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Editorial

Mark Skues, Editor-in-Chief

This quarter's edition has a number of diverse papers in the world of Ambulatory Surgery covering a wide spectrum of information. There are two submissions from colleagues in China, a paper evaluating quality of sleep after ambulatory surgery, and two national reports from representatives of the General Assembly of the IAAS.

Sun Jie and colleagues from Shanghai evaluated the role of laser resection of the prostate as a suitable ambulatory procedure by describing the progress and outcome of 240 patients undergoing the technique. They found an impressive 95% of patients were discharged within one day, and overall costs were reduced by 2000Yuan (£230 sterling) when inpatient stay was avoided. This figure equates well with costings from the United Kingdom. Data from England for the year 2017/18 indicated that laser prostate resection was a daycase procedure in 20.2% of cases, with non-laser methods achieving a 3.1% daycase rate. So here is a surgical procedure with a different technique that is eminently suitable for ambulatory management.

Two nurses from Beijing have evaluated the experiences of mothers of ambulatory children with congenital cataract to explore the feelings engendered by surgery. This is a relatively neglected subject as little attention is paid to the caregivers of patients undergoing surgery. Analysis of interviews revealed anxiety, impacts on family relations, requests for further information about general anaesthesia and family care skills and a need for psychological support from care teams as the predominant themes. The Authors provide advice on management of such issues.

Vicente Vieira and Luis Oliveira have provided a comprehensive review evaluating sleep quality after ambulatory surgery, using a number of established outcome measures. They evaluated patients' sleep patterns for a week after short stay surgery, comparing those who spent their first night sleeping at home, and those who spent the first night in hospital. They found no differences between the groups, though emphasise that sleep quality is impaired for the first week after surgery. While the paper may not be ground breaking in terms of outcome, it provides a comprehensive resource on the subject of sleep deprivation after surgery.

Finally, each year, national representatives of the General Assembly are invited to provide a one page resumé of their national Society's developments. This year, we have two contributions from Norway and Denmark, who both describe the improved access to national data showing wide variation in outcomes for common ambulatory procedures. The next step, potentially, is to drill down to the causes of such variation, and see what can be facilitated to improve such rates.. I sense this is the difficult bit! Either way, both countries are to be congratulated for the progress made so far, and we look forward to further developments and improvements.

Mark Skues
Editor-in-Chief

Exploration of Day Surgery. Photoselective Vaporisation of Prostate (PVP) in the Chinese population

*Sun Jie[a], Shi An[a], Tong Zhen[a], Xue Wei[a]**

Abstract

Background: The problems of "difficulty in hospitalization, overlong waiting time and hospital stays" beset patients with benign prostatic hyperplasia/lower urinary tract symptoms (BPH/LUTS) in China nowadays. As a reform attempt, the surgical ambulatory procedures of photoselective vaporization of prostate (PVP) have been implemented by the urology department of Renji Hospital since 2014.

Objective: To explore the surgical effect and cost-effectiveness of day surgery versus inpatient surgery for PVP in Chinese population and present the flow chart of urologic ambulatory surgery.

Patients and Methods: This is a retrospective study of consecutive 240 patients undergoing day-surgery PVP (April 2014 to April 2016) and 156 patients undergoing inpatient-surgery PVP (May 2012 to March 2014). Functional measurements used were International Prostate Symptom Score (IPSS), maximum flow rate (Qmax), residual urine volume (RUV), postoperative complication. Economical results in terms of hospital stay, relevant preoperative, intraoperative and postoperative cost.

Results: There was no significant difference in operative time, incidence of postoperative complications and other functional outcomes between two groups ($P>0.05$), but the waiting time for admission and the hospital cost including the drug charges, bed fee, nursing fee, laboratory test and imaging fee of day-surgery group were significantly lower than that of inpatient surgery group ($p<0.05$).

Conclusion: Ambulatory surgery of PVP has a firm and well-accepted position even in ambulatory surgery. It could significantly reduce the waiting time for admission and hospitalization costs.

Keywords: Benign prostate hyperplasia; Lower urinary tract symptoms; Ambulatory surgery; Photoselective vaporization of prostate.

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Introduction

Benign prostate hyperplasia (BPH) is the main aetiology of lower urinary tract symptoms in elderly men (1). Transurethral resection of the prostate (TURP) has been the "Golden Standard" treatment of BPH for many decades. As technology has evolved in the past few years, the rate of alternative minimal invasive surgical therapies (MISTs) has increased (2). Photoselective vaporization of the prostate (PVP) has been introduced as a substitute treatment for patients with LUTS. Additionally, it has been shown that 180W XPS Greenlight laser prostatectomy is non-inferior to the standard procedure transurethral resection of prostate (TURP) in terms of efficacy, but there was a tendency of better safety pattern like severe bleeding (3). PVP, as a known safe and effective surgical method to treat benign prostatic hyperplasia, has become one of the first choices in surgical treatment of BPH in men suffering from LUTS due to benign prostate enlargement (BPE) worldwide, and recently in China too. As in 2012 about 432,000 "BPH"-procedures have been done in the U.S. with about 25% performed as Greenlight laser prostectomy procedures. The capability of the laser to destroy tissue is touchless (4). With the wavelength of 532nm green monochromatic light ablates prostate tissue by vaporization. Due to the optical tissue penetration depth of about 0.8 mm, the superficial rim of the tissue is coagulated which leads to the excellent perioperative hemostasis. With the evolution of 180W power setting and the improvements of the MoXy-fiber technique, 180W XPS Greenlight laser vaporization is effective and safe with reproducible results, especially in high-risk patient under ongoing anti-coagulation (5,6).

As a new mode typified by 24-h discharge, day surgery developed rapidly in the recent 20 years due to patients' requests and health economic pattern. At present, in certain European countries and especially in the United Kingdom and United States, day surgery accounts for up to 80% of all selective operations due to local health economic situations, which support ambulatory surgery (7,8). Due to the growth of ageing population is accelerating, the high BPH/LUTS prevalence is a significant financial and medical burden to patients and society. Performing PVP as an ambulatory procedure may decrease the duration of hospital stay and minimize cost.

Thus, we conducted this retrospective study to identify patients who have undergone PVP as an ambulatory surgery, to determine the adverse events, 30-day readmission rates and clinical outcomes who underwent PVP as a traditional inpatient procedure.

Patients and Methods

The present study was approved by the institutional review board. Between April 2014 and April 2016, our department has completed consecutive 240 cases of day surgery PVP. Treatment indications were in accordance with the clinical practice guidelines (9). We excluded the patients with prostate cancer by digital rectal examination (DRE) combined with prostate-specific antigen (PSA) test or prostate biopsy. Institutional review board approval was obtained.

Preoperative variables included medical history, symptoms index score, transrectal ultrosonography(TRUS), post-voiding residual(PVR), uroflowmetry, serum prostate specific antigen and hospitalization costs. Patients were evaluated at 1, 6, 12 months postoperatively. Postoperative complications were also recorded during follow-up visit. All complications were graded according to the Clavien-Dindo classification (10).

Day surgery procedure

Preoperatively, a detailed surgery instruction including postoperative care, occurrence of complications and expectations is provided for

the patients according with the surgical indications. A "day surgery application" will be submitted by doctor after the patient agrees to be hospitalized for surgery. The permission of related preoperative inspections will be issued (including the routine electrocardiogram (ECG), conventional blood and coagulation tests). After receiving a consultation at the clinic of anaesthesia department, the patient will be admitted to hospital at a chosen date. Patients taking aspirin or clopidogrel can undergo surgery without cession of therapy.

Intraoperatively, all the patients received general anaesthesia including intraoperative monitoring. After the surgery, the patient is returned to the inpatient unit for a rest. The voiding trial was taken on postoperative day 1 and patients were discharged when they met standardized criteria.

Standardized procedure of PVP surgery ("Six-step method of PVP side lightening")

All the patients received general anaesthesia. Then operation was performed using a Greenlight laser 120W-LBO (Realton Co., Beijing, China) or 180W-LBO (Realton Co., Beijing, China). Saline was used as washing fluid, and a Storz 26F(Karl Storz GmbH&Co., Tuttlingen, Germany) continuous flow resectoscope with a laser bridge was used for all these surgeries.

By first setting the laser power at 60W, vaporization of prostatic urethra mucosa started from 11 to 7 o'clock in a counterclockwise direction. Then without changing the laser power setting, mucosa lining the prostatic urethra was vaporized from 1 to 5 o'clock in a clockwise direction.

Between 7 and 11 o'clock, we increased laser power to 120W/180W and vaporized prostate tissues from bladder neck to apex, removed right lobe in a counterclockwise direction.

From 1 to 5 o'clock, from the bladder neck to prostatic apex, left lobe is vaporized in a clockwise direction. Keeping the laser in its highest power, from bladder neck to apex, we applied a technique of vapor-resection on median lobe between 5 and 7 o'clock. From 11 to 1 o'clock, from the bladder neck to prostatic apex, we vaporized the distal portion of the prostate with 120W/180W energy. At the end of the procedure, we usually use 80W laser power to manage bleeding, and to make the bladder neck and prostate apex smoother.

Postoperative follow-up

The first postoperative follow-up was scheduled at 4 weeks after the surgery, which examined IPSS, RUV and uroflowmetry. The incidences of postoperative complications were observed during the follow-up. Then the follow-up was taken place at 1,6 and 12 months, which examined IPSS, uroflowmetry and RUV. All the clinical data were retrospectively collected.

Statistical analysis

Statistical analysis was performed using the Statistical Package for Social Sciences, version 22.0(IBM Corp., Armonk, NY). Statistical results were presented as mean ± standard deviation (X±S) or as a percentage of total patients. Proportions of the variables were analyzed using Chi-square t test. All tests were two-sided with significant level at $p<0.05$.

