

## Patients' Assessment of Ambulatory Anesthesia and Surgery

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*Study Objective: To obtain patients' assessments of ambulatory anesthesia and surgery using a return-mail questionnaire postcard.*

*Design: Return-mail questionnaire given to consecutive ambulatory surgery patients. Setting: Adult ambulatory surgery unit of a university hospital.*

*Patients: The questionnaire was given to 3,722 patients. Responses were returned by 1,511 patients (41%). Among the respondents, 95% had gynecologic procedures and 5% had general surgical procedures.*

*Measurements and Main Results: Eighty-six percent of respondents reported at least one minor sequela persisting after discharge. Laparoscopy patients experienced significantly more aches, drowsiness, dizziness, sore throat, nausea, and vomiting. For all patients, sequelae lasted 1 day for 59% of all patients, 2 days for 28%, and 3 or more days for 14%. Different sequelae had different durations. Thirty-eight percent of respondents were able to return to their usual activities the day after surgery; the remainder required  $3.2 \pm 2.0$  additional days. The main reasons for delayed recovery included general malaise (57%) and surgical discomfort (38%). Assessing their overall satisfaction, 97% would choose day surgery again.*

*Conclusions: Return-mail questionnaires can be used for patient follow-up after ambulatory surgery, with limitations characteristic of unselected-patient methods. Patients' assessments of their anesthesia and surgery can identify common sequelae that ambulatory patients should realistically expect to experience.*

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Supported in part by a grant from the Medical Malpractice Joint Underwriting Association of Massachusetts.

Received for publication September 16, 1991; revised manuscript accepted for publication February 25, 1992.

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**J. Clin. Anesth. 4:355-358, 1992.**

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**Keywords:** Anesthesia: ambulatory, follow-up—complications; quality assurance.

### Introduction

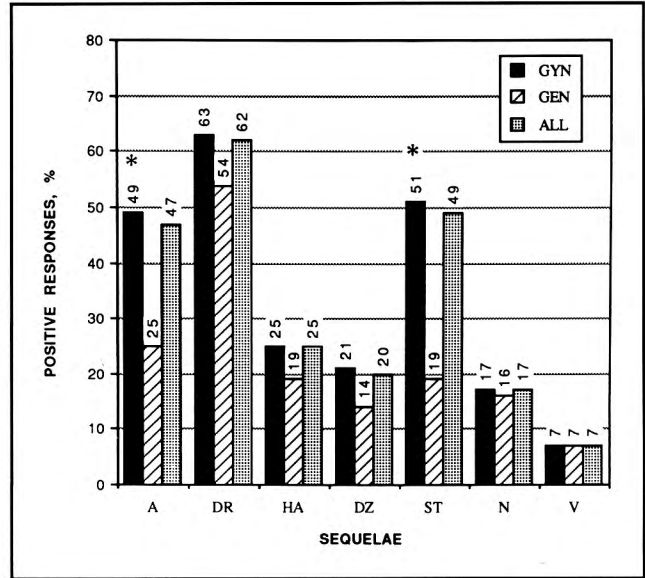
Ambulatory anesthesia and surgery are usually successful from the physicians' point of view. However, patients' assessment of their ambulatory experience may be different and must be determined independently.<sup>1</sup> Since ambulatory patients are discharged home shortly after the procedure, a traditional postoperative follow-up visit cannot be conducted. An alternative means for obtaining patients' assessments must, therefore, be used in the ambulatory surgery unit. We have developed a follow-up system using postcards that performs this function. The system and the first year of collected data are evaluated.

**Materials and Methods**

All patients in the Brigham and Women's Hospital adult ambulatory surgery unit received a stamped, addressed postcard containing questions about the occurrence of specific anesthetic sequelae that persisted after discharge. These sequelae included muscle aches, drowsiness, headache, dizziness, sore throat, nausea, and vomiting (Figure 1). Other questions concerned awareness during anesthesia, duration of recovery, and patient satisfaction. The sequelae were chosen from those reported in earlier studies.<sup>2-6</sup> Information from returned postcards was sorted and tabulated. The frequency and duration data were analyzed using Fisher's exact test, chi-square analysis, and contingency tables. A value of  $p < 0.05$  was considered significant.

