

Postoperative instructions after endoscopic sinus surgery: is there a consensus?*

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Rhinology Online, Vol 6: 1 - 4, 2022
<http://doi.org/10.4193/RHINOL/22.022>

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***Received for publication:**
July 25, 2022

Accepted: October 24, 2022

Published: January 3, 2023

Abstract

Background: Most endoscopic sinus surgeons instruct their patients to avoid certain activities during the postoperative period. Due to the scarcity of empirical data on this issue, most instructions are based on surgeons' personal insights. In this study we evaluated if restrictions for performing specific activities have a consensus among endoscopic sinus surgeons.

Methodology: A nationwide survey was conducted among experienced Israeli endoscopic sinus surgeons. Participants were asked to note the optimal postoperative time restrictions of 25 different activities.

Results: The response rate was 30/36 (83%). Surgeons' responses regarding time restrictions of specific activities postoperatively showed high variance. The greatest variance was noted for using a hair dryer, light physical activities, nose blowing, driving a car, having sexual intercourse, eating/drinking hot food or beverages, taking hot showers and drinking alcohol.

Conclusions: The time restrictions given by endoscopic sinus surgeons for specific activities postoperatively vary greatly among them. The study findings call upon rhinology boards to establish consensus-based guidelines for postoperative management after endoscopic sinus surgery.

Key words: endoscopic sinus surgery, postoperative care, postoperative time restrictions, consensus

Introduction

Endoscopic sinus surgery (ESS) is considered the standard approach for surgical management of sinonasal diseases^(1,2). It is one of the most prevalent surgeries in the United States, with more than 500,000 procedures performed annually^(3,4). Despite its widespread use, there are no clear guidelines or recommendations for patients' behavior and required activity level after the procedure. Most endoscopic sinus surgeons instruct their patients to avoid certain activities during the postoperative period, but due to the scarcity of empirical data on this issue, most instructions are based on the surgeons' personal insights ("gut feelings") and experience. This study aimed to determine

the status of recommendations on postoperative time limits of various activities among endoscopic sinus surgeons in Israel.

Materials and methods

Setting and participants

A nationwide anonymous survey was conducted in June, 2021 among experienced Israeli endoscopic sinus surgeons recruited from the Israeli Rhinologic Society (IRS) forum. The study was approved by the institutional ethics committee.

The participants were asked to note the optimal postoperative time restrictions of 25 different activities. They were also asked to note their seniority and operation load.

Statistical analysis

Statistical analysis was descriptive and performed using the SAS statistical software version 9.4 (SAS Institute, Cary, NC, USA). Categorical variables were summarized by number and percentage and continuous variables were summarized using arithmetic mean and standard deviation, median, minimum, maximum, 95% confidence interval and coefficient of variation (CV). CV is a measure of consensus with low CV representing homogeneity and high CV representing heterogeneity.

Results

Of the 36 questionnaires sent, 30 (83%) were completed and returned. Seniority ranged from 2 to 38 years with a median of 15 years. The estimated annual number of ESS per endoscopic sinus surgeon ranged from 24 to 400 with a median of 90 procedures. Surgeons' responses regarding time limits for performing specific activities postoperatively varied greatly. All CVs were above 50%, indicating heterogeneity among participants' recommendations (median [days]; range [days], CV): The highest CVs were for using a hair dryer (0, 0-14, 266.3, taking hot showers (0, 0-14, 234), driving a car (1.5, 0-21, 140.7) and having sexual intercourse (0 days, 0-21, 136.3 (7, 0-28, 101.6), The complete surgeons' recommendations of postoperative limitations following ESS are summarized in Table 1.

Discussion

To the best of our knowledge this survey is the first to investigate the issue of recommended time restrictions of activities post-ESS. Surgeons are responsible not only for performing surgery, but also for patients' experience and quality of life before and after surgery. Postoperative instructions are intended to reassure patients, to ensure adequate recovery and healing, to preserve the integrity of the repair and to minimize pain and complications, such as postoperative infection and bleeding. Nevertheless, postoperative recommendations are routinely given to patients even if they are not supported by any direct evidence. The results of the survey reflect the high variance in post-ESS recommendations among senior Israeli endoscopic sinus surgeons. Altogether, the surgeons that participated in the survey perform about 4500 procedures annually, reflecting their experience. However, the high heterogeneity among their recommendations, as seen by the relatively high CV, demonstrates that many recommendations lack uniformity. The greatest variance was noted for light physical activities, nose blowing, driving a car, computer work at home, using a hair dryer, having sexual intercourse, eating/drinking hot food or beverages, taking hot showers and drinking alcohol. For example, some endoscopic sinus surgeons allowed patients to have sexual intercourse only 21 days after ESS, whereas others reported no restrictions at all post-surgery. Additionally, some surgeons prohibited scuba diving for 84 days while others al-