Results

In this study we compared the 240 cases of BPH patient performed with day surgery with the ones performed with non-day PVP surgery before April 2014 (n=156). Table 1 lists the preoperative and intraoperative parameters of all patients. There was no significant difference in immediate curative effect and safety between the both groups, while daytime PVP surgery was able to reduce the waiting time for admission, the total cost was also reduced accordingly. Compared to intraoperative costs, there was no significant difference in the intraoperative anesthesia and surgery fee, ($p>0.05$). But in the postoperative costs, the drug charges, nursing care fee and bed fee of day surgery group were all lower than that of inpatient surgery group ($p<0.05$).

Overall, 228 patients of ambulatory surgery group were discharged in 24 hours and 12 patients were delayed, mainly due to the bleeding disorder requiring bladder irrigation (7 cases) and high fever (4 cases). One patient experienced acute myocardial infarction, transferring to intensive care unit immediately.

Clinical outcomes for the perioperative period and postoperative follow-up are summarized in Table 2. Follow-up was 12 months. IPSS, RUV and Qmax in both groups have been significantly improved. For postoperative complications, the overall complications rates at 0-12 months were 27.1%(65/240) and 28.8%(45/156) between two groups and majority of adverse events were Clavien-Dindo grade I (17.5% verse 20.5%, P=0.452) . Complications requiring intervention under regional or general anaesthesia (Clavien-Dindo grade III-IV) was recorded as 2.1% for patients undergoing ambulatory surgery, which showed no significant difference with inpatient surgery group ($p>0.05$). Irritative symptoms and bleeding were the most common Clavien-Dindo grade I/II complications. Urinary stricture was the most common Clavien-Dindo grade III complication. 1 patient developed acute myocardial infarction following PVP and was transferred to intensive care unit immediately.

Discussion

The mode of day-surgery has not been widely carried out in China, especially in the field of laser treatment in BPH. This is the first study to present the day surgery of Photoselective vaporization of prostate (PVP) in a Chinese population. In the domain of surgical treatment of BPH/LUTS, the development of laser technology enormously improved the patient's surgical experience and curative effects. The safety and effectiveness of PVP have been already widely acknowledged long ago as a main force in the field of laser technologies (11), while the combination of minimally invasive technology with daytime inpatient unit has further enormously improved the patient's experiences of hospitalization and therapy.

One published article study PVP as a day-case in 134 patients, 121 (90%) were actually discharged in ambulatory pathway (12). As demonstrated in our study, the majority of patients (228/240, 95%) patients can be managed safely in the ambulatory setting, with only 12 patients delayed the discharged and being converted to an inpatient procedure. We observed the main reason for delay were haemorrhagic events, which were mostly associated with bladder spasm.

In terms of complications between 0-12 months, serious or even life-threatening complication are rare in both inpatient and outpatient surgery group, which were similar to the previously published literature including the GOLIATH study (3) and other reported XPS Greenlight series (10). Urinary symptoms (IPSS, QoL) and uroflow parameters (Qmax, PVR) were all significantly improved compared to baseline. These data showed that the PVP was successful to treat patients in outpatient mode.

An extra emphasis is laid on the evaluation of effect of clinical and medical therapy of day surgery in western countries, focusing on the safety of day surgery including the incidence of postoperative adverse reaction, second-time surgery and postoperative living quality and other indexes (6). However, comparison of definitive costs and

Table 1 Comparison of cost-savings between day-surgery PVP and non-day surgery PVP.

	Non-day surgery	Day surgery	P-value
Age (years)	68.2±10.5	71.1±8.42	0.725
Size of prostate (g)	58.4±26.70	51.9±24.7	0.296
Mean surgery time (min)	38.9±21.9	36.9±24.0	0.408
Waiting time for admission (days)	16.5±6.2	7.9±3.4	0.000
Hospital stay (days)	3.7±1.2	1.3±0.5	0.000
Total cost (CNY)	11435.2±816.7	9478.6±652.2	0.000
Laboratory test and imaging cost	899.6±41.7	597.7±27.1	0.000
Surgery fee	3508.6±182.4	3412.4±165.5	0.708
Anesthesia fee	1172.9±112.3	1148.4±96.8	0.620
Drug charges	2622.8±613.3	1757.4±589.7	0.000
Nursing care fee	72.4±10.2	35.7±7.0	0.000
Bed fee	386.7±70.9	142.6±32.6	0.000
Medical material fee (Fiber)	2000	2000	

Table 2 Clinical variables assessed during the follow-up.

	Non-day surgery	Day surgery	P value
Preoperative IPSS	25.8±6.9	26.4±7.5	0.637
Preoperative Qmax (ml/s)	7.2±4.3	6.8±4.5	0.583
Preoperative RUV (ml)	232.5±204.1	213.2±192.6	0.708
IPSS, 1 month follow-up	7.4±5.1	6.9±4.6	0.628
Qmax, 1 month follow-up (ml/s)	17.9±4.6	16.7±4.9	0.728
RUV, 1 month follow-up (ml)	17.9±26.4	17.3±24.2	0.600
IPSS, 6 month follow-up	4.8±4.5	5.4±4.6	0.342
Qmax, 6 month follow-up (ml/s)	20.9±6.7	19.8±5.8	0.460
IPSS, 12 month follow-up	5.0±4.5	4.5±3.7	0.684
Qmax, 12 month follow-up (ml/s)	20.3±6.2	21.8±6.0	0.636

reimbursements in Europe is difficult because of different health economic regulations. It was shown by data from U.K. and Italy that, PVP could shorten the hospital stays by averagely 1.15 days as compared to the traditional TURP surgery ($p<0.01$); the result of cost minimization analysis (CMA) showed that, 629 Euros were saved from medical insurance for every case of PVP patient as compared with TURP (15,16). With the accelerating growth of PVP, the ramifications for health care expenditure worth discussing.

In this study, data presented the ambulatory surgery of PVP was able to reduce the hospitalization costs including the drug charges, nursing care fee and bed fee. At the same time, the increase of bed conversion shortened the patient's time of waiting for bed. The satisfaction rate of patients has also been elevated substantially. The majority of patients with benign prostatic hyperplasia needing surgical treatment were elderly people, who were in need of the company and care of relatives. The simplicity of daytime inpatient unit system and substantial shortening of hospital stays undoubtedly have reduced nursing burden and provided convenience for the whole family of patient.

During the course of this clinical exploration, we realized the combination with PVP and day surgery unit is feasible. The key to the whole process included: 1) All the patients should accept a complete and strict preoperative evaluation by the urologist and anaesthetist to exclude those patients not suitable for day surgery. It depends on the experienced clinical assessment that takes in account the underlying health of patients, risk for general anesthesia and postoperative severe complications. 2) The postoperative observation is the most important, especially in some elderly patients who were more prone to suffer bleeding, infection and even cardiovascular complications. The medical staff should fully inform the patients of the potential postoperative complication and corresponding emergency measures. Therefore, the development of day-surgery PVP in the remote areas with the comparative fall-behind medical condition has some limitations. 3) Postoperative health guidance and regular follow-up are equally important.

The limitation of this study include the relative small number of patients and heterogeneity of the series. These results may only reflect a single center experience.

PVP day surgery has developed up to now in our department; it tends to become a mature management mode that can be referenced. Nowadays, no unified day-surgery management system has been developed in China yet. The standards and supervisions of hospitals of

various levels were also of different qualities, resulting in a portion of hidden medical risks, that how to regulate the according supervisory system and matching policies and regulations still requires the coordination and management by government through intervention.

Conclusion

Ambulatory surgery of PVP has a firm and well-accepted position even in ambulatory surgery. It could significantly reduce the waiting time for admission and hospitalization costs. It improves utilization of medical resource and reduces the healthcare burden of the country.

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The Psychological Experiences and Demands of Mothers of Ambulatory Surgery Children with Congenital Cataract: A Qualitative Study

Wanxia Zhang & Zhangfang Ma

Abstract

Objective: To explore the psychological experiences and demands of mothers of ambulatory surgery children with congenital cataract before and after ambulatory surgery in a cohort of Chinese patients.

Methods: All twenty mothers of ambulatory surgery children with congenital cataract at a large tertiary hospital were recruited for a semi-structured interview face-to-face. The phenomenological methodology was used. The data had been analyzed by Colaizzi's method.

Results: Analysis showed five themes. They were anxiety and worry, the impacts on family and social relations, urgent demands for the knowledge about the general anesthesia, eager to talk and be heard, and urgent demands for family care skills.

Conclusion: The Nurses should understand the psychological experiences and demands of mothers of ambulatory surgery children with congenital cataract, provide emotional support where required and help mothers to build positive coping style so as to promote their physical and mental health.

Keywords: Care Experience, Congenital Cataract, Qualitative Research, Mother, Ambulatory Surgery.

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Introduction

Congenital cataract is the leading cause of blindness in children worldwide. It has serious influences on children's visual development and visual acuity. Surgery is still the main method in treatment [1]. Ambulatory surgery under general anesthesia can reduce the waiting time for children with congenital cataract. But their parents have many serious psychological problems. What concerns them is that their children need to have surgery under general anesthesia and be hospitalized for less than 1 day. Mothers of children are the primary caregivers and need more attention. The purpose of the present study was to understand the psychological experiences and demands of mothers of ambulatory surgery children with congenital cataract by Colaizzi's method, and to provide the basis for the development of scientific and effective interventions.

