

Relief of Painful Thoracic Zygapophysial Joints by Thermal Neurotomy: An additional Prospective Case Series in a Community Practice in Canberra.



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Background

There are techniques for diagnosing thoracic zygapophysial joint pain, and it is feasible to undertake percutaneous thermal neurotomy of the medial branch nerves of such identified painful joints. This has been conclusively demonstrated for the cervical and lumbar spine, but not for the thoracic spine.

Objectives

To determine to what extent thermal neurotomy of thoracic zygapophysial medial branch nerves can provide useful pain relief for painful thoracic zygapophysial joints.

Methods

This was a retrospective audit of consecutive prospectively gathered data at Capital Pain and Rehabilitation Clinic, Canberra, Australia of patients with thoracic joint pain 2009-2018. This is an additional 10 years of data to the first such series ever published by the author in 2011 [1].

Diagnosis was achieved by a series of fluoroscopically-guided intra-articular joint injections, requiring >50 % relief on at least 2 occasions. Pain response was documented on an eight-hour self-report 0-10 numerical rating scale pain diary.

The **technique of thermal radiofrequency neurotomy** was undertaken by fluoroscopically placing two to four (depending on the length of the transverse process) monopolar lesions along the medial branch nerve. These were all undertaken by a single practitioner (GS).

The **primary outcome measure** was 'good to excellent' change of ≥50% in Numerical Rating Scale of pain for ≥3 months. Results are presented as success rates in achieving this.

Secondary outcomes that were evaluated were of physical and psychological function at the 3-month point after the procedure when it could be reasonably expected that the neurotomy would be demonstrating its maximal effect.

The Functional Rating Index (FRI) measures physical function pragmatically from best to worst, on a 0–40 scale.

The Depression Anxiety and Stress Scale (DASS) rates each of these states from lowest to highest, on a scale of 0–42.

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Figure 1.

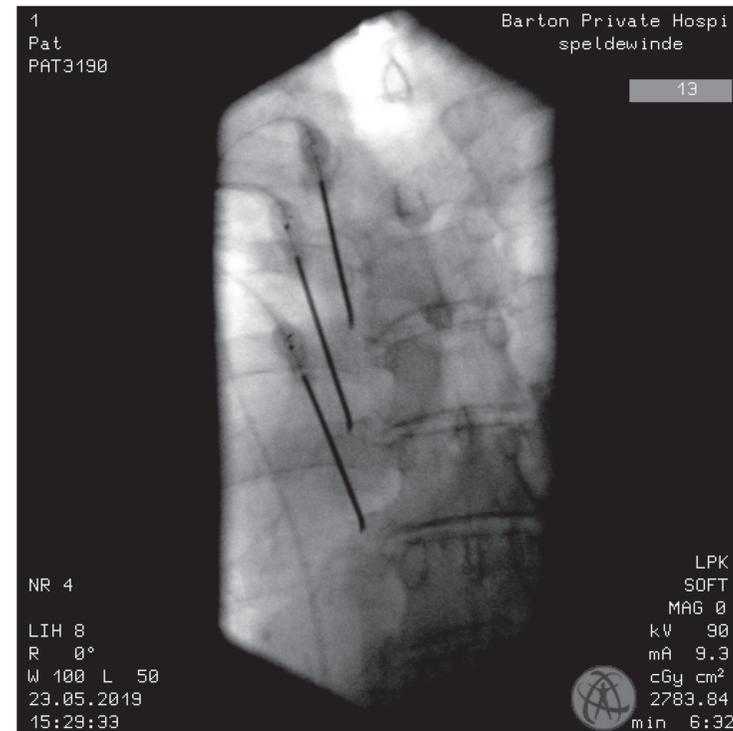


Table 1. General demographic data.

Age range y	21-90
Mean age y	55
Age group by deciles	n
20-29	3
30-39	6
40-39	13
50-59	9
60-69	11
70+	9
Gender	n
Male	35
Female	53
Pain duration	years
Range	0,25-50
Average	7.2

Results

The results of 51 of 88 consecutive procedures of this single practitioner are available with useful data sets, with of the remaining 37 procedures 27 providing incomplete or 10 no data for analysis. **The success rate was 51% of procedures providing at least 3 months of >50% pain relief.** The mean NRS pain change was 6.8 to 4.1 (p<0.001).

Moreover the relief of pain contributes substantially to the **restitution of physical and psychological health**, although of course these may benefit from more specific and targeted therapies.

The overall **average duration of a patient's 'best relief' was 8 months**, with a range of 0-48 months. This contrasts with the average duration of pain before the procedure of 7.2 years.

Repetitions of this procedure can be as successful as the first time with reliable restitution of desirable sensory pain relief.

Table 2. Patients having repetitions of the same procedure and the success rates of those repetitions.

Procedures	n	Average relief at 3-months compared to baseline , (with 95%CI)	Achieved significant relief (≥50%)
1st procedure	9	60% ± 32%	78%
2nd procedure	9	65% ± 31%	67%
3rd procedure	4	42% ± 48%	50%

Conclusion

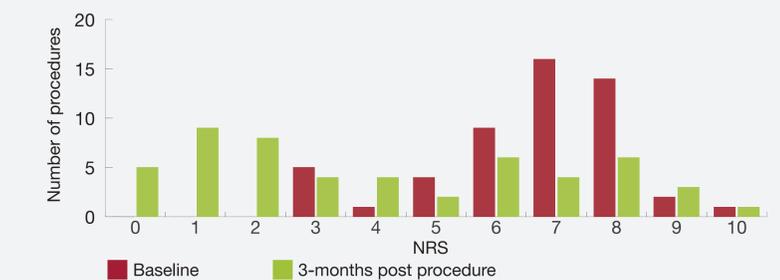
This additional consecutive case series continues an earlier case series to show that **50% or more of thoracic RFN procedures provide a clinically useful period of at least 3 months of good to excellent pain relief of average duration 8 months**, and which in many cases has been repeated just as successfully.

This series adds to the evidence that thermal neurotomy to painful thoracic zygapophysial joints is a useful and effective treatment of the sensory component of pain for people with such pain. facilitating physical and psychological health, although of course these may benefit from more specific and targeted therapies.

Table 3. Showing Pain Scores (NRS) at baseline and at 3-months after the procedure with change in mean score.

NRS pain scores	Baseline	3-months post procedure
0	0	5
1	0	9
2	0	8
3	5	4
4	1	4
5	4	2
6	9	6
7	16	4
8	14	6
9	2	3
10	1	1
Mean NRS pain scores	6.76	4.16
P value < 0.0001		

Graph of Table 3 visually revealing the shift of pain NRS from baseline (red) to 3 months (green) after procedure:



Significance

This consecutive community-based case series for the first time quantitates the success of thoracic zygapophysial joint thermal neurotomy to reduce such joint pain- 51% likelihood of >50% relief for >3months, averaging 8 months.

Acknowledgements

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References

1. Outcomes of percutaneous zygapophysial and sacroiliac joint neurotomy in a community setting. Speldewinde GC, Pain Med 2011; 12(2):209-18.