lowed it immediately after the procedure. According to Xu et al. ⁽⁵⁾, the recovery of the mucosa after ESS has 3 phases: clean operative cavity, mucosal transition and complete epithelialization (completed within 10-15 weeks). Byun and Lee reported that uncinectomy heals after 2.42 ± 0.79 weeks ⁽⁶⁾. ESS usually involves more than uncinectomy alone. Shaw et al. reported a healing process of more than 12 weeks in an animal model ⁽⁷⁾. While there is no evidence that there is any association between healing time and postoperative risk following specific activities, this may somehow explain the caution of some surgeons. Formulating guidelines is a complex task, especially if high-quality evidence is lacking. Therefore, prospective studies are needed to establish a standard list of instructions that would be accepted by the national and international rhinology boards and would serve as a basis for clinical guidelines for post-ESS management. A similar study to ours, which examined the recommended time limits after transsphenoidal surgery (TSS) among 14 pituitary surgeons in Germany, served as a foundation for establishing joint recommendations for patients' behavior after TSS and for minimizing postoperative risks ⁽⁸⁾. Following routine TSS (not extended), taking showers with washing hair was allowed within 1 week, using a CPAP device and nose blowing after 3, driving a car and travelling on a plane after one, lifting heavy weights after 4, playing woodwind/brass instruments and competitive sports can be resumed after 6 weeks. The results were discussed at the German pituitary working group and a group of pituitary surgeons was constituted to screen the relevant literature. During few conferences, joint recommendations were elaborated and the results were brought together in a manuscript. All participating neurosurgeons and consultants approved the recommendations as described in this manuscript. The conclusions of this study would be more relevant if the surgery had not included opening the skull base, and if the conclusions had been given by rhinologists rather than neurosurgeons. Our study is not without limitations. ESS encompasses a wide range of procedures, making homogeneous post-operative restrictions on activity difficult. Surveying only experienced rhinologists who are members of a learned society in a single country is unlikely to give a realistic measurement of consensus. The number of endoscopic sinus surgeons in Israel is relatively small; however, most of them (83%) completed this survey. This sample size was considered sufficient for the purpose of this study. Our study provides a snapshot of current restrictions of rhinologists who filled out the questionnaire; however, we refrained from giving recommendations because high-quality evidence is lacking. The study suggests that endoscopic sinus surgeons' rationale is based on experience rather than solid evidence. We expect that our findings will be used to create a guide for surgeons to further explore the topic of postoperative management. We plan to investigate the association between physical activity and postoperative bleeding in a future study.

Table 1. Surgeons' recommendations of postoperative limitations following ESS.

Limitation	N	Mean (standard deviation), days	Coefficient of varia- tion, %	Median (range), days	95% confidence interval
Running (>5 mph)	30	13.2 (6.6)	50.3	14 (0-28)	(10.7-15.7)
Scuba diving	30	31.1 (16.0)	51.4	28 (0-84)	(25.2-37.1)
Swimming	30	18.2 (9.4)	51.9	14 (3-42)	(14.7-21.7)
Playing professional sports	30	19.1 (9.9)	51.7	14 (7-42)	(15.4-22.8)
Travelling on a plane	30	20.5 (10.8)	52.6	21 (0-42)	(16.5-24.5)
Taking a sauna	25	13.8 (7.3)	53.1	14 (0-28)	(10.8-16.9)
Playing woodwind/brass instruments	28	14.4 (8.6)	59.5	14 (0-42)	(11.0-17.7)
Snorkeling	25	20.8 (12.7)	60.8	14 (0-42)	(15.6-26.1)
Playing ball games	30	13.4 (8.3)	62.2	14 (0-42)	(10.3-16.5)
Doing push-ups/crunches	30	13.7 (8.6)	62.6	14 (0-42)	(10.5-16.9)
Lifting heavy weight	29	9.3 (6.5)	70.0	7 (0-28)	(6.8-11.8)
Sun/ heat exposure	30	6.9 (4.9)	70.6	7 (0-14)	(5.1-8.8)
Computer work among other people	29	5.6 (4.2)	74.5	7 (0-14)	(4.0-7.2)
Using a CPAP device	29	11.0 (8.6)	78.2	7 (0-28)	(7.7-14.2)
Smoking	28	16.8 (14.8)	88.4	14 (0-56)	(11.0-22.5)
Nose blowing	28	5.6 (5.7)	101.4	5 (0-21)	(3.4-7.8)
Jogging(<5 mph)	29	7.2 (7.3)	101.6	7 (0-28)	(4.4-10.0)
Eating/drinking hot food or beverages	30	3.4 (3.6)	105.5	3 (0-14)	(2.0-4.7)
Drinking alcohol	30	4.4 (5.7)	127.7	0 (0-21)	(2.3-6.6)
Sexual intercourse	29	4.6 (6.3)	136.3	0 (0-21)	(2.2-7.0)
Driving a car	30	3.7 (5.2)	140.8	1.5 (0-21)	(1.7-5.6)
Taking hot showers with washing hair	29	2.4 (3.6)	155.1	0 (0-14)	(1.0-3.7)
Taking hot showers without washing hair	30	1.4 (3.3)	234.0	0 (0-14)	(0.2-2.6)
Computer work at home	30	1.2 (3.1)	255.6	0 (0-14)	(0.1-2.4)
Using a hair dryer	29	1.4 (3.8)	266.4	0 (0-14)	(-0.02-2.9)

Conclusions

There is great variance among time restrictions for post-ESS activities given by endoscopic sinus surgeons. The study findings call upon national and international rhinology boards to establish consensus-based protocols and guidelines for postoperative management after ESS.

Acknowledgments

Not applicable.

Funding

Not applicable.

Authorship contribution

SS, RL: study design, data collection, data evaluation and manuscript writing; MMasalha, AM, YR and M Masarwa: data collection and evaluation.

Ethics approval and consent to participate

Not applicable.

Availability of data and materials

Not applicable.

Conflict of interest

The authors declare no competing interest.

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