Materials and Methods

Materials

A convenience sampling method was used to recruit the mothers of ambulatory surgery children with congenital cataract in ophthalmic day-case unit of our hospital from March to August 2016. The sample size is determined by the principle of data saturation. When the content is no longer new, the data is saturated [2]. The inclusion criteria of the present study: 1) The mothers of ambulatory surgery children with congenital cataract; 2) Having a certain ability of language expression, clear consciousness and clear thinking, 3) No history of mental illness and agreed to be interviewed. When we visited to the twentieth mother, the information achieved saturation.

In 20 cases of mothers, their age was between 24 and 42 years old. The educational background of 12 mothers was high school and above, and the educational background of 8 mothers was junior middle school. The occupation of 8 cases was farmer. The occupation of 6 cases was clerk. The occupation of 1 case was teacher. The occupation of 5 cases was other. The children's age was between 2 and 5 years old. 11 children were male. 9 children were female. The complications of 2 children were congenital iris deficiency and nystagmus. The complication of 15 children was amblyopia. The complications of 2 children were strabismus and nystagmus. The complication of 1 child was strabismus.

Methods

Guided by phenomenological method in qualitative research, we used a semi-structured interview. We followed the ethical principles and signed the informed consents wih these 20 mothers. We respected the willingness of the research subjects and made a commitment that the research materials are strictly confidential [3]. Questions for semi-structured interview: 1) How do you feel about caring your child before and after the surgery? 2) What difficulties do you have before and after surgery? How do you cope with the difficulties? 3) What do you need most now? In what way would you like to get assistance?

The same researcher was responsible for all the interviews. The time of the interview was 1 day after discharge. Each interview lasted from 30 to 40 minutes. The respondents were numbered in sequence from C1 to C20. The information was collected by means of recording and transcripts on the spot. The recordings were converted into text after the interviews. The data was analyzed by Colaizzi's method [4]. The research themes were generalized in detail below.

Results

Anxiety and Worry

When the children were diagnosed with congenital cataract, all the mothers showed shock at first, and then guilt, remorse and helplessness. They all expressed uncertainty and worry. The mothers' anxiety were also more serious after ambulatory surgery. They

worried about the effectiveness of surgery and general anesthesia, but also worried about their poor care skill. C1: At first, I'm shocked. It's eye disease. How does my child live later? C6: My child is still so small. It is my fault. I did not give birth to him very well. C13: My child would have surgery today, and discharge tomorrow. I feel insecure. C9: I often worry about the failure of the operation. C5: Will the cry affect the effect of the surgery? C10: My child had been crying after surgery. She pulled the gauze. Is the surgery failed? C2: Is the child's cry and scream because of insufficient anesthetic's dosage?

The impacts on family and social relations

The mothers expressed that the family relations of these mothers were influenced. Some family members considered mothers were the source of the heredity and blamed them. Because the child fell sick, the mothers had been forced to stop working. Their social circle was diminished due to working stopped and changed social role. C3: My mother-in-law thought that this disease was inherited from me, as soon as she knew the name of congenital cataract. It's unreasonable. C17: The quarrel between my parents and my husband's parents has been going on, since my child fell ill. They blame each other. My husband doesn't say a word. C16: When others ask about the reason of the child's illness, I am very sick and tired. C12: I have not been at work, since my child fell ill. I heard that the child could have amblyopia training after surgery. I hope some social groups or associations can help me and my child. C2: I hope the hospital can held more knowledge lectures and provide us the way of obtaining the relevant knowledge.

Urgent demands for the knowledge about the general anesthesia

The mothers all expressed their demands for the knowledge about the process and adverse reaction of general anesthesia. C19: General anesthesia is a blind spot for me. How to acquire this knowledge? C14: Will general anesthesia not affect the child's intellectual development? No harm to the body? C7: How to have the general anesthesia? Is it an injection or intubation?

Eager to talk and be heard

The mothers of this group all expressed their desire to talk and be heard. They hoped to be heard by the doctors and nurses. They hoped to gain the psychological support of other mothers of the children with the common disease. C18: Sometime I feel depressed in the face of my child and family. Do something else and find someone to chat, and then I feel a little better. C8: I have a lot of questions to ask the doctor, but the doctor is too busy to have time. C20: If the doctor can explain in more detail, I will feel better mentally. C11: It's better to chat about these annoying things with outsiders than with my family. Our several mothers have built a WeChat group. We feel very well.

Urgent demands for family care skills

The mothers all expressed concerns about the time of hospitalization. They mentally depended on the nurse's care and guidance. Because of the lack of the family care skills and relevant knowledge, they had less confidence to take care of their children at home after ambulatory surgery. C4: I'm afraid I can't care my child very well, because the hospital stay is so short. C15: the nurse has told me how to take care of my child after surgery, but what if I forget?

Discussion

Pay attention to the psychological status of the mothers and put emphasis on listen.

All the mothers in this group showed anxiety and worry. This is consistent with other studies in China [5]. Ambulatory surgery can reduce the waiting time and hospitalization time for children with congenital cataract, but at the same time the mothers became more worried about the risk of the hospitalization for less than one day. The caregivers with high burden experience tend to pay less attention to their health [6]. Thus the nurses should pay attention to the psychological status of the mothers of the children with congenital cataract before and after ambulatory surgery. The nurses need to understand psychological experiences and demands of the mothers, and then in hospital the nurses provide psychological nursing care to them at the right moment. In addition, the nurses should ask carefully, tell patiently and remind clearly the important things during the preoperative telephone interview and the postoperative telephone follow-up. The nurses could analyze the existing psychological problems of mothers, help them to face their problems squarely and provide them the timely psychological counseling. Meanwhile, the "listen" training of nurses must be strengthened. Though this training, the nurses might master the "listen" skills so as to provide better psychological care for mothers of children with congenital cataract.

Strengthen the health education of the knowledge of general anesthesia and family care skills and reduce the mothers' uncertainty and concerns about the family care risk of ambulatory surgery.

The sense of uncertainty has become an important and common problem in the process of making medical decision and caring for patients [7]. The symptoms and signs of congenital cataract make a psychological impact on the mothers of the children with congenital cataract. They felt an overwhelming sense of uncertainty about this disease. The uncertainty sense of diseases is positively correlated with the lack of information [8]. Because of the hospitalization for less than 1 day, the timing and time of health education is not enough relatively in hospital. Thus the health education of the knowledge of general anesthesia and family care skills is not enough for the mothers. This health education need be strengthened in ophthalmological ambulatory surgery center. Meanwhile, the psychological nursing is provided in the process of health education. Through telephone interview, nurses can provide timely psychological counseling for mothers of children and strengthen the knowledge introduction of general anesthesia before surgery so as to reduce the fear of general anesthesia. Through strengthening the guidance of family care skills and the inform of the continuous nursing, fundamentally build their confidence in family care. It would help to relieve their concern about the risk of the hospitalization for less than 1 day and reduce all kinds of uncertainty sense. Finally it would help to reduce their psychological burdens.

Building family and social psychological support system

When the individual lacks the support system, he will have a strong sense of social isolation, and be unable to cope with various problems in life [9]. Family is a very important social support system [10]. A good family-social psychological support system can alleviate or relieve the psychological problems of caregivers. The nursing staff needs to master the relevant psychological knowledge so as to be able to help to build a stable family- social psychological support system. Strengthen health education about the etiology of congenital cataract and psychological knowledge for the children's family members. It would help them to correctly treat the disease itself, relieve the negative emotions and actively cope with the problem. The mothers stopped working and contacted with the parents of children with the same disease every day. It is easy to increase their anxiety. In the present study, 16 mothers started work again after leaving the child for a short time. They felt that the negative emotions were relieved. Thus we should suggest that the members of family may take care of the children in turn and duly rest and separate oneself from the

negative emotion environment. Nurses should help the mothers to use the positive coping style such as solving the problems and seeking help.

Summary

In summary, the nurses should understand the psychological experiences and demands of mothers of children with congenital cataract before and after ambulatory surgery. Positive coping style and emotional support should be offered for these mothers. It would help to promote the physical and mental health of these mothers.

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Conflict of interest

There was no conflict of interest from the authors related to this paper.

The present study had been approved by the ethics committee of Beijing Tongren Hospital

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Sleep Quality Assessment in Ambulatory Surgery Patients

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Abstract

Aim: Evaluate the postoperative quality of sleep in patients submitted to ambulatory surgery and additionally compare who spent the first night at the hospital and those who returned home.

Material and Methods: 80 patients submitted to ambulatory surgery answered and delivered a questionnaire with sleep and recovery evaluation surveys. After the patient completed the questionnaire, more general information about the patient was analysed, as well as if the patient spent the first night at the hospital. The questionnaire consists in an evaluation of sleep and surgery recovery through Quality of Recovery (QoR-15), Visual Analogue Scale – Sleep (VAS-S), Sleep Diary and Patient-Reported Outcome Measures for Sleep Disturbance and Sleep-Related Impairments (PROMIS™). The evaluation refers to seven days before and seven days after surgery.

Results: Comparisons between group "Home" (n=62) and group "Hospital" (n=18) have shown no differences in QoR-15, VAS-S, and PROMIS™. Patients Sleep Diary did not show differences between groups in almost every variable except "Hospital" group patients presented more day napping time the day after surgery (p=0.049). Both groups showed a significant decrease in sleep quality, in 7-day evaluation ("Home": p<0.000; "Hospital": p=0.005).

Conclusion: Our results suggest that sleeping one night at the hospital after ambulatory surgery does not affect significantly the quality of sleep a week after surgery. The procedure per se means a significantly lost quality of sleep during the first week after surgery in both groups (there are no differences between groups). Patient recovery assessment showed more "Hospital" group patients had "poor recovery" at 24 hours, but this is not a significant difference.

Keywords: Sleep; Quality of Sleep; Ambulatory Surgery; Ambulatory Anaesthesia.

