Pre-Operative Cervical Plexus Blocks for Thyroid and Parathyroid Surgery Pain Management

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Background:

- Superficial cervical plexus blocks(SCPB) for head and neck surgery are not standard protocol in the UK
- Use of local or regional anaesthesia is usually dependent on surgeon and anaesthetic preference and experience¹

Objectives:

- Evaluate our use of superficial cervical plexus blocks for post-operative pain management in thyroid and parathyroid surgery

Method:

- Prospective observational study over 5 months (February to June 2017)
- Included all adult patients undergoing thyroid and parathyroid surgery in a single ENT unit
- Bilateral SCPB currently only performed by OL(senior author)
- Patients were grouped accordingly(cervical-block vs no-block)
- Primary measure: Pain scores using a visual analogue scale (max=10 for unbearable pain), recorded on Day-0 and Day-1
- Secondary measure: Analgesia consumption in theatre-recovery(Day-0) and post-operative ward on Day-1
- Mann-U Whitney test used to determine statistical significance

Results:

- 24 patients total, distribution of operations shown in Table 1
- 16 in the cervical-block group (female=13, male=3, mean age=46.8), 8 in the no-block group (female=8, mean age=51.5)
- Day-0 Theatre Recovery: (see Table 2)
 - Significantly lower pain scores and consumption of IV morphine in cervical-block group
 - 18.8% partial block rate in cervical-block group (n=3), resulting in morphine requirement
- Day-1 Post-operative Ward: (see Table 2)
 - Significantly lower pain scores in cervical-block group
 - From cervical-block group: 18.8% patients required morphine; same patients with partial-block on Day-0
 - Significantly lower consumption of codeine and oral morphine in cervical-block group

Discussion:

- Bilateral SCPB improved post-operative pain control and reduced opioid consumption on both Day-0 and Day-1
- 3 patients in the cervical-block group required morphine on Day-0 and Day-1, the amounts consumed were still lower than the mean consumption in the no-block group, suggesting that the SCPB were partially effective rather than unsuccessful
- No patients had respiratory compromise or complications post-operatively, or as a result of the bilateral SCPB
- Small sample size at present, but provides a starting point for more robust studies in the future

Conclusions:

- Bilateral SCPB provides good pain control immediately post-op and benefit can also be seen on the first post-op day, even while the bupivacaine wears off
- Surgeons can consider learning the SCPB technique for use in thyroid and parathyroid surgery

Image from NYSORA: Infiltration of cervical plexus block with surface landmarks of sternocleidomastoid

Technique for Superficial cervical plexus block:

- Administered after anaesthetic induction
- 0.375% Bupivacaine 15-20ml each side
- Subcutaneous infiltration over posterior border of SCM via 50mm 22G regional anaesthesia needle

Table 1: Distribution of Operations

Operation	Cervical-Block n=16	No Block (control) n=8
Total Thyroidectomy	3	1
Hemi-Thyroidectomy	11	6
Completion Thyroidectomy	0	1
Parathyroidectomy	2	0

Table 2: Summary of Pain-Scores and Analgesia

Intraoperative			
		Cervical-Block n=16	No Block n=8
Intra-operative Analgesia	Paracetamol 1g IV	100%	75%
	Ketorolac 30mg IV	82.30%	0
	Morphine IV	0%*	100%* (mean=6.25mg, range=5-10mg)
Day-0: Theatre Recovery			
Pain-Score	Mean	2.18* (range=0-9)	7.35* (range=5-10)
Analgesia Consumption	Morphine IV	18.8%* (mean=1.56mg, range=0-10mg)	100%* (mean=12mg, range=6-25mg)
	Codeine 60mg PO	Nil	50%
	Ibuprofen 400mg PO	Nil	18.80%
	Paracetamol 1g IV	Nil	25%
Day-1: Post-operative Ward			
Pain Score	Mean	2.38* (range=0-6)	5.25* (range=4-8)
Analgesia Consumption	Paracetamol 1g PO Reg	100%	87.50%
	Ibuprofen 400mg PO Reg	81.20%	37.50%
	Codeine 60mg PO PRN	18.80%	20%
	Morphine PO PRN	18.8%* (mean=8.3mg, range=0-15mg)	62.5%* (mean=17mg, range=0-25mg)

* Statistically significant results (p< .05)

References:

1. Andrieu, G., Amrouni, H., Robin, E., Carnaille, B., Wattier, J. M., Pattou, F., Lebuffe, G. (2007). Analgesic efficacy of bilateral superficial cervical plexus block administered before thyroid surgery under general anaesthesia. British Journal of Anaesthesia, 99(4), 561-6.

2. NYSORA. (2018). Cervical Plexus Block. Retrieved from New York School of Regional Anesthesia: <https://www.nysora.com/cervical-plexus-block>