**Results**

Postcards were given to 3,722 patients. Of the replies, 1,511 were returned, for a response rate of 41%. Of the replies, 1,428 (95%) had gynecologic procedures (GYN), including laparoscopy (861 patients), pelvic or perineal surgery (505), and breast biopsy (62). Eighty-three patients had general (nongynecologic) surgical procedures (GEN), including orthopedic (41), plastic (10), general (7), urologic (6), and other (19). The distribution of re-



**Figure 2.** Frequency of anesthetic sequelae by procedure group. \* $p < 0.05$ , gynecologic (GYN) versus general (GEN). A = muscle aches; DR = drowsiness; HA = headache; DZ = dizziness; ST = sore throat; N = nausea; V = vomiting.

Name	MRN
Date of Procedure	
1. After you got home did you have any of the following?	
a. muscle aches:	Yes/No 1 day-2 days-longer
b. drowsiness:	Yes/No 1 day-2 days-longer
c. headache:	Yes/No 1 day-2 days-longer
d. dizziness:	Yes/No 1 day-2 days-longer
e. sore throat:	Yes/No 1 day-2 days-longer
f. nausea:	Yes/No 1 day-2 days-longer
g. vomiting:	Yes/No 1 day-2 days-longer
h. any other discomfort (describe):	
2. Did you have dreams during your operation or do you remember your anesthesia or surgery? Yes/No Describe:	
3. Were you able to do your usual activities the next day? Yes/No If not, why? When were you able?	
4. If you needed it, would you choose to be a Day Surgery patient again? Yes/No	
5. How could we serve you better?	

**Figure 1.** The patient follow-up postcard.

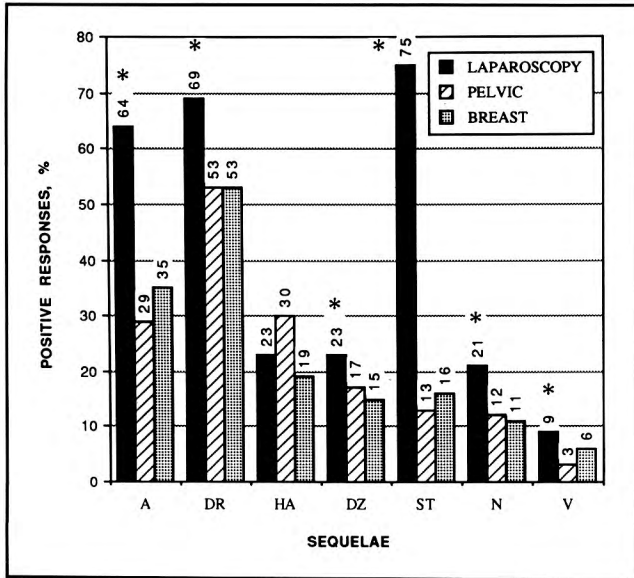
sponses reflects the distribution of procedures done in the surgery unit during the study period.

There were no major complications. Eighty-six percent of patients responding reported at least one minor sequela persisting after discharge. The frequency of sequelae was identified for each procedure group (Figure 2). Significant differences between the GYN and GEN groups were found for muscle aches and sore throat. Within the GYN group, the laparoscopy subgroup experienced significantly more of all the complaints except headache than did the pelvic and breast subgroups (Figure 3). There were no significant differences between the pelvic and breast subgroups, between the GEN group and the pelvic and breast subgroups, or among the GEN subgroups.