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Introduction

Sleep is a complex and dynamic physiological state fundamental to physical (circadian cycle) and mental health [1–3]. Patients undergoing major or minor surgical interventions undergo several physical and psychological changes [4–6]. Postoperative poor sleep quality or "disrupted sleep" is an under-investigated physiological change associated with immune system dysfunction, proinflammatory state, impaired resistance to infection, as well as alterations in nitrogen balance and wound healing [3,7–10], poor sleep quality is also associated with increased in socioeconomic costs due to more extended absences from work and greater use of health care [11]. Multiple investigations have recognised sleep disturbances after minimally invasive surgery, ambulatory surgery and elective surgery [12–15]. These papers agree that sleep alterations are mainly changes in sleep pattern/cycles in the first postoperative days. The changes in sleep cycles are sleep fragmentation, reduced total sleep time and loss of time spend in slow wave sleep (SWS) and rapid eye movement (REM) sleep [12–16]. Suppressed REM sleep is compensated with rebound REM sleep in following nights which is correlated with apnoea, ventricular tachycardia, severe bradycardia [17]. Rebound REM sleep is linked with a threefold increase in hypoxic episodes, obstructive sleep apnoea syndrome, stroke, myocardial infarction, mental status impairment, hemodynamic instability and wound breakdown [17].

Today, Ambulatory Surgery (AS) includes surgical procedures of almost every surgical speciality and in Portugal, patient's hospital stay is limited to a maximum of 24 hours. Therefore some patients may need to sleep one night in a hospital setting [18]. In Braga's Hospital, sleepover was introduced in 2008 to support inclusion of more surgeries (mainly in the evening period), more complex procedures and patients with longer vigilance aiming to reduce the surgical waiting list [19]. Although AS was introduced in Portugal only 20 years ago, in 2006, it was already responsible for 27.1% of all programmed surgical procedures rising to 63.7% in 2016. This fact demonstrates its growing evolution and significant contribution to Portuguese National Health System (data collected by the Annual Report on Access to the National Health System of 2017). Among its numerous advantages, we find lower morbidity, lower mortality and greater patient comfort and satisfaction. Nevertheless, it is not free of complications [5].

Sleep quality is one of the postoperative complications that has been less studied [3,17]. Sleep quality impairment may affect patient's recovery and well-being after surgery, so it should be routinely evaluated [8–10,12,14–16]. Certain postoperative symptoms and signs are already analysed and treated before discharge like pain, nausea, hemodynamic stability, bleeding and dizziness [4,6,13,14,16,20]. Pain and nausea are the most common side effects in the postoperative recovery period [4,6,20].

Currently evaluation of sleep quality is neglected. Hospitalised patients often complain of sleeping difficulty in a hospital setting. This may seem related to endogenous and exogenous factors[9,15,21] including: hospital noise, unfamiliar environment, invasiveness of the procedure, worries about safety, hunger and other symptoms like pain.

With the purpose to get the optimal recovery conditions, quality of sleep should also be an outcome measure and an important variable in patients' recovery. Postoperative sleep disturbances represent a relevant research field, as they may have a significant negative impact on postoperative outcome [14,22].

The primary goal of this study was to evaluate and compare the postoperative quality of sleep in patients submitted to ambulatory surgery who spent a night in hospital and compare it those who returned home on the same day. We wanted to analyse if sleeping one night at the hospital has a significant impact on patients sleep quality and, in the global recovery (physical and psychological) from ambulatory surgical procedures.

Materials and Methods

This prospective, observational and descriptive study with investigator blinded groups included all adults [18-70 years old) submitted to ambulatory surgery at Hospital de Braga, independently of surgery speciality. Patients were asked to fill questionnaires for self-evaluation of sleep (before and after surgery) and quality of recovery after surgery. In sleep and sleep quality assessment, it is possible to use different methods: quantitative parameters such as the number of hours of sleep, sleep latency and number of awakenings, and qualitative parameters like the patient perception of sleep quality [1,9,10,17].

Firstly, due to the subjectivity of self-evaluation questionnaires, to ensure a better quality of data, patients were submitted do a Mini-Mental State Examination (MMSE). Every patient with low score level was excluded (cut-off values appropriated to country language and education level [23,24]. Patients were excluded following the criteria: unable to sign informed consent, motor dependency, cognitive dysfunction or MMSE < 24 (depends on graduation level), age under 18 or older than 70 years old, subjects unable to speak and write Portuguese or incapable of filling questionnaires without help, and if a life threatening complication emerged. Patients on psychiatric medication were excluded if they started a new medication for sleep disturbance recently (<1 month), to avoid potential bias. If surgery was cancelled or transferred to conventional surgery, the patient was excluded. Patients who delivered the questionnaire incomplete tests or non-appropriate answers was considered as invalid.

The questionnaire is divided into five parts: before surgery (T0), 24 hours (T1), 48 hours(T2), 72 hours (T3) and seven days after surgery (T4). Patients were asked to complete each part at the end of the day. After taking informed consent patients immediately filled the first part of the questionnaire (T0), referring to sleep quality for the previous seven days and the night before surgery and baseline overall state for quality of recovery. It took about 10-15 minutes to complete. T1, T2, T3 and T4 questions were self-filled at home. Every question answered at home was also answered at the hospital in T0 (to avoid patients doubts). The patient was requested not to fill the corresponding questionnaire part if he/she forgets to answer in the matching moment/day.

From patients who gave informed consent, demographic and clinical data was analysed. The investigator was blinded as to if the patient did or didn't sleep the first night at the hospital, this was only evaluated later.

Measures

Questionnaire tools

Mini-Mental State Examination: Mini-Mental State Examination (MMS) is a widely used mental state evaluation by many investigators to have a quantitative assessment of cognitive performance. The MMS includes eleven questions and requires only 5-10 min to fill. It has reliability and validity to detect patients with cognitive impairment as well as diseases which cause cognitive and mental impairment [23]. Guerreiro et al. made Portuguese validation and adaptation, more recently, in 2009, Santana revalidated and defined new cut-off scores for different education levels [24].

Quality of Recovery 15: Quality of Recovery 40 (QoR-40) is one of the most applied postoperative recovery questionnaires, and a Quality of Recovery 15 (QoR-15) version was developed, tested and approved. The short version consists of 15 questions and performs well in all dimensions, taking only 2.5 minutes to complete. When compared to QoR-40, QoR-15 provides an equally extensive but less time-consuming evaluation. The QoR-15 questionnaire consists in 15 questions that assess the quality reported by the patient of the postoperative recovery using an 11-point numerical rating scale that ranges from a minimum score of 0 (poor recovery) to a maximum score of 150 (excellent recovery) [25,26].

This questionnaire was to be filled at three different times: in the preoperative period (T0) 24 hours (T1) and 48h postoperatively (T2). It is usually filled out at 0 and 24 hours. In this case, it was also be applied at 48 hours since there are references that in the first 24 hours the QoR results would not correspond to reality. Some patients due to stress and anxiety associated with surgery may have skewed results. Patients with a QoR-15 score lower than total patients QoR-15 (T0) average minus one standard deviation (measurement before surgery) are defined as "poor recovery quality" [26].

Sleep Diary and Visual Analogue Scale – Sleep: One way to evaluate sleep quality is by using scales and complement it with a sleep diary. These instruments are simple, easy to use and could be used by the general practitioner because they allow a good sampling of accurate and repeated measurements of sleep quality with reliability. We chose a protocol of self-evaluation of sleep quality, used in Gögenur et al. (2009) [27]. Sleep quality assessment was made by a questionnaire using both VAS-S and sleep diary for four days (4 measurements). Visual Analogue Scale – Sleep (VAS-S) was applied by asking patients to report how they slept the previous night using a 100 mm visual analogue scale (0 mm is the best conceivable sleep, and 100 mm is the worst conceivable sleep). The visual analogue scales were tested and approved for Portuguese [28].

The sleep diary (SD) was also recorded by patients (at what time they went to bed, when they tried to sleep, how many minutes it took to fall asleep, duration of night-time awakenings, duration of awake time during nighttime and the time they left bed). The time and duration of naps during the day were also counted [27,29].

Patient-Reported Outcomes Measurement Information System - Sleep Disturbance Short Form 8a: The Patient-Reported Outcomes Measurement Information System (PROMIS™) Sleep Disturbance questionnaires allow the patient to self-assess various sleep characteristics such as their quality, depth, and well-being. These questionnaires allow us to carry out an overall evaluation that also includes difficulties in falling asleep, maintaining sleep and perceptions related to adequate and quality sleep. The objective of this questionnaire is to obtain a 7-day evaluation of the sleep quality of the patient in a standardised and quantifiable way. This investigation will be applied before surgery (T0) to obtain the patient's baseline sleep quality and seven days after surgery (T4) to find out if we find differences. All questions from the PROMIS™ sleep disturbances database have already been translated to the Portuguese language [30,31].

The results of the questionnaires were collected in 2 ways: telephone contact (after 7-10 days of surgery) or by mail. All shipping methods had no cost to the patient and identity was kept anonymous.

Ethics

This project was approved by the Ethics Commission of Life and Health Sciences Research Institute and Ethics Committee of Braga's Hospital. Informed and written consent, describing all the procedures and goals of this research protocol, was obtained before any data collection. Moreover, all subjects were informed they could withdraw from participating at any moment during the study.

