ORIGINAL ARTICLE

Telephone pre-anaesthesia assessment for ambulatory breast surgery

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Objective To review the efficacy of telephone preoperative anaesthesia assessment in patients undergoing ambulatory breast surgery.

Design Retrospective study.

Setting Day Surgery Centre, Tung Wah Hospital, Hong Kong.

Patients Patients with breast lumps to be excised were seen by dedicated breast surgeons and informed of day procedures and preoperative anaesthesia assessment. Those who fulfilled the selection criteria of age (18-45 years) and American Society of Anesthesiologists grade I were recruited for telephone anaesthesia assessment preoperatively. The patients were contacted by senior day surgery nurses via telephone before the scheduled operation date, and information was retrieved using a standard assessment form. Prospective data from January 2002 to December 2007 were analysed.

Main outcome measures Proportion of patients who successfully underwent day surgery after telephone preoperative anaesthesia assessment.

Results Of 482 patients receiving ambulatory surgery for breast lumps during the study period, 283 patients were selected for preoperative telephone anaesthesia assessment. Five (2%) patients with problems identified by this method underwent further assessment at the Day Surgery Centre; the remaining 278 (98%) required no further assessment and proceeded to have a successful day surgery procedure.

Conclusion Preoperative anaesthesia assessment by telephone is an effective means of preoperative assessment in selected patients undergoing ambulatory breast surgery.

Introduction

Ambulatory surgery is being practised widely in the United States and Europe. It is estimated that up to 65% of all surgical procedures are performed on a day case basis in North America,[1] while Patil and Wong[2] estimated that only about 15% of surgical procedures under general anaesthesia are performed as day cases in Hong Kong. A more recent study, however, revealed that a high proportion of local Chinese patients prefer day case surgery if feasible for appropriate procedures.[3]

It has been shown in previous studies that patient selection is of paramount importance in ambulatory surgery.[4-7] The traditional way of admitting patients the day before surgery for anaesthetic assessment and preoperative preparation is no longer routine. Instead, patients are triaged into different risk groups according to their medical history and the expected invasiveness of the planned surgical procedure. The concept of the pre-anaesthesia assessment clinic (PAC) has evolved since 1980s.[8,9] It is coordinated by anaesthesiologists, surgeons, a team of registered nurses, and in some centres, physicians. History taking and physical examination are performed in the PAC, and laboratory tests are ordered when necessary. Coordination between the surgeon, anaesthetist, and physician is important in optimising the condition of the patient preoperatively. Patients are typically assessed within 1 month prior to the scheduled operation day.

Excision of breast lumps is one of the most common day surgery procedures. Preoperative anaesthesia assessment (PAA) is necessary as for any other day procedures. For young working patients, however, out-patient PAC may be demanding in terms of time. Telephone PAA was introduced at the Tung Wah Hospital Day Surgery Centre (DSC) in 2002. The rationale was to (1) provide more efficient one-stop ambulatory care in the DSC, (2) reduce the number of visits by patients and thus time off from work, and (3) allow more

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非住院式乳腺外科手術的麻醉前電話評估

目的 回顧接受非住院式乳腺外科手術的病人進行麻醉前電話評估的效用。

設計 回顧研究。

安排 香港東華醫院的日間外科手術中心。

患者 外科醫生首先會見接受乳腺良性腫瘤切除的病人，並講解有關手術及術前麻醉評估的程序。本研究分析2002年1月至2007年12月的預期數據，選擇年齡由18至45歲，並屬美國麻醉醫師協會I級的病人。高級日間護士會在病人手術前先進行電話評估，並用標準評估表格取得他們的資料。

主要結果測量 接受麻醉前電話評估並成功接受非住院式乳腺外科手術的病人的比例。

結果 研究期間，共482位病人進行非住院式乳腺良性腫瘤切除術，其中283位接受麻醉前電話評估。電話評估後，有5人（2%）需要在日間外科手術中心作進一步評估，其餘278人（98%）可直接進行非住院式乳腺外科手術。

結論 麻醉前電話評估有效地為非住院式乳腺外科手術的病人進行術前評估。

BOX 1. Criteria for selection of patients for day case surgery (Day Surgery Centre, Tung Wah Hospital)

Surgical
- Operating time of <90 minutes
- Operation unlikely to cause loss of independence or toilet function
- Operation unlikely to cause severe morbidity, haemorrhage, pain, nausea, or vomiting
- No special postoperative care required
- Informed consent to day surgery

Anaesthesia
- ASA* grade I or II
- No adverse anaesthetic history

Social
- Home access to telephone, lift, indoor toilet and bathroom
- Competent adult to accompany home and take care of the patient for 24 hours
- Lives within 1 hour's travel to hospital

* ASA denotes American Society of Anesthesiologists

effective use of resources. In this study, the efficacy of telephone PAA was reviewed in patients undergoing ambulatory breast surgery.

