

CT-guided Splanchnic nerve radiofrequency therapy for chronic visceral pain:

Is thermal or pulsed RF more effective?

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Introduction

Pancreatitis, inflammatory bowel disease and abdominal surgery are common causes of chronic abdominal pain. Pain control is challenging and interventions are often needed.

CT guided splanchnic nerve denervation is a treatment of choice when pain is severe constant and refractory to medication.

A prospective longitudinal evaluation of pulsed and thermal splanchnic nerve radiofrequency therapy was performed under CT guidance.

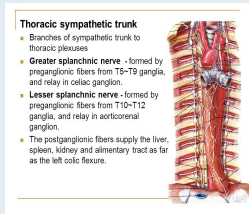


Figure 1: Splanchnic nerve

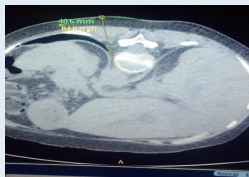


Figure 2: Measurement for needle entry point

Method

28 patients were randomly selected and treated with PRF or TRF CT- guided splanchnic nerve denervation.

A 15cm radiofrequency needle was inserted at the T6 – T8 level.

Needle placement was at either T6 or T7 (dependent on where the great splanchnic nerve was seen most clearly with the CT scan).

Pulsed radiofrequency was administered for 4 minutes at 5 Hz with a temperature < 42 degrees Celsius. Thermal radiofrequency was administered at 80 degrees Celsius for 90 seconds. Outcome measures included VAS and QOLS.

PRF: 4 minutes /40°C
TRF: 1.5 minute/ 80°C

Total number of patients: 28
PRF (N=16), TRF (N= 12)
Mean age: 47years

Causes of pain:

- Pancreatitis (N=15)
- Crohn's disease (N=4)
- Multiple laparotomies (N=9)

Results

Sixteen patients received pulsed and twelve patients received thermal radiofrequency treatment respectively.

Causes of abdominal pain were as follows: pancreatitis (N=15), Crohn's (N=4) and Multiple abdominal surgeries (N=9).

Mean VAS for the two groups Pre and post were not significantly different (Pulsed: Pre=7.9, Post=1.8, N=16; Thermal: Pre=8.4, Post=0.5, N=12; P>0.05).

However, thermal radiofrequency was associated with a significantly greater Pain Free duration: 3.7 versus 10.3 months respectively (P=0.002). QOLS at 6 months was significantly improved in the thermal group (Pulsed: Pre=4.1, Post=5.1, N=16; Thermal: Pre=5.2, Post=8.1, N=12; P<0.05).

| | PRF | TRF | P- value |
|--------------------|-------------|-------------|-----------|
| VAS pre procedure | 7.9 | 0.5 | p> 0.05 |
| VAS post procedure | 1.8 | 0.5 | p> 0.05 |
| Pain free months | 3.7 | 10.3 | p= 0.002 |
| QOLS pre/post | 4.1/ 5.1 | 5.2/8. 1 | p= 0.0034 |

Conclusion

This case series indicates that while both CT-guided pulsed and thermal RF ablation of the splanchnic nerves is an effective therapy, the latter is associated with longer duration of benefit.