Analytic and Statistical Analyses

Patients' data was registered in Microsoft Excel 2018, and the statistical analyses were performed with SPSS software (version 25.0, SPSS Inc., Chicago, IL, USA). All variables were tested for normality variables through the Kolmogorov-Smirnov test ($p > 0.05$),

asymmetry and kurtosis (George & Mallery, 2010) and the histograms were also verified. Binomial variables evaluation was done using the Chi-squared test, but if more than 20% of expected counts were verified, Fisher's exact test was applied. For quality of sleep scores and objective sleep parameters comparison in distinct groups, the Independent T-test for normally distributed variables and Mann-Whitney U for variables non-normally distributed was performed. Some variables were compared between different evaluations inside the same group using a paired t-test or Wilcoxon test for normally non-normally distributed variables, respectively. Bonferroni correction was made for multiple comparisons. As for effect size evaluation, Cohen's D or R-value was calculated for parametric and non-parametric analysis, accordingly. Results are expressed as mean ± standard deviation (SD) or as median ± interquartile range (IQR) if normality is not assumed. A p-value <0.05 was accepted as statistically significant.

Results

Demographic Data

Figure 1 shows a representative diagram of patients participating in the study.

From July to September 2018, 152 patients were assessed to participate in the study, but not all were admitted as Figure 1 shows. In total, 33 patients were excluded, 36 did not deliver the answers and 3 delivered invalid questionnaires (total drop out of 72 patients).

In the end, 80 patients met all the necessary criteria, and their demographic characteristics are presented in Table 1. Patients were divided in "Home" (patients who spent the first night at home, n=69) and "Hospital" (patients who spent the first night at the hospital, n=19).

Sample analysis and differences between groups variables were verified. Differences between groups were detected in cardiovascular comorbidity (Fisher's exact test: p=.04, **Φ**c = 0.311) and corticoid use in surgery (Fisher's exact test: p=.034, **Φ**c=0.237).

Measures Results

In order to evaluate the quantitative parameters of patients sleep patients were asked to make a sleep diary for four days (one day before and three after surgery) (Table 2). Intergroup analysis was performed, and almost no differences were found. Differences were only verified in T1, 24 hours after surgery, in which "Hospital" group spent significantly more time napping (n= 17, U=371; p=.049; r=-.22; n=77) than "Home" group.

VAS-S assessment was made with intragroup and intergroup comparisons. VAS-S has shown no differences between groups (Table 3). However, the intragroup evaluation in Table 4 shows a significantly different score every consecutive night in both groups (T0-T1, T1-T2, T2-T3, p<.05). The first night after surgery (T1) was significantly worse than preceding night (T0) for both groups (Home: n=54, Z=-4.108, p<.000, r= -.56; Hospital: n=17, Z=-2.488, p=.013, r=-.60). Comparing first and second night after surgery (T1-T2), the first was also worse for both groups (Home: n=48, Z=-2.945, p=.024, r=-.43; Hospital: n=16, Z=-2.257, p=.024, r=-.56). The third night (T2-T3) show statistical improvement of subjective sleep quality in both groups (Home: n=45, Z=-2.622, p=.028, r=-.39 ; Hospital: n=14 Z=-2.197, p=.028, r=-.59). The preoperative night (T0)

Figure 1 Representative diagram of patients participating in the study (CONSORT DIAGRAM 2010)(32).

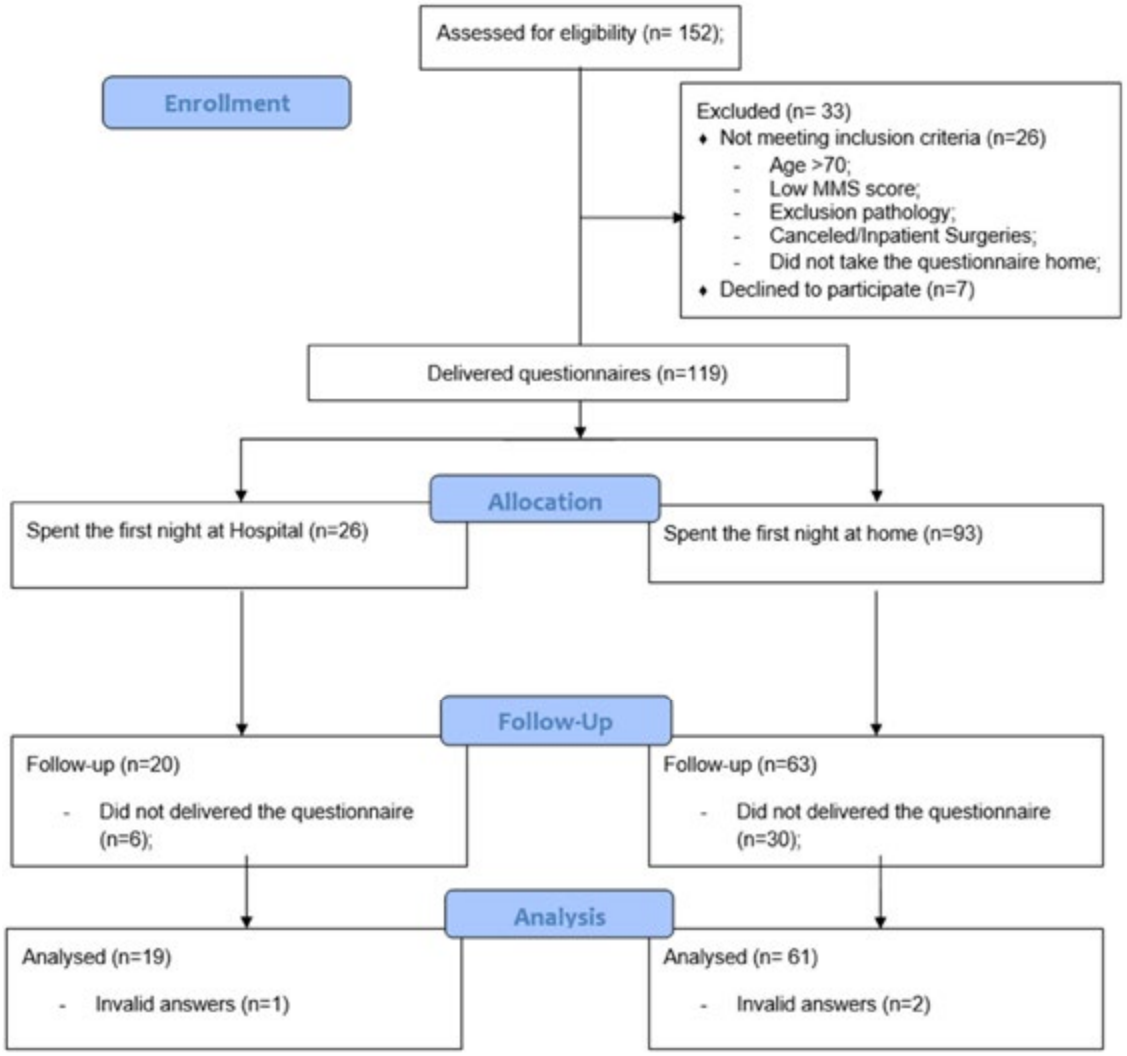

Table I Patient Characteristics.

	Home (n=62)	Hospital (n=18)	Statistical test
Gender (M/F)	21/41	4/14	X2(1) =0.881, p=.348, Φ= 0.105
Age (mean ± SD)	45.5 ± 13,3	39.2 ± 12.2	t(78) = 1.801. p=.076, d= 0.493
IMC (mean ± SD)	25.4 ± 4.4 (n=44)	24.7 ± 3.2 (n=14)	t(55)=0.538, p = .593, d=0.183
Surgery Speciality (n - %)			
- ORL	6 – 9.7%	5 – 27.8%	
- General Surgery	9 – 14.5%	5 – 27.8%	
- Vascular Surgery	9 – 14.5%	5– 27.8%	
- Gynaecology	14 – 22,6%	2 – 11.1%	p =.131, Φc = 0.389
- Ophthalmology	4 – 6,5%	0 – 0%	
- Orthopaedics	14 – 23%	1 – 5.6%	
- Plastic Surgery	3 – 4.8%	0 – 0%	
- Urology	3 – 4.8%	0 – 0%	
ASA (n-%)			
- 1	26 – 41.9%	6 – 33.3%	p=.832, Φc = 0.555
- 2	34 – 54.8 %	12 – 57.5%	
- 3	2 – 3.2%	0 – 0%	
Comorbidities (n - %)			
- Cardiovascular*	20 – 32.3%	0 – 0%	p=.04, Φc = 0.311*
- Venous Insufficiency	6 – 9.7%	0 – 0%	p=.328, Φc = 0.153
- Respiratory	1 – 1.6%	2– 11.1%	p=.125, Φc = 0.209
- Alcohol/Smoking addiction	6 – 9.7%	1 – 5.6%	p=1.000, Φc = 0.061
- Multiple involvement diseases	6 – 9.7%	2 – 11.1%	p=1.000, Φc = 0.020
- Overweight	20 – 32.3%	7 – 38.9%	p=.600, Φc = 0.059
- Endocrine	5 – 8.1%	2 – 11.1%	p=.652, Φc = 0.045
- Dyslipidaemia	11 – 17.7%	3 – 16.7%	p=1.000, Φc = 0.012
- Urology	6 – 9.7%	0 – 0%	p=.328, Φc = 0.153
- Gastrointestinal	3 – 4.8%	0 – 0%	p=1.000, Φc = 0.106
- Musculoskeletal	3– 4.8%	1– 5.6%	p=1.000, Φc = 0.014
- Neurologic	5 – 8.1%	1– 5.6%	p=1.000, Φc = 0.040
- Psychiatric	11 – 17.7%	2 – 11.1%	p=.722, Φc = 0.075
Regular user of sleep drugs (n - %)	10 – 16.1%	4 – 22.2%	p =.506, Φc = 0.067
Surgery background (No/Yes)	31/31	13/5	X2 (1) = 2.783, p=.095, Φ=0.187
Anaesthesia (n - %)			
- General, Balanced	52– 83.9%	16 – 88.9%	
- General, Intravenous	4– 6.5%	1– 5.6%	p=.175, Φc =0.286
- Regional	0 – 0%	1– 5.6%	
- Sedation	6 – 9.7%	0– 0%	