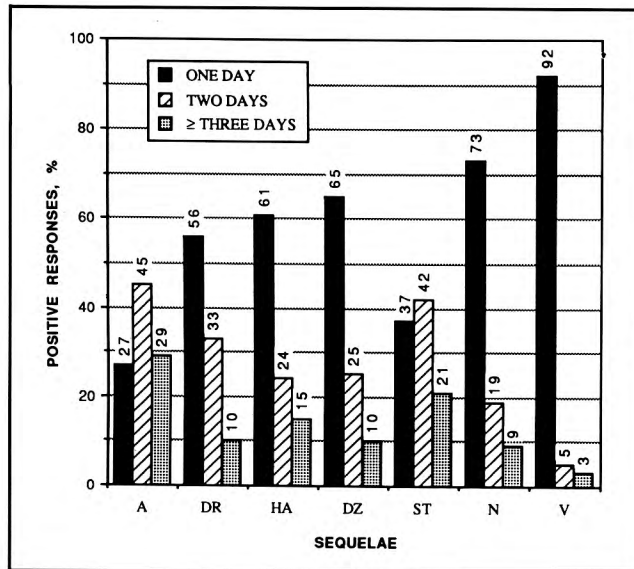
The duration of postanesthesia sequelae also was determined. Sequelae lasted 1 day for 59% of all respondents, 2 days for 28%, and 3 or more days for 14%. Different sequelae had different durations, as shown in Figure 4. Vomiting resolved relatively rapidly, while muscle aches and sore throat persisted. There was no difference in the duration of any sequelae between the GYN and GEN groups or among the subgroups.

Patients reported the occurrence of other discomforts. Thirty-one percent of respondents identified surgical pain (e.g., incisional, cramping, or gas pain), 1.8% noted anesthesia-related pain (of jaw, larynx, or mouth), and 19% noted general malaise (weakness, tiredness, lack of appetite, or lethargy).

Four patients who had general anesthesia reported intraoperative awareness (0.3%). In addition, 0.6% of the respondents remembered insertion of the endotracheal tube, and 1% remembered its removal.



**Figure 3.** Frequency of anesthetic sequelae among the gynecologic (GYN) subgroups. \* $p < 0.05$ , laparoscopy versus pelvic or breast. A = muscle aches; DR = drowsiness; HA = headache; DZ = dizziness; ST = sore throat; N = nausea; V = vomiting.



**Figure 4.** Duration of anesthetic sequelae. A = muscle aches; DR = drowsiness; HA = headache; DZ = dizziness; ST = sore throat; N = nausea; V = vomiting.

Thirty-eight percent of patients were able to return to their usual activities the next day. The remaining 62% required  $3.2 \pm 2.0$  additional days to recover (Table 1). Reasons for delayed recovery included general malaise (57%), surgical discomfort (38%), nausea (2%), and vomiting (0.2%).

Assessing their overall satisfaction, 97% of patients

**Table 1.** Additional Time Needed for Recovery

	Days				
	1	2	3	4-7	8-14
Positive responses (%)	6	39	32	21	2

said that they would choose to have day surgery again. Patients' comments concerning service were generally positive. Their suggestions for improved service could be broadly grouped into scheduling factors (less waiting), physical plant factors (less crowding, better parking), and desire for the option of inpatient care.

### Discussion

When patients are asked to assess their ambulatory surgical experience, they report that minor postanesthetic sequelae are common. This finding is not unique to our facility but is in agreement with results from other institutions. The more frequently occurring sequelae have been reported in other studies with the following frequencies: drowsiness, 53% to 96%;<sup>3,7</sup> sore throat, 28% to 69%;<sup>2,6</sup> muscle aches, 12% to 43%.<sup>2,6</sup>

The frequency and distribution of sequelae depend on the surgical procedure performed. In this study, 57% of respondents underwent laparoscopy, the procedure associated with the highest overall frequency of sequelae and with those sequelae having the longest duration (sore throat and muscle aches). Gold *et al.*<sup>8</sup> reported a 3.9-fold increase in risk of unanticipated hospital admission among ambulatory patients having laparoscopic surgery. According to the authors, this may have been related to the aftereffects of general anesthesia, and to postoperative vomiting. Thompson *et al.*<sup>1</sup> reported a "nearly 100% incidence" of sore throat after laparoscopy. Other ambulatory surgical units with different case mixes would be expected to have different distributions of sequelae.