Methods

The study was performed in the Tung Wah Hospital DSC, Hong Kong and referred to the period January 2002 to December 2007. During those months, patients with breast lumps scheduled for excision were seen by dedicated breast surgeons in the out-patient clinic. Those deemed suitable for day surgery (ie American Society of Anesthesiologists [ASA] grade I and II patients) were referred to the DSC. Box 1 shows the selection criteria for day case surgery. After inclusion of the relevant patients on the operation booking list, DSC nurses reviewed the respective clinical records. Patients aged 18 to 45 years and conforming to ASA grade I criteria were assigned to telephone PAA, while those who did not fulfil these criteria had PAC assessment. Patients diagnosed to have breast cancer were excluded. Recruited patients were contacted 1 to 30 days before the scheduled operation date, by one of the two senior day surgery nurses with operating theatre experience for anaesthesia assessment by telephone. This involved using a day surgery assessment form (details retrieved are shown in Box 2). Additional information regarding body weight and height were also documented. In addition to information from patients, preoperative counselling was given and questions related to anaesthesia or day surgery were all addressed during the telephone PAA. The completed assessment forms were sent to the anaesthetist-in-charge for final assessment. Blood tests, chest radiographs, and electrocardiograms were not routinely performed unless clinically indicated. Patients were called back to have PAC assessment if (1) further investigations were deemed necessary, (2) potential anaesthetic problems were anticipated, (3) a medical problem requiring more detailed assessment was anticipated, and (4) they opted to have in-depth discussion with anaesthetist in addition to the telephone PAA. In the PAC, a further history was obtained and physical examination was performed by the anaesthetist. Laboratory tests and referral to other specialties was undertaken if clinically indicated. On the other hand, patients proceeded to day surgery if no problems were identified in the telephone PAA. Patients were seen by anaesthetist and had a physical examination on the day of surgery. Each patient signed the informed consent regarding anaesthesia on the day of surgery. In this study, only patients who had telephone PAAs were reviewed.

Results

During the study period, of 482 patients receiving ambulatory surgery for breast lumps, 283 (59%) were selected for telephone PAA. In these selected patients, 278 (98%) required no further assessment and proceeded to the day surgery procedure successfully, whereas five (2%) patients identified with problems had further assessment at the DSC. Among the remainder, three were obese (body mass index of >25 kg/m^2) and two had underlying medical problems warranting further assessment. Of these five patients, one had surgery as an in-patient while the other four subsequently underwent day surgery. The former had obesity related to a medical problem. By contrast, three other patients who 'passed' the telephone PAA underwent in-patient surgery for psychosocial reasons. Among the 278 day surgery patients, 276 were discharged on the same day; the remaining two patients stayed for observation, one

due to unexpected surgical findings and one following postoperative hypotension. No operation was cancelled on the scheduled day of surgery (Table).

Discussion

In this study, only 2% of ASA grade I patients required PAC assessment and the majority of patients (98%) proceeded to day surgery after telephone PAA. The majority of these patients were discharged on the same day. A French study[10] comparing patients who underwent telephone PAA versus standard preoperative assessment showed no significant difference between the groups in terms of cancellation of procedures (whether based on medical and psycho-sociological criteria). Telephone PAA has also been studied in paediatric ambulatory surgery, in which parents were contacted by nurses; 2.8% of these patients also underwent a PAC assessment.[11,12]

As ambulatory anaesthesia is becoming more prevalent, its implementation for obese patients has prompted concerns.[13] Many patients with obesity have associated medical conditions that may be unnoticed, including hypertension, congestive heart failure, and obstructive sleep apnoea. Obese patients are reported to have increased rates of peri-operative respiratory events,[13] and yet ambulatory anaesthesia is possible in the fit obese when carried out cautiously. According to the definition of ASA grades, patients with obesity can still be classified as grade I, if they do not have systemic disease. One of the purposes of this study was to identify which patients should be excluded. Our study showed that telephone PAA alone may not be sufficient to assess obese patients. This should be taken into consideration in selecting patients for telephone PAA, as obese subjects may warrant further assessment.

