

Efficacy of a direct booking system: a prospective cohort study

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Abstract

Patients with recurrent tonsillitis are traditionally seen in the outpatient department and their suitability assessed prior to booking for tonsillectomy. The waiting time to the outpatient appointment in our unit is up to 18 months. Our aim was to reduce this lengthy waiting time by offering the direct booking system and to assess its efficacy and acceptability to patients.

Methods: This was a single-blinded cohort study consisting of 3 parts:

Part 1: Patient selection

Patients (adults, children > 20kg) referred by GP for tonsillectomies were sent a questionnaire (Q1) to assess their suitability for tonsillectomy.

Part 2: The returned questionnaires were reviewed by the consultant and patients that fulfilled the criteria for tonsillectomy were booked for the procedure.

Part 3: On the day of admission, the patients were assessed by a registrar (senior resident) using another questionnaire (Q2). The registrar was

blinded as to whether the patient was booked for surgery via the traditional outpatient review or via the questionnaire and information leaflet.

Results: There were 22 patients booked for tonsillectomy via the traditional outpatient system and 20 booked via the direct booking system. Patients booked through the outpatients had to wait approximately 12.8 months while the direct booking patients only waited 5.3 months before surgery. Questionnaire assessment of the patients and parents knowledge of the procedure (Q2) showed both groups to be equally lacking in knowledge regarding the risks and complications of the procedure.

Conclusion: The direct booking system for tonsillectomy provides an efficient way for selecting patients requiring this procedure. It is acceptable to patients and significantly reduces the waiting time and the load on outpatient appointments.

Keywords: Direct booking system; Tonsillectomy

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Introduction

Tonsillectomy is one of the most common otolaryngology procedures. Patients requiring this routine operation often have lengthy waiting times for outpatient appointments and surgery.

Traditionally, referrals for tonsillectomy are made by general practitioners (GPs). GPs refer patients to the otolaryngology clinic by letter, which, as well as containing information regarding their complaint, also contains supplemental clinical information about the patient (i.e. age, sex, social status, medical conditions, and medications). These referrals are not standardised. The referrals are reviewed by a consultant otolaryngologist and a time schedule for the outpatient clinical assessment is proposed on the basis of the information in the referral and the availability of appointments. The waiting time between GP referral and outpatient appointment in Beaumont Hospital, Dublin can be as long as 18 months. Having been reviewed by an otolaryngologist in the clinic setting, if patients are deemed to require surgery, and are suitable surgical candidates, they are given information about the procedure and counseled regarding the options, risks and complications of the surgery. Patients who wish to proceed with surgery, are placed on the hospital waiting list. The waiting time for tonsillectomy once patients have been listed in Beaumont Hospital is up to 12 months.

Traditionally it would be considered unsafe to book patients for routine tonsillectomy without an outpatient assessment by a trained otolaryngologist. However the decision as to whether tonsillectomy is indicated, is made on the basis of the patient's history and therefore we propose that patients referred by their GP may be safely selected

for surgery, on the basis of a detailed questionnaire which is filled in by each patient and once selected these patients may be given adequate written information by mail. Thus the need for prior assessment in the outpatient department can be obviated. We term this the direct booking system.

We propose that this 'direct booking system', may reduce the lengthy waiting time from initial GP assessment to surgery and also the overall cost involved.

The 'direct booking system' for tonsillectomy is based on the concept that the decision made to proceed with tonsillectomy is based on the history and not the clinical appearance of the tonsils (Scottish Intercollegiate Guidelines Network – SIGN) [1]. It is a questionnaire based system, designed to bypass the traditional outpatient assessment.

The aim of this study was to assess the efficacy of a 'direct booking system' in selecting patients for tonsillectomy, in reducing waiting time from referral to surgery and in increasing the cost-effectiveness of this process.

Methods

This study was a single-blinded prospective cohort study that consisted of 3 parts:

Part 1: Patient selection

Patients (adults, children > 20kg) referred by GP for tonsillectomy,

were sent a questionnaire (Q1) to assess their suitability for tonsillectomy (see Appendix A). A letter was also sent to the GP to inform them that the patient would be receiving a tonsillectomy questionnaire leaflet. This questionnaire consisted of eight parts designed to assess if the patient met the criteria for tonsillectomy, if they were medically fit for surgery and to exclude any patients in whom tonsillectomy would be contraindicated.

Part 2: Patient selection

The returned questionnaires were reviewed by the consultant otolaryngologist and patients that fulfilled the criteria for tonsillectomy were booked for the procedure. Once booked for tonsillectomy, a leaflet regarding the procedure, including the risks and complications was sent to the patients (Appendix B). Patients or parents of underage patients were required to read, sign and return this leaflet to confirm that they had fully understood the procedure. The patient's name was placed on the waiting list for tonsillectomy on receipt of this leaflet.

