CORRESPONDENCE

Sedation during vitreoretinal surgery: practice patterns in Canada

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Received: 12 February 2020 / Revised: 17 April 2020 / Accepted: 18 April 2020 / Published online: 4 May 2020
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To the Editor,

Most ophthalmic surgeries are performed under monitored anesthesia care (MAC) using procedural sedation.¹ Achieving optimal sedation during pars planar vitrectomy (PPV) is critical as there are potential consequences associated with under- or over-sedation; either state may result in sudden movements due to periodic abrupt awakening with resulting eye injury and blindness. As ophthalmic surgery is increasingly performed in ambulatory surgical centres, anesthesiology residents may have limited exposure to procedural sedation for these surgeries. We undertook this survey to understand current sedation practice for PPV among Canadian academic anesthesiologists and identify opportunities for further research and education.

The survey was approved by Hamilton Integrated Research Ethics Board (4 January 2017). This nationwide anonymous web-based survey was developed by the primary author in discussion with two anesthesiologists,

but was not piloted. Invitations to participate were distributed by the Canadian Anesthesiologists' Society. The questionnaire (eAppendix, available as an Electronic Supplementary Material) investigated the practice patterns of Canadian anesthesiologists regarding sedation during regional block and the PPV procedure, as well as exposure of Canadian anesthesia residents to PPV.

Surveys were sent in two waves (one initial mail on 13 March 2018 and one follow-up reminder on 9 April 2018). Inclusion criteria were practicing staff anesthesiologists and anesthesia residents in training at Canadian academic centres. Respondents were excluded if they answered no to the following questions: “Are you an anesthesiologist staff or resident?” and “Are you an anesthesiologist at a Canadian academic centre who performs sedation for PPV procedures?” In total, there were 374 respondents from 2,427 emails (15.4%); staff and resident response rates were 338/1835 (8.4%) and 30/593 (5%), respectively. After excluding staff anesthesiologists who did not perform sedation for vitrectomy, we analyzed data from 127 staff and 30 resident responses (Table 1).

Intermittent bolus administration of sedation was preferred for regional analgesic block and during surgery. Midazolam was the preferred sedative. Evidence supporting the choice of sedation drug and technique is lacking;^{2–4} choice may instead be driven by individual provider preference. One of the few studies examining sedation during PPV compared anesthesiologist-administered midazolam boluses versus patient-controlled propofol boluses.⁵ The midazolam group experienced more amnesia (16/22 [73%]) than those assigned to propofol (27/28 [96%], $P = 0.03$) during regional block performance but no other significant outcome differences were found).

Of the 13 residents exposed to PPV cases, seven (54%) felt that their residency training in sedation for

Electronic supplementary material The online version of this article (<https://doi.org/10.1007/s12630-020-01689-2>) contains supplementary material, which is available to authorized users.

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Table 1 Participant responses with respect to anesthesia technique and medications used during regional block and the pars planar vitrectomy procedure

Topic	Response	n (%)
Regional block technique (n = 127)	Retrobulbar block	69 (54)
	Peribulbar block	28 (22)
	Sub-Tenon's block	14 (11)
	Don't know/other	16 (13)
Sedation technique prior to regional block (n = 127)	Bolus	125 (98)
Preferred sedative during initial regional block* (n = 127)	Midazolam	91 (72)
	Fentanyl	69 (54)
	Propofol	39 (31)
	Remifentanyl	18 (14)
Sedation technique during surgery (maintenance) (n = 127)	Bolus-only	75 (59)
	Infusion alone	12 (9)
	Bolus + infusion	9 (7)
	None [†]	31 (24)
Preferred sedative during maintenance* (bolus) (n = 84)	Midazolam	69 (82)
	Fentanyl	45 (54)
	Propofol	13 (15)
Preferred sedative during maintenance* (infusion) (n = 21)	Propofol	17 (81)
	Remifentanyl	7 (33)

*Respondents could select more than one option; [†]25 of the 31 used sedation during the regional block. Thus, 6/127 (5%) respondents provided no sedation for either the regional block or the vitrectomy

ophthalmological procedures was insufficient; three (23%) neither agreed nor disagreed; and three (23%) agreed that it was sufficient.

This is the first study attempting to examine Canadian academic anesthesiologists' preferences for procedural sedation during vitreoretinal surgery. Our findings are limited by not pilot testing the questionnaire to improve its internal validity and usability. Data from 157 of 2,427 (6.5%) members of our survey frame and exclusion of community practitioners limits generalizability. Nevertheless, our limited data suggest a lack of resident exposure to vitreoretinal surgeries in Canada. Given that ambulatory vitreoretinal surgery is on the rise, we must consider if Canadian residents would benefit from increased exposure to vitreoretinal procedures under MAC as part of a competency-based curriculum. We also note that the research on sedation for vitrectomy focuses on propofol and remifentanyl infusions² while our Canadian participants preferred midazolam and fentanyl boluses. Current sedation practice for ophthalmological surgery is framed by clinician experience and preference. Evidence showing the quality and safety of current practice is needed.

Acknowledgements The authors would like to thank the McMaster Anesthesia research department for funding the distribution of the survey, as well as the Canadian Anesthesiologists' Society for

providing the platform to distribute the survey nationally. We would also like to thank Sara Miller MSc, Scientific Editor, Department of Anesthesia – Research Office, McMaster University for final edits prior to submission. Finally, the authors would like to thank the anesthesiologists that contributed as survey respondents.

Disclosure None.

Funding statement Dr. Harsha Shanthanna is supported by the Canadian Anesthesia Research Foundation as Career Scientist Award (2018).

Editorial responsibility This submission was handled by Dr. Gregory L. Bryson, Deputy Editor-in-Chief, *Canadian Journal of Anesthesia*.

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