Controversies exist in regard to the timing of preoperative evaluation and whether all day surgery patients need out-patient PAC assessment. In general, patients undergo PAC screening 1 to 30 days before the scheduled day of surgery. There is no strong evidence in the literature on the optimal timing for pre-anaesthesia evaluation. In a comparative study of early versus day-of-surgery pre-anaesthesia evaluation of 63 ASA grade I and II patients undergoing ambulatory gynaecological procedures,[14] there was no difference between the two groups in terms of anaesthetic and analgesic requirements, anxiety levels, or satisfaction score. However, these investigators did not examine day-of-surgery delay and cancellation rates. Telephone PAA can be viewed as a shortcut to day-of-surgery pre-anaesthesia evaluation in that the interview is conducted on the telephone, while leaving physical examination to the day of surgery. Telephone PAA has the advantage of identifying potential medical, anaesthetic, or social problems that may preclude patients from day surgery at an early stage, and theoretically lead to fewer day-of-surgery

BOX 2. Day surgery pre-anaesthesia assessment form (Day Surgery Centre, Tung Wah Hospital)

Clinical symptoms
1. Cardiovascular system
   - Chest pain
   - Shortness of breath (exercise tolerance in terms of flight of stairs)
   - Dizziness
2. Respiratory system
   - Chronic cough or sputum production
3. Haematological system
   - Easy bruising, anaemic symptoms
4. Neurological system
   - Severe headache, seizure

Medical history: chronic medical problems that required medical attention*

Anaesthetic history
1. History of anaesthesia and any adverse events from anaesthesia
2. Family history of anaesthetic problem
3. Any restrictions in range of neck movement and mouth opening
4. Medication history
5. Allergic history

Social history
1. History of smoking and alcohol consumption
2. Travelling time to hospital from home
3. Home access to telephone, lift, indoor toilet and bathroom
4. Competent adult to accompany home and take care of patients for 24 hours

Others
1. Pregnancy history and last menstrual period for female patients
2. Any denture or hearing aid
3. Any pacemaker, implant, or prosthesis

* Hypertension, ischaemic heart disease, diabetes mellitus, liver disease, kidney disease, epilepsy, haematological disease, thyroid disease, etc

TABLE. Patient outcomes after telephone preoperative anaesthesia assessment

Year	No. (%) of patients*			Outcome (%)	
	Telephone PAA	No PAC assessment after telephone PAA	PAC assessment after telephone PAA	Day surgery successful	Same-day discharge
2002	67	64 (96)	3 (4)	66 (99)	66 (99)
2003	40	40 (100)	0 (0)	40 (100)	39 (98)
2004	41	40 (98)	1 (2)	41 (100)	41 (100)
2005	43	43 (100)	0 (0)	40 (93)	39 (91)
2006	61	61 (100)	0 (0)	60 (98)	60 (98)
2007	31	30 (97)	1 (3)	31 (100)	31 (100)
Total	**283**	**278**	**5**	**278 (98)**	**276 (98)**

* PAA denotes preoperative anaesthesia assessment, and PAC pre-anaesthesia assessment clinic

delays or cancellations than with day-of-surgery pre-anaesthesia assessments. In addition, preoperative counselling can be carried out during telephone PAA. This certainly decreases the workload of the PAC and reduces the number of hospital visits.

In this study, telephone PAA was conducted by senior day centre nurses. The role of the nurse in day surgery has been explored.[15] Vaghadia and Fowler[16] showed that the sensitivity and specificity of a nurse-based screening model was 46.5% and 86.1%, respectively.[16] In that model the day centre nurses needed to contact the surgeon's office as necessary, to ensure completion of the questionnaire, trace all relevant laboratory investigation results, and contact patients for additional data. The nurse then had to decide on patient suitability for day surgery and whether PAC assessment was also needed. This study concluded that a nurse-based model was effective in ruling out patients who did not need PAC assessment before the day of surgery. In our DSC, the role of the nurse was similar.

Cancellation of operations can have significant negative financial implications.[17] The causes of cancellation in elective surgery can be medical, social, or due to other factors. Several studies reported significant reductions in cancellation rates after implementation of PAC. Ferschl et al[18] reported a decrease in same-day surgery cancellations from 16.2% to 8.4% after PAC was implemented. However, whether a group of healthy patients requiring day-of-surgery assessment only would result in significant day-of-surgery delays or cancellations in the absence of PAC assessment has not been studied.

Patient satisfaction is another important parameter in ambulatory surgery, which was not addressed in this study. Hepner et al[19] demonstrated that preoperative visits had a significant impact on patient satisfaction, and facilitated communication between clinical and non-clinical staff. To date, there have been no clinical trials comparing patient satisfaction among those having standard PAC as opposed to telephone PAA.

This study explored the use of telephone PAA in a day surgery centre and the results were encouraging. In future, telephone PAA should also be considered in ASA grade II patients, and possibly extended to other types of day surgery.

Conclusion

Telephone PAA is an effective method for preoperative assessment in selected patients undergoing ambulatory breast surgery. However, randomised controlled trials are required to compare telephone PAA and standard PAC assessment in terms of operation delay, cancellation rates, and patient satisfaction.

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