M U N I

COMMENTARY TO HABILITATION THESIS

PREVENTING POSTOPERATIVE NAUSEA AND VOMITING AND EMERGENCE DELIRIUM IN CHILDREN

Postoperative nausea and vomiting (PONV) and emergence delirium (ED) are the most common complications after surgery, affecting up to 80% of children without adequate prevention. Both conditions can cause a range of physiological, metabolic and psychological complications and prolong PACU and hospital stay. The management of PONV is difficult in young children, who are often unable to verbalise the experience of postoperative nausea and receive inadequate treatment. Differential diagnosis between postoperative pain and emergence delirium is also difficult in these children, as both conditions have similar manifestations. Prevention of PONV and ED is particularly important in patients undergoing ENT procedures, as these are the highest risk procedures in terms of the incidence of these complications. In addition, ENT procedures account for 30% of all procedures in paediatric surgery.

The first part of the thesis is dedicated to PONV in children undergoing adenoidectomy. For the first time, we have published the true incidence of PONV in this specific procedure and also demonstrated the efficacy of a single dose of dexamethasone in preventing this postoperative complication. Our results support the classification of this procedure as having a moderate risk of PONV, and prophylaxis is indicated according to current recommendations. At the same time, we have shown that the administration of dexamethasone is not associated with an increased risk of postoperative bleeding, which is a risk of asphyxia in these procedures. In contrast to tonsillectomy, the use of dexamethasone does not reduce the use of analgesics and offers no additional advantage over other antiemetics in this respect. Another study looked at the incidence of post-discharge nausea and vomiting (PDNV), which has only been reported in one previous study in children. In our latest work, we have shown that measuring the depth of general anaesthesia using a BIS monitor leads to a significant reduction in the incidence of PONV, probably by reducing the use of inhalational anaesthetics, which are a major trigger of PONV. BIS monitoring thus expands our options for non-pharmacological prevention of PONV. The importance of the results presented in this thesis is demonstrated by their publication in prestigious journals: Journal of Clinical Anesthesia and BMC Anesthesiology (Q1 and Q2 according to WOS).

In the second part of the thesis, we showed that in addition to PONV, BIS monitoring reduces the incidence of ED in children. Measuring the depth of general anaesthesia is therefore a promising way to optimise early postoperative recovery in children. The importance of this work is demonstrated by its acceptance for publication in the journal Anaesthesia Critical Care & Pain Medicine (Q1 according to WOS).

[1] FRELICH, Michal, Karolina LECBYCHOVA, Vojtech VODICKA, Tereza EKRTOVA, Peter SKLIENKA, Ondrej JOR, Hana STRAKOVA, Marketa BILENA, Martin FORMANEK and Filip BURSA. Effect of BIS-guided anesthesia on emergence delirium following general anesthesia in children: A prospective randomized controlled trial. *Anaesthesia Critical Care \& Pain Medicine* [online]. 2024, 43(1, Article 101318). ISSN 2352-5568. Available at: doi:10.1016/j.accpm.2023.101318

Document Type: Article/Article; in 2023 **IF = 3,700**; median IF ANESTHESIOLOGY – SCIE 1,600 + CRITICAL CARE MEDICINE – SCIE 2,200; according **to IF ANESTHESIOLOGY Q1** + CRITICAL CARE MEDICINE Q1; according to AIS ANESTHESIOLOGY – SCIE Q1 + CRITICAL CARE MEDICINE – SCIE Q1

Experimental work (%)	Supervision (%)	Manuscript (%)	Research direction (%)
25	75	100	100

[2] FRELICH, Michal, Peter SKLIENKA, Tereza ROMANOVA, Simona NEMCOVA, Marketa BILENA, Hana STRAKOVA, Karolina LECBYCHOVA, Ondrej JOR, Martin FORMANEK and Filip BURSA. The effect of BIS-guided anaesthesia on the incidence of postoperative nausea and vomiting in children: a prospective randomized double-blind study. *Bmc Anesthesiology* [online]. 2024, 24(1, Article 228). ISSN 1471-2253. Available at: doi:10.1186/s12871-024-02610-w

Document Type: Article/Article; in 2023 **IF = 2,300**; median IF ANESTHESIOLOGY – SCIE 1,600; according **to IF ANESTHESIOLOGY Q2;** according to AIS ANESTHESIOLOGY – SCIE Q2

Experimental work (%)	Supervision (%)	Manuscript (%)	Research direction (%)
25	75	100	100

[3] FRELICH, M.*(Corresponding Author)*, J. DIVAK, V. VODICKA, M. BEBEJ, P. SKLIENKA and O. NEDOPILKOVA. Dexamethasone for postadenoidectomy pain reduction. Does it truly work? A prospective randomized double-blind clinical trial. *Journal Of Clinical Anesthesia* [online]. 2020, 61(109634, Article 109634). ISSN 1873-4529. Available at: doi:10.1016/j.jclinane.2019.109634

Document Type: Letter/Letter ; **IF = 9,452**; median IF ANESTHESIOLOGY – SCIE 3,183; according to **IF ANESTHESIOLOGY Q1**; according to AIS ANESTHESIOLOGY – SCIE Q2

Experimental work (%)	Supervision (%)	Manuscript (%)	Research direction (%)
25	75	100	100

[4] FRELICH, Michal*(Corresponding Author)*, Jan DIVAK, Vojtech VODICKA, Michaela MASAROVA, Ondrej JOR and Roman GAL. Dexamethasone Reduces the Incidence of Postoperative Nausea and Vomiting in Children Undergoing Endoscopic Adenoidectomy under General Anesthesia Without Increasing the Risk of Postoperative Hemorrhage. *Medical Science Monitor* [online]. 2018, 24, 8430–8438. ISSN 1643-3750. Available at: doi:10.12659/Msm.911231

Document Type: Article/Article ; **IF = 1,980**; median IF MEDICINE, RESEARCH & EXPERIMENTAL – SCIE 2,770; according to IF MEDICINE, RESEARCH & EXPERIMENTAL **Q3**; according to AIS MEDICINE, RESEARCH & EXPERIMENTAL – SCIE Q3

Experimental work (%)	Supervision (%)	Manuscript (%)	Research direction (%)
50	75	100	100

[5] FRELICH, Michal, Vojtech VODICKA, Ondrej JOR, Filip BURSA, Martin FORMANEK, Peter SKLIENKA and Vaclav PROCHAZKA. Postdischarge nausea and vomiting (PDNV) in children: A review and observational study. *Biomedical Papers-Olomouc* [online]. 2023, 167(2), 109–115. ISSN 1804-7521. Available at: doi:10.5507/bp.2023.020

Document Type: Review/Review ; **IF = 0,700**; median IF MEDICINE, RESEARCH & EXPERIMENTAL – SCIE 2,700; according to IF MEDICINE, RESEARCH & EXPERIMENTAL **Q4**; according to AIS MEDICINE, RESEARCH & EXPERIMENTAL – SCIE Q4

Experimental work (%)	Supervision (%)	Manuscript (%)	Research direction (%)
25	75	100	100

[6] FRELICH, M. *(Corresponding Author)*, J. DIVAK and R. KULA. Postoperative nausea and vomiting in children. *Anesteziologie A Intenzivni Medicina*. 2016, 27(4), 214–221. ISSN 1214-2158.

Document Type: Article/Article

Experimental work (%)	Supervision (%)	Manuscript (%)	Research direction (%)
		100	