Table continures

Surgery drugs (n - %)			
Corticoid*	49 – 79%	18 – 100%	p=.034, Φc=0.237*
NSAID	55 – 88.7%	18 –100%	p=.340, Φc=0.167
Antiemetic prophylaxis	45 – 72.6%	14 – 77.8%	p=.768, Φc=0.049
Antibiotic prophylaxis	20 – 32.3%	4 – 22.2%	$X^2(1) = 0.669$, p=.413, Φ=-0.091
Benzodiazepine	26 – 41.9%	4 – 22.2%	$X^2(1) = 2.313$, p=.128, Φ= -0.170
Opioid	25 – 40.3%	7 – 38.9%	$X^2(1) = 0.012$, p=.913, Φ= -0.012
Surgery duration (median ± IQR)	49.5 ± 26.0	54.5 ± 30.4	U= 501.5, p=.520, r=-0.073
Hospitalization duration (mean ± SD) *	230 ± 94	1003 ± 147	t(78)=-26.765, p<.000*, d=6.27
Opioid used during recovery period	5 – 8.1%	1 – 5.6%	p = 1.000, Φc = 0.040
Incident during surgery	3 – 4,8%	0 – 0%	p = 1.000, Φc = 0.106
Complication during recovery	5 – 8.1%	1 – 5.6%	p = 1.000, Φc = 0.420

n = sample size; SD = standard deviation; % - percentage; IQR – interquartile range Chi-squared, Mann-Whitney and T-Test were performed. *Significantly differences between groups were verified.

Table 2 Sleep Diary (SD) results.

	Preoperative - T0		First Night - T1		Second Night - T2		Third Night -T3	
	Home (n=62)	Hospital (n=18)	Home (n=59)	Hospital (n=17)	Home (n=56)	Hospital (n=17)	Home (n=53)	Hospital (n=18)
Sleep latency – minutes	16 (15)	15 (29)	15 (20)	21 (14)	10 (20)	22 (20)	15 (20)	18 (21)
Total sleep duration – minutes	402 (85)	443 (73)	442 (121)	480 (110)	447 (117)	463 (88)	467 (120)	464 (94)
No. night awakenings	1.0 (3.0)	0.5 (2.0)	2.8 (2.4)	3.0 (2.5)	2.0 (2.0)	2.0 (2.1)	1.0 (3.0)	2.0 (2.0)
Night awakenings – minutes	5 (15)	0.5(5)	10 (25)	14 (18)	10 (15)	18 (21)	10 (30)	10 (10)
No. daytime naps	0 (0)	0 (0)	0.0 (1.0)	1.0 (2.0)	0.0 (1.0)	0.0 (2.0)	0.0 (1.0)	0.0 (1.0)
Daytime nap duration - Minutes	0 (0)	0 (0)	0 (60)	30 (120)*	0.0 (60)	0.0 (120)	0.0 (30)	0.0 (33)

Values are given as median (IQR) or mean (SD) depending if Normal Distribution is verified. Mann-Whitney test was performed. *Significant differences are indicated for intergroup comparisons.

Table 3 Sleep Diary (SD) results.

	Preoperative - T0		First Night - T1		Second Night - T2		Third Night -T3	
	Home (n=61)	Hospital (n=18)	Home (n=54)	Hospital (n=17)	Home (n=49)	Hospital (n=16)	Home (n=49)	Hospital (n=14)
VAS -S median (IQR)	4.0 (3.0)	4.0 (3.0)	5.5 (6.0)	6.0 (4)	4.0 (4.0)	3.5 (4.0)	2.0 (4.0)	2.0 (3.0)
Intergroup evaluation	U= 535.0 p= 0.866 r = -.02		U= 422.5 p=0.62 r=-.06		U=358.0 p=0.596 r=-.07		U=297.0 p=0.434 r=-.10	

n – number; IQR – interquartile range; r – effect size. Mann-Whitney test was performed.

Table 4 Visual Analogue Scale – Sleep (VAS-S) Intragroup comparison results.

	T0 – T1		T1 – T2		T2 – T3	
	Home (n=54)	Hospital (n=17)	Home (n=48)	Hospital (n=16)	Home (n=45)	Hospital (n=14)
Intragroup evaluation	Z=-4.108[b] p<.000† r = -.56	Z=-2.488 b p=.013† r = -.60	Z=-2.945[c] p= .024† r =-.43	Z=-2.257[c] p =.024† r =-.56	Z=-2.622[c] p=.028† r =-.39	Z=-2.197[c] p=.028† r =-.59

n – number; IQR – interquartile range; b –value decreased; c – value increased. Wilcoxon test was performed. † - Significant differences are indicated for intragroup comparisons.

compared to the second (T2) and third night (T3) show no statistical difference between them (T0-T2, T0-T3). Finally, the third night had statistically better sleep quality then first night (T1-T3) (Home: n=47, Z=-3.964, p< .000, r=-.58; Hospital: n=17, Z=-2.534, p=.011, r=-.68).

QOR-15 is used to analyse a patient's recovery. Just as mentioned earlier, the cut-off value for "poor recovery" was obtained through calculation of average minus one standard deviation of total patients in baseline score, T0, which the cut-off result was 122. Lower scores mean worst overall recovery. No differences between groups were observed in T1 and T2 (Table 5).

Twenty-four hours after surgery (T1), an analysis between who did or didn't spend the night at the hospital showed more of patients classified as "poor recovery": Home (n=61) 65.6% and Hospital (n=18) 77.7%. However, this difference wasn't statistically significant ($X^2(1) = 0.957$, p=.328, $\Phi = 0.11$). At forty-eight hours of recovery (T2), "Home" (n=59) and "Hospital" (n=18) groups showed: 45.7% vs 44.4%, also no statistical difference was found ($X^2(1) = 0.010$, p=.922, $\Phi = 0.11$).

To better understand the different scores obtained in each day, we explored each question score to see if Hospital sleepover would affect recovery aspects (Table 6). (Near here)Separate questions of QoR-15, have significant differences in T1 and T2. Patients who slept at hospital demonstrate significantly worst score for "Been able to enjoy food" at T1 (n=79 ,U=346, p=.009, r=-.30) and T2 (n=77, U=297.5, p=.001, r=-.38) and "Able to communicate with family or friends" (n=79, U=298.5, p<.001, r=--.42) at T1.

PROMIS™ was the second measure we used to evaluate patient sleep quality. The baseline is T0 (evaluating seven days before surgery) and postoperative week T4. No differences between Home and Hospital group were found in the quality of sleep assessment in the week before surgery and after surgery (Table 7). (Near here)Nevertheless, an intragroup analysis shows significant differences in both groups between total PROMIS™ score in both groups at T0 (Home score: M=45.0, SD=6.23; Hospital group score: M=41.5, SD=7.91) to T4 (Home score: M=49.3, SD=9.13; Hospital group score: M=46.1, SD=7.02). This finding means that in both groups, the quality of sleep for seven days after surgery was worse than preceding week (Home: n=62, z=-3.51, p<.001, r=-.45; Hospital: n=18, z=-2.81, p=.005, r=-.66).

Discussion

Results discussion

Sleep deprivation has a potentially deleterious effect on postoperative recovery (8). When a patient undergoes surgery, it is crucial that the patient has optimal recovery conditions. Bad sleep quality affects healing (2,3), and also, Yilmaz et al. showed that sleep quality plays a crucial role in patients' satisfaction (21). If the patient is satisfied, recovery becomes easier with better cooperation, among other advantages (21). In this small study, self-reported questionnaires have shown that patients have sleep quality impairment, and so we can assume that in this area, there is space for recovery improvement, even for patients that sleep the first night home.

The primary goal was to compare sleep quality and recovery of patients who spent the night at the hospital in the first night and those who slept at home. We conclude that, in this sample, no significant differences were detected in patients who did or didn't stay the first night at the hospital. Though, a more detailed investigation showed small differences between the group's results and sleep. Sleeping the first night at the hospital proved to increase nap duration in the next day after surgery although similar sleeping times were observed in both groups, which can be an indirect sign that sleep was not as good/refreshing as the patients who slept at home. VAS-S could not confirm this assumption in T1, as both groups scored lower sleep quality but not statistically different between them. The first night was the worse in the postoperative but was independent of patients sleep location suggesting sleep quality is not as good as usual, at least for patient's self-evaluation perception. Due to insufficient data initially, we intended to analyse certain recovery variables like pain, and another patient conditions could influence patient sleep and are typically registered by nurses, yet most of the times patient data did not have any information regarding these variables and so, it was not possible to do it.

As for the recovery quality assessment, overall QoR-15 score shown no significant difference between groups in the 48 hours evaluated. There were no statistical differences, even though a superior percentage of "poor recovery patients" was present in "Hospital" patients at T1 (24 hours after surgery): Home with 65.6% and Hospital group with 77.8%. This difference between groups suggests bigger and balanced samples with the same size would give more information and confirm/dismiss some apparent differences. A deeper analysis of QoR-15 proved that two aspects for the quality of recovery were significantly worst in patients who spent the first night at the hospital: being able to taste the food and being able to speak with familiars and friends. The first difference can be explained because patients have the first meals after surgery at the hospital. Several aspects like the hospital environment can cause anxiety, nausea and problems with appetite, and additionally, hospital food has traditionally an image problem (33). Just like sleep, nutritional status is essential for recovery; this is proving to be another important aspect of studying. The problem with not "being able to speak with familiars and friends" as much as patients would like can be linked to hospital visit restrictions. By the Braga's Hospital rules, patients

Table 5 Visual Analogue Scale – Sleep (VAS-S) Intragroup comparison results.