The percentage of positive responses in a survey is affected by the method of data collection. Fahy *et al.*<sup>3,4</sup> found that use of a questionnaire to identify postanesthetic symptoms elicited more positive responses than an interview technique (62% vs. 45% overall). They observed an increase both in the number of patients responding positively and in the number of complaints reported by each patient. The investigators identified other factors that contributed to the increase in positive responses: obtaining the responses early in the postoperative period (several days) rather than late (several months) and querying specific complications rather than collecting only those comments volunteered by patients. This study used a questionnaire that was to be returned the week after discharge. The questionnaire was specifically designed to encourage patients to report their experiences and to elicit positive responses.

The method of data collection also affects the rate of response. When questionnaires have been given to a limited number of selected study patients, response rates

have been 76% to 100%.<sup>1,7</sup> Follow-up of unselected patients in other studies has yielded lower response rates. Ahlgren *et al.*<sup>9</sup> mailed questionnaires to all patients, and 33% responded. Patel and Hannallah<sup>10</sup> attempted follow-up by a next-day telephone call, and their response rate with unselected patients was 47%. In this study, all patients were given postcards prior to their discharge, and 41% returned them. This 41% response rate demonstrates the rate that is achieved with a return-mail questionnaire and unselected patients, and it is similar to rates with other methods using unselected patients.

Another consideration is the experience of the patients who did not respond. It is not known whether the nonrespondents had experiences similar to those of respondents or whether they were characterized by fewer or more sequelae. A follow-up questionnaire identifies the experiences of only those patients who choose to respond, and this is a limitation of the method.

Information was not collected about specific anesthetic drugs. Therefore, no correlation could be made between this outcome data and the effects of various anesthetic drugs. Future studies using computerized cross-referencing methods could be designed to collect this potentially valuable data. It is interesting that the frequency of minor sequelae after ambulatory anesthesia in this study was similar to that of data collected in 1969–1975,<sup>1–5</sup> when different anesthetic drugs were commonly used.

Information also was not collected about specific anesthetic techniques. Typical practices are known. In the study period, GYN patients predominantly received general anesthesia. Endotracheal anesthesia was provided for all laparoscopy patients, typically after intubation with succinylcholine. The higher frequency of muscle aches and sore throat in laparoscopy patients may, therefore, be related to the intubation process. Orthopedic and urologic GEN patients were more likely to receive regional block anesthesia. However, the number of responses in these categories was too low to evaluate specific outcomes.

Although our respondents were discharged on the day of surgery, full recovery required additional days at home. This finding, while not new,<sup>2,4</sup> is contrary to the popular expectation by patients and surgeons of “street fitness” after “in-and-out surgery.” Sixty-two percent of our patients did not resume normal activities the next day, but instead required an average of 3 additional days. This information needs to be provided to patients and surgeons so that they can have realistic expectations of the ambulatory surgical experience.<sup>1,11</sup> Our ambulatory surgery unit has incorporated the normative patient re-

sponses obtained with the questionnaire into our preoperative patient information booklet and preoperative anesthesia consent form.

Despite the frequent minor postanesthetic sequelae, patient satisfaction was high. This indicates that the high frequency of sequelae was not due to poor quality of care as perceived by the patients. Instead, the high satisfaction suggests that other factors are more important in determining ambulatory surgical patients' overall satisfaction. The patients who experienced intraoperative awareness were not dissatisfied with their care.

In conclusion, return-mail questionnaires can be used for patient follow-up after ambulatory surgery. This method has limitations that are typical of methods using unselected patients. Patients' assessments of their anesthesia and surgery identify common sequelae that ambulatory patients should realistically expect to experience.

### Acknowledgments

I wish to thank Ellen Murray Silvius, RN, and Usha Dhingra, MD, for assistance in data entry.

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