procedure, at 3-4 weeks post-procedure (n=97), and once again between 4-24 months post-procedure (n=105).

6. Results:

   - **Demographic and Clinical Characteristics:**
     - **Baseline VAS:**
       - Mean ± SD: 8.15 ± 1.68
     - **VAS at 3-4 Weeks Post Treatment:**
       - Mean ± SD: 5.18 ± 2.74
   - **Results:**
     - Mean visual analogue scale (VAS) pain scores at baseline and at 3-4 weeks after treatment with Cooled RF Lateral Branch Neurotomy, for 97 subjects with 3-4 week follow-up data. *p = 0.001 as compared with baseline VAS scores.

7. Discussion

   The prevalence of sacroiliac joint (SIJ) pain among patients with chronic axial low back pain is reported to be between 18% and 30%.[1, 2] Pure SIJ pain may be difficult to diagnose because it can be confused with referred pain from other low back structures. Diagnosis of SIJ pain typically consists of physical examination, including medical history and a series of provocation maneuvers, followed by diagnostic blocks.[3] Some authors have advocated a single diagnostic block, while others have advocated confirmatory (double) diagnostic blocks with anesthetics of different duration of effect.[1, 2, 4–7]

   Previously published results on using Cooled RF probes to treat chronic SIJ pain have demonstrated ≥50% pain relief in 50 to 64% of subjects at 3-4 months, respectively[8, 9] A retrospective analysis of a large series of patients found the use of Cooled RF technology to be the only positive predictor of treatment success.[10] Further, a recent evidence-based review of SIJ pain treatment options has recommended Cooled RF LBN for subjects who fail, or receive only short-term effects, from intra-articular injections.[3]

   This is the first published study on Cooled RF LBN to report outcomes in a European population and the first to report outcomes up to 24 months in duration. Many regions in Europe have yet to adopt this treatment modality, but these results are encouraging and in line with, if not more positive, than those reported in American studies of Cooled RF LBN.[8, 9] These results further support the recommendation of Cooled RF LBN as the treatment option for subjects who are not able to achieve adequate benefit from conservative medical management or therapeutic SIJ injections.[3] The decreases in chronic pain medication usage, along with the improvement in quality of life and high amount of treatment satisfaction, may justify the use of Cooled RF equipment in a broader population.

   **References**

   1. W. Cohen, S.P., et al., Outcome Predictors for Sacroiliac Joint (Lateral Branch Neurotomy), foraminal and foraminal SIJ joint, at baseline and at 3-4 weeks after treatment with Cooled RF Lateral Branch Neurotomy, for 97 subjects with 3-4 week follow-up data. *p = 0.001 as compared with baseline VAS scores.

   2. M. Aiglesberger, D. Stelzer, V. Stelzer, Med. Zentrum SchmerzLOS Linz / Baden/ Vienna – Austria

   3. W. Stelzer, Med. Zentrum SchmerzLOS Linz und Baden/Vienna – Austria; H. Wagner, JK Universität Linz; M. Aiglesberger, D. Stelzer; V. Stelzer, Med. Zentrum SchmerzLOS Linz / Baden/ Vienna – Austria