	Preoperative - T0			First Night - T1		Second Night - T2	
	Home (n=62)	Hospital (n=18)	Total (n=80)	Home (n=61)	Hospital (n=18)	Home (n=59)	Hospital (n=18)
Average (SD)	134 (13.9)	130 (12.3)	133 (10.9)	113 (17.6)	103 (20.8)	119 (22.1)	112 (25.8)
% Patients with poor recovery				65.6%	77.8%	45.7%	44.4%
	Z = -1.21 p= .23 r = -.14			Z = -1.57 p= .117 r=-.18		Z = -0.90 p= .367 r=-.10	

n -number; SD - standard deviation; % - percentage; The cut-off value for "poor recovery failure" is this sample is <122.
Independent T-test was made to analyse differences between groups.

Table 6 Quality of Recovery 15 questions results.

	Preoperative - T0		First Night - T1		Second Night - T2	
Question (0-lowest/worst; 10-highest/best)	Home (n=62)	Hospital (n=18)	Home (n=61)	Hospital (n=18)	Home (n=59)	Hospital (n=18)
1 - Able to breathe easily	10 (0.0)	10 (2.0)	10 (2.0)	9.0 (3.0)	10 (0.0)	10 (3.0)
2 - Been able to enjoy food	10 (0.0)	10 (1.5)	10 (2.0)*	7.5 (6.0)*	10 (1.0)*	8.0 (9.0)*
3 - Feeling rested	8.5 (3.3)	7.0 (5.3)	8.0 (5.0)	7.5 (3.0)	8.0 (4.0)	8.0 (4.0)
4 - Have had a good sleep	9.0 (3.0)	7.0 (4.3)	6.0 (5.0)	5.5 (5.0)	7.0 (5.0)	7.5 (6.0)
5 - Able to look after personal toilet and hygiene unaided	10 (0.0)	10 (0.0)	10 (2.0)	9.0 (4.0)	10 (2.0)	10 (1.0)
6 - Able to communicate with family or friends	10 (0.0)	10 (0.0)	10 (0.0)*	8.5 (3.0)*	10 (0.0)	10 (1.0)
7 - Getting support from hospital doctors and nurses	10 (0.0)	10 (0.0)	10 (1.0)	10 (0.0)	10 (2.0)	10 (1.0)
8 - Able to return to work or usual home activities	10 (0.0)	10 (0.0)	3.0 (5.0)	2.0 (5.0)	5.0 (6.0)	4.5 (6.0)
9- Felling comfortable and in control	10 (2.0)	10 (2.0)	8.0 (5.0)	5.0 (6.0)	8.0 (5.0)	9.0 (5.0)
10 - Having a feeling of general well-being	10 (2.0)	9.5 (2.3)	8.0 (6.0)	5.0 (4.0)	8.0 (5.0)	7.5 (5.0)
11 - Moderate pain	10 (0.0)	10 (2.0)	5.0 (6.0)	5.0 (6.0)	8.0 (6.0)	5.0 (6.0)
12 - Severe pain	10 (0.0)	10 (0.0)	10 (4.0)	10 (2.0)	10 (2.0)	10 (2.0)
13 - Nausea or vomiting	10 (0.0)	10 (0.0)	10 (0.0)	10 (2.0)	10 (0.0)	10 (3.0)
14 - Feeling worried or anxious	5.0 (5.0)	3.5(4.5)	8.0 (6.0)	7.5 (6.0)	9.0 (4.0)	8.5 (6.0)
15 - Feeling sad or depressed	10 (5.0)	10 (2.8)	10 (4.0)	10 (6.0)	10 (3.0)	10 (6.0)

n- number; Value (median; IQR). Mann-Whitney test was performed. * Significant differences are indicated for intergroup comparisons.

Table 7 Patient-Reported Outcomes Measurement Information System (PROMIS™) Sleep Disturbance 8a Short form.

	Preoperative Week - T0		Postoperative week – T4	
Question (0-lowest/worst; 10-highest/best)	Home (n=62)	Hospital (n=18)	Home (n=62)	Hospital (n=18)
1. My sleep quality was	2.5 (1.0)	2.0 (1.0)	3.0 (1.0)	2.0 (1.0)
2. My sleep was refreshing	2.0 (1.0)	2.5 (1.0)	3.0 (2.0)	3.0 (1.0)
3. I had a problem with my sleep	2.0 (2.0)	1.0 (1.0)	2.0 (2.0)	2.0 (2.0)
4. I had difficulty falling asleep	1.5 (1.0)	1.0 (0.0)	2.0 (2.0)	2.0 (2.0)
5. My sleep was restless	1.0 (2.0)	1.0 (2.0)	2.0 (2.0)	1.5 (2.0)
6. I tried hard to get to sleep	1.0 (1.0)	1.0 (0.0)	2.0 (2.0)	1.0 (2.0)
7. I worried about not being able to fall asleep	1.0 (2.0)	1.0 (0.0)	1.5 (2.0)	1.0 (1.0)
8. I was satisfied with my sleep	3.0 (1.0)	2.0 (2.0)	3.0 (2.0)	2.5 (1.0)
Total (mean ± SD) T-Score	45.0 ± 6.23	41.5 ± 7.91	49.3 ± 9.13†	46.1 ± 7.02†

N – number; SD – Standard deviation; † - Significant differences are indicated for intragroup comparisons.

who spend the night at the hospital can have only one family member for one hour at his bedside. The ambulatory surgery concept implies less than twenty-four hours of hospitalisation, and hospital rules defined exclusively 1-hour visit. This visit duration seems not to be satisfactory to patients.

PROMIS™ Sleep Disturbance Short Form 8a was the core tool used to evaluate sleep quality. As referred before, no differences between groups were found — however, both groups showed statistical differences, by the quality of sleep decreasing significantly in the week after surgery. An analysis of each question/parameter evaluated in PROMIS™ also shown no differences between groups. We conclude that a negative impact of hospital sleepover was not verified. The already described sleep impairment in the postoperative period by several studies (12,13,17,21,22) was confirmed in both groups patients, and no particular difference was noticed even evaluating each question of PROMIS™.

Although results between groups globally show little differences, the fact is that small differences were found between groups. We know groups were not perfectly matched because they display different sample sizes and statistical differences in two variables (corticoid use during surgery and cardiovascular comorbidity) and we recognise that as a study limitation.

This study showed that we can introduce policies that are aimed to improve patient's quality of recovery and satisfaction after AS. Group differences in Sleep Diary were not prominent, but patients must be informed that they will be more sleepy in the day after the surgery, and through the results in Qor-15, patients can be better instructed to why they cannot be more time with family or friends during a hospital stay.

Studies analysing the effects of sleeping just one night at the hospital were not found so we could not compare with other results. However, the effect of surgery and anaesthesia in sleep pattern was already studied (12–14,16,21,22,33). All of them demonstrated sleep problems/decrease sleep quality after surgery, and some of them demonstrated hospitalised patients sleep had worse sleep quality mainly due to several environmental factors and endogenous factors as pain, and most studies had more extended hospital stays. An overall sleep quality decrease was also found in our study, which agrees with other studies.

Nevertheless, our results show there is no significant adverse impact in patients sleep if they spend the first night at the hospital. This result may not be verified in other hospitals because the surgical unit in which study was developed could have a better environment for resting or/and one night was not enough to make much difference in the postoperative week sleep quality. More studies in different environments can be made.

It is important to find why patients have this sleep quality decrease and what causes may be responsible for this and if they are preventable. Kain and Caldwell-Andrews already demonstrated postoperative sleep disturbances are not directly proportional to pain as and can be more likely linked do psychological aspects like anxiety (13). Opioid use and personality traits were already investigated (13,22) and were not a part of this investigation.

Adverse effects in sleep pattern in elderly patients with multiple comorbidities may be much more significant. As we already been investigated, postoperative delirium in elderly patients could be a consequence of the postoperative sleep disturbances (22).

Limitations

This comparison, hospital vs home first-night sleepover was not found in other investigations. However, these results have some limitations that must be mentioned. Mainly, the sample size and groups. Like many other similar studies, a larger sample of participants would make the analysis more precise, and groups should be more balanced to avoid type II errors (24). The group's number is unbalanced, and it is a consequence of investigator blind method, and there are more patients not sleeping at the hospital (hospital always should favour non-sleepover of patients (18)), so this effect/bias was inevitable in this methodology. Although sample analysis shows almost no differences between them in demographic data, ideally both groups have the same number and no differences in all variables.

A prospective, randomised, blinded study would help to avoid these limitations. Besides, self-reported questionnaires always associated with response bias and are more limited than objective measurement. We must recognise self-report questionnaires are not the most objective tools for a precise sleep evaluation (34). The most complete and objective evaluations of sleep include polysomnography (Gold Standard), electroencephalographic spectral analysis and actigraphy (1). However, these methods of evaluation require a better logistic capacity as well as more patient availability because of their duration. They are more expensive and demand more complex application and evaluation (4). On the other hand, interviews, sleep diaries and standardised validated tools filled out by the patient himself (self-report) or by an evaluator also provide useful and informative data (15). Quality of sleep is also a subjective perception of how the person perceived sleep, and according to Rosenberg, it is possible to evaluate the subjective sleep quality by merely asking the patient how he perceived his sleep (22). Additionally, we cannot guarantee that patients filled the questionnaires at the correct time, except for T0 and T4, which can be a substantial flaw. Still, patients were asked not to fill in out of time.

