

## Science Letter

# Unrestricted drinking before surgery: a structured patient interview

Our recent study [1] showed that unrestricted drinking before surgery, and its implementation using fasting cards, shortened the median pre-operative liquid fasting time to 2.1 h. Although adherence to the guidelines was significantly improved, critics questioned whether patients drink too much liquid immediately before induction of anaesthesia. Therefore, we evaluated our study data

regarding patients' drinking behaviour. In the third PDSA cycle [1], 25 weeks after the implementation of fasting cards, 143 patients underwent a structured interview.

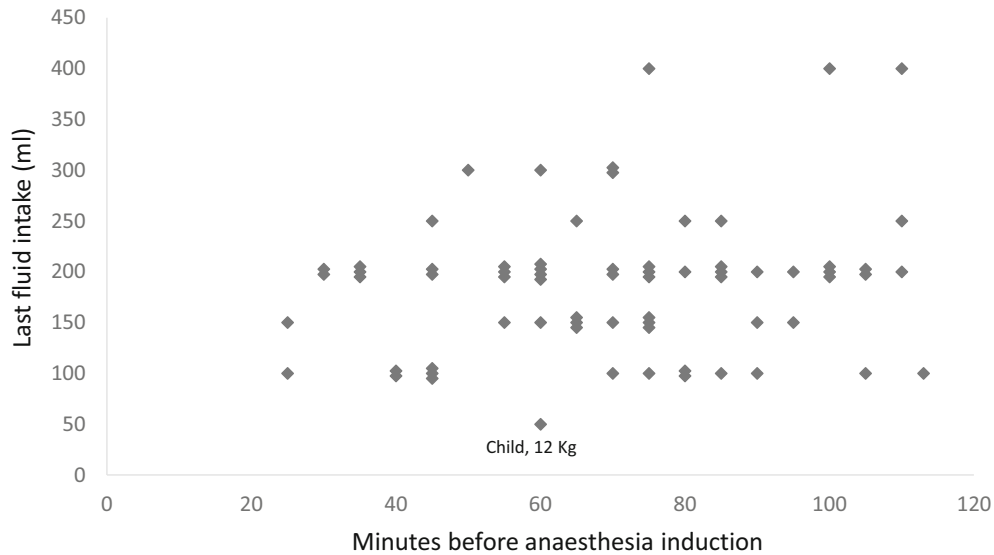
The results are summarised in Table 1. On the day of surgery, 130 (91%) patients had drunk at least 100 ml of liquid or at least 2 ml.kg<sup>-1</sup> if they were children. The minimum time interval between drinking clear liquids and

**Table 1** Results of patient survey regarding pre-operative drinking patterns. Data are number (proportion) or median (IQR [range]).

	<b>n = 143</b>
Fasting card received	117 (82%)
Median liquid fasting time; h	2.1 (1.2–3.8 [0.4–18.8])
Liquid intake; ml	
Median last liquid intake	200 (150–250 [50–500])
Median total liquid intake*	400 (200–500 [100–1500])
Anaesthesia before 11.00	250 (200–363 [100–500])
Anaesthesia after 11.00	500 (400–750 [100–1500])
Beverage (multiple selection possible)	
Water	102 (71%)
Coffee <sup>#</sup>	35 (25%)
Tea	27 (19%)
Juice	4 (2.8%)
Did not drink	13 (9%)
Thirst (NRS)**	0 (0–2 [0–10])
No thirst	100 (71%)
Moderate thirst (NRS 1–5)	36 (25.5%)
Severe thirst (NRS 6–10)	5 (3.5%)
Hunger (NRS)**	0 (0–3 [0–10])
No hunger	78 (55%)
Moderate hunger (NRS 1–5)	49 (35%)
Severe hunger (NRS 6–10)	14 (10%)
PONV (anti-emetics required)	4 (2.8%)
Patient did not drink on day of surgery	13 (9%)
Was not informed or did not understand the information	8
Did not want to drink	1
Could not get coffee <sup>#</sup> and refused to drink anything else	1
Afraid of urination	2
Not given anything to drink on the ward	1
Aspiration	0

NRS, numerical rating scale 0–10; PONV, postoperative nausea and vomiting.

\*n = 98; \*\*n = 141; <sup>#</sup>Inpatients who were first on the surgical schedule could not be offered coffee for logistical reasons.



**Figure 1** The relationship between the amount of liquid last consumed (vertical axis) and the time before anaesthetic induction of that consumption (horizontal axis).

induction of anaesthesia was 25 min (Fig. 1). The median (IQR [range]) volume of the last liquid intake before induction of anaesthesia was 200 (150–250 [50–500]) ml. Patients were asked about the total amount drunk on the day of surgery. Of 108 patients, six had not drunk anything at all, two patients had only taken a few sips with their morning medication and two infants had drunk 50 ml each. Of the remaining 98 patients, the median (IQR [range]) pre-operative cumulative drinking volume was 400 (200–500 [100–1500]) ml, and was higher when anaesthesia was induced later in the day. Patients with induction of anaesthesia before 11.00 ( $n = 44$ ) had drunk a median (IQR [range]) of 250 (200–363 [100–500]) ml, while patients with induction of anaesthesia after 11.00 ( $n = 54$ ) had drunk a median (IQR [range]) of 500 (400–750 [100–1500]) ml;  $p < 0.0001$ .

Regarding drinking quantities, patients drank small amounts repeatedly, hence the pre-operative total liquid intake increased as the day went on. Patients who usually drink little and may still be worried about urinary urgency also drink little pre-operatively. For them, small sips are enough to reduce thirst and dry mouth [2]. Thus, the lowest pre-operative cumulative drinking volume at anaesthetic induction, both before and after 11.00, was 100 ml. Other patients liked to drink more during the day; the largest cumulative total when anaesthetic induction was after 11.00 was 1500 ml, which was three times the largest cumulative total when anaesthetic induction was before 11.00 (500 ml).

For elderly patients in particular, it is important to drink in the morning; these patients consume about 60% of their daily liquid intake between 05.00 and 13.00 and another

30% until 19.00. They might intentionally avoid drinking in the evening because they are concerned regarding night-time incontinence [3]. Therefore, the risk of peri-operative dehydration in this group is relatively high.

Prolonged deprivation of fluids harms patients [4], but forcing them to drink more than they want to, for example in the context of studies with rigid drinking instructions, makes them uncomfortable. Patients who drank an amount they were used to had less anxiety [2], and anxiety regarding their operation is the most troublesome aspect for many patients [5]. Unrestricted drinking before surgery allows patients to drink on the day of surgery in the manner they are used to and find comfortable. Therefore, only 3.5% of our study patients reported severe thirst, even though thirst appears to be the most frequent feature of peri-operative discomfort [5].

Unrestricted intake of clear liquids before induction of anaesthesia has been shown to reduce the incidence of postoperative nausea and vomiting [6, 7], a predictor of patient dissatisfaction with anaesthesia [7, 8]. Only 2.8% of our patients required an anti-emetic in the recovery room.

Our study has some limitations. In the interviews, the patients were able to state the time of the last liquid intake very precisely. However, the amount of liquid last drunk sometimes referred to a time-period rather than a time-point. Thus, the last amount of liquid consumed may have been overestimated. Data on the total amount drunk on the day of surgery were not available for 35 patients as this question was only added to the interview on the second day of the survey.

In summary, patients were allowed unrestricted drinking before surgery, drank wisely and according to their

needs. The amount and type of liquid desired were highly individual. This liberal liquid regime may prevent perioperative anxiety, stress, postoperative nausea and vomiting, postoperative delirium and other complications.

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