Finally, this study's purpose was to have a general perception of sleep, independently of the surgery or medical area, and although group analysis showed no significant difference between groups, patients were submitted to different surgical procedures. Ideally, the same number of patients from each speciality should be analysed, and the effect of different surgeries (e.g. septoplasty can cause more sleeping disturbance than hernioplasty due to anatomic surgery location).

Future considerations

Once again, significant quality of sleep decrease was proved after surgery, even in the ambulatory setting and the physiologically (better recovery) and psychologically (more satisfaction) advantages of good sleep after surgery are undebatable. For the future, we suggest investigating if specific measures (non-pharmacological or/and pharmacological) like decreasing anxiety levels or sleep inductors (i.e. zolpidem) can be useful for improving patients postoperative sleep and efficacy has overall benefits. there should be a report about sleeping problems going unnoticed by nurses and are not recorded (6), it would be interesting to test the use of VAS-S routinely.

Conclusions

Sleeping one night at the hospital after ambulatory surgery does not affect significantly the quality of sleep in this population. Both groups (sleeping at hospital and home) had significant sleep quality impairment during the first week after surgery. Sleeping the first night at the hospital does not worsen sleep quality after ambulatory surgical procedures. As for the quality of recovery, both groups had the lowest score 24h after surgery (T1). A higher percentage of patients with poor recovery was found in the "Hospital" group but turned out to be not a statistically significant difference. Although the hospital sleepover is not affecting the patient's recovery negatively, it can still improve to make patients sleeping and recovery conditions better.

We suggest that there should be a regular assessment of sleep quality in ambulatory surgery centres, as early identification and treatment of this disturbance can improve overall patient healing and satisfaction.

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Norwegian Report 2018–2019

The Norwegian Association of Ambulatory Surgery (NORDAF) is a lively organization with about 229 paying members. The board is active and committed. We meet 3 times per year and participate in meetings promoting day surgery in hospitals around the country.

Our organization has its own Facebook account with 655 followers, a web site: www.nordaf.no, and a newsletter in paper (Dagkirurgisk Forum), that we send to all our members twice a year.

Our annual meeting is in January every year, and this year we had 309 participants and 25 exhibitor companies. The meeting got "all time high" evaluation score.

Our annual meeting is always divided in 3 main sessions:

1. Political session
2. New trends and development
3. "When something (almost) goes wrong"

This year, at our annual winter meeting we had the pleasure of having Carlos Manuel Vieira Magalhaes, president of the Portuguese Day Surgery Association, Hospital Santo Antonio/ Instituto Cuf Porto, and the host of this year 13th International Congress of Ambulatory Surgery in Porto, as our international lecturer.

In the political session, we had the secretary of health Anne-Grethe Erlandsen, how concluded that NORDAF is working for what our government wants us to do – more ambulatory surgery. This together with the change in our DRG-refund system we experienced last year, benefitting procedures done as day surgery, shows us we have good reason to believe that Ambulatory surgery can increase over the next years to come.

We are in close contact with our neighboring countries ambulatory associations. Members of both the Swedish and Danish association joined our annual meeting, and Norwegian board members were present at both the Danish Annual meeting and the Swedish Annual Meeting in May.

Our president, Mariann Aaland participated in a TNT course/ workshop i Beograd, Serbia this year, and is now in at the final of a 5 years long project in Moldova as a representative of NORDAF as well as representing the Department of Health.

The day surgery concept is doing quite well in Norway, but we still see variations between the different hospitals.

We have national tools, providing us with data comparing the population's consumption of health services in different geographic areas – it reports on 12 different day surgery procedures, www.helseatlas.no.

In addition to this, there is another national web site:

https://www.helsedirektoratet.no/statistikk/statistikk/samdata-spesialisthelsetjenesten/bruk-av-tjenester-i-somatikken

which is an analysis and a managing tool, considering method and variation in the service given.

This makes different practice from one hospital to another transparent, and useful in benchmarking national standards. Both sites are retrospective reports.

Development in Denmark

DANSK SELSKAB FOR DAGKIRURGI

In many areas, Danish day surgery is already one of the best in the world, but there is far too much diversity in the distribution and implementation of the best methods. Thus, there are numerous examples of the fact that the preparation and implementation of a good course in one hospital is not even widespread to the neighboring hospital (in the same region).

In DSDK, we have tried to elucidate this problem more specifically by obtaining data on 10 selected surgical procedures within the specialties of abdominal surgery, orthopedic surgery, ENT surgery, gynecology and urology. The data obtained indicate the percentage of the interventions performed as day surgery at the individual hospital / hospital, ie. hospitalized / printed on the same date.

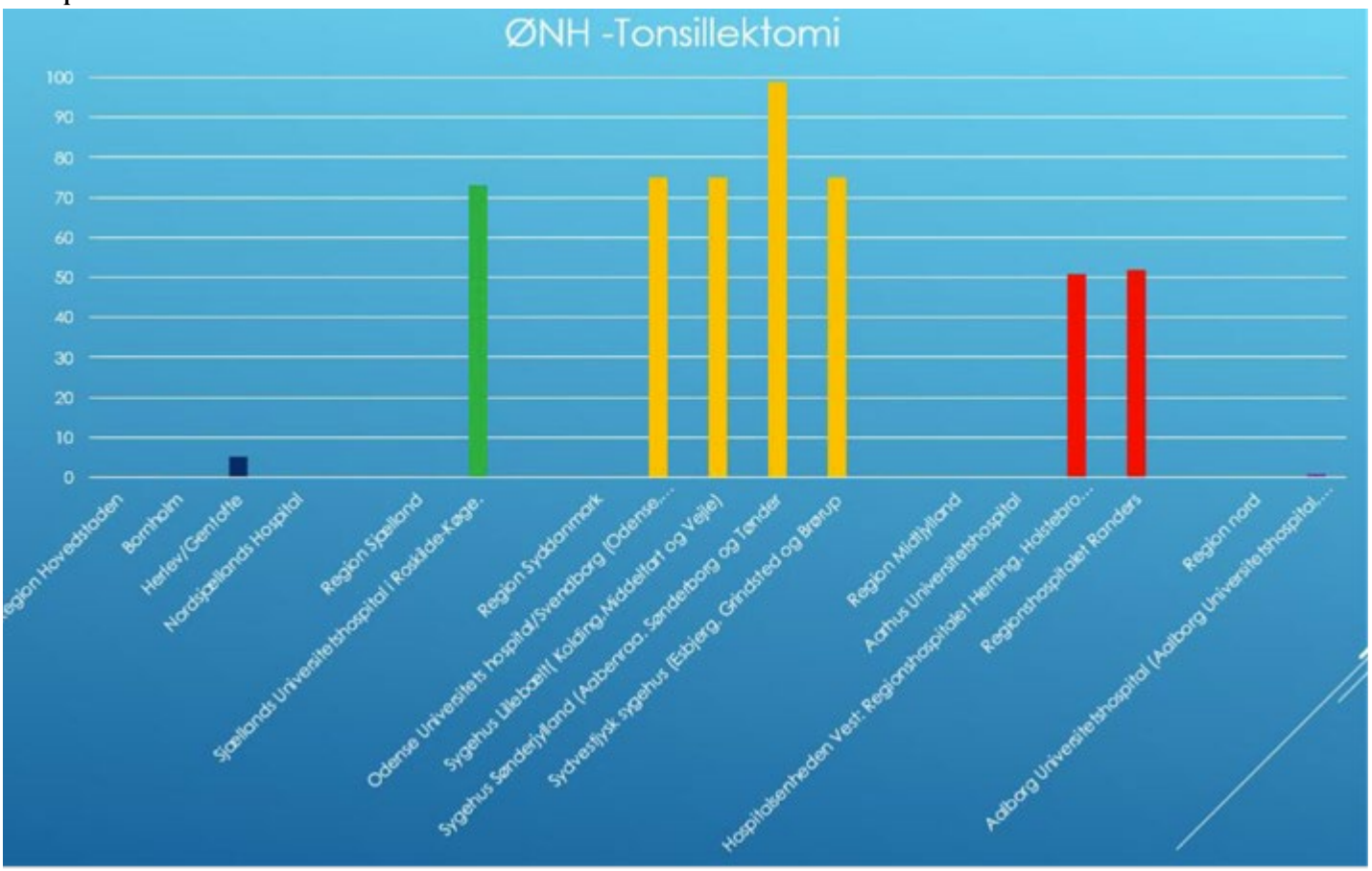
The results show large differences both interregionally and intraregional. Thus, there are several examples of an intervention being performed respectively. 100% and 0% outpatient.

Diversity is so great that it can´t be explained solely on the basis of either professional or local / regional conditions. You can guess a lot about the causes of the variation, but **data itself generates more questions than explanations**.

To move on, we have decided to set up a steering committee consisting of stakeholders from surgical companies, the Association of Practicing Specialists, the Danish Society for Anaesthesiology and Intensive Medicine, Danish Regions, the Regional Clinical Quality Development Program (RKKP) and DSDK.

The aim of the steering committee is to first discuss the possibilities for **creating a database-based quality boost within Danish day surgery**, possibly supported by other activities, eg symposia / workshops. In the long term, the steering committee will be opened to other stakeholders.

example



***Ambulatory Surgery* is the official clinical journal for the International Association for Ambulatory Surgery.**

Ambulatory Surgery provides a multidisciplinary international forum for all health professionals involved in day care surgery. The editors welcome reviews, articles, case reports, short communications and letters relating to the practice and management of ambulatory surgery.

Topics covered include basic and clinical research, surgery, anaesthesia, nursing, administrative issues, facility development, management, policy issues, reimbursement, perioperative care, patient and procedure selection, discharge criteria, home care. The Journal also publishes book reviews and a calendar of forthcoming events.

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