Patients that did not fulfil the criteria for tonsillectomy based on the questionnaire review, or patients with medical conditions that required further assessment were sent an outpatient appointment and therefore excluded from the 'direct booking system'.

Part 3: (Assessment of knowledge)

On the day of admission for tonsillectomy, the patient or parents of an underage patient were assessed by an otolaryngology registrar, who was blinded as to whether the patient was booked for surgery via the traditional outpatient review or via the direct booking system. A further questionnaire consisting of four parts, designed to assess patients or parents' knowledge of the procedure, recovery period, risks and complications of the procedure and risks of anaesthesia was completed. Score 0 was given for zero knowledge, 1 for minimal knowledge, 2 for good knowledge and 3 for excellent knowledge. The maximum possible score was 54.

After thorough questioning and clinical examination, the patient or parents were asked to sign the routine consent form prior to the surgery.

Assessment of waiting time

The length of delay (date of referral by general practitioner to the time of surgery) was calculated (months).

This study was ethically approved by the Ethics committee of Beaumont Hospital Dublin, Ireland.

Results

In total 42 patients were included in this study. 22 patients were booked for tonsillectomy through the traditional outpatient method while 20 patients were booked via the direct booking system (Table 1). 7 patients that were initially sent questionnaire 1 as part of direct booking patients were excluded after the consultant reviewed their returned questionnaire. These patients were sent outpatient appointments. There were 20 female patients and 22 male patients.

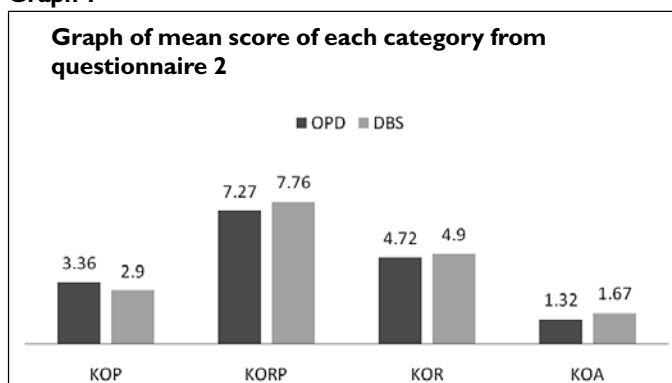
Table 1

	Overall	Outpatient	Direct booking
Number of patients	43	22	21
Female: male	20:23	8:14	12:9
Mean age	9.53 (3–23)	7.36 (3–13)	11.81 (3–23)
Child:adult	37:6	20:0	15:6

The ratio of child to adult patients was 36 to 6. All patients booked through the outpatient clinic were below the age of 15, while 16 children and 6 adults were booked through the direct booking system. The mean patient age was 9.53 years (range 3 to 23 years).

We calculated the mean score overall, and within each category in questionnaire 2, to assess and compare patients' and parents' knowledge of tonsillectomy (Graph 1). The mean overall score was 16.31 (SD=5.51), the mean score of patients booked through the outpatient clinic was 16.68 (SD=6.42) and the mean score of those patients booked through the direct booking system was 17.05 (SD=4.52). There was no statistical significance between the groups (P -value =0.8307). 95% confidence interval of this difference is -3.80 to 3.07 and the standard error of difference equals 1.70.

Graph 1



The mean waiting time between GP referral to surgery was 12.8 months (standard deviation=2.97) (range between 8 to 18 months) in the group seen in the outpatient clinic, and 5.4 months (standard deviation=1.14) (range between 4 to 7 months) in the direct booking system group. This result is statistically significant (P -value less than 0.0001).

Discussion

Currently our system is unable to cope with the volume of referrals for routine ENT assessment resulting in waiting times of up to 18 months. These prolonged waiting times for an appointment are due to lack of manpower to assess the individual cases.

The idea of a direct booking system grew from our experiences of dealing with referrals through the traditional outpatient channel and publications from the UK concerning direct access surgery in general, direct access day case oral surgery, direct access hernia referral and direct access colposcopy clinics [2,3,4,5,6]. To date our results show a significant improvement in the patient waiting time from an average of 12.8 months (range 8 to 18 months) to 5.4 months (range 4 to 7 months) and hence we have taken a big step forward in achieving our goal to release the backlog and pressure from our system, thus dramatically improving individual patient waiting time for specialist management and hence protecting the welfare of patients.

The direct booking system also allows us to manage patients more cost effectively, as there are a lot less contributing cost components. The following is a simple illustration to show cost comparison between the two groups.

The outpatient group journey through the system is far more complex and detailed and incurs accumulative costs along the way, i.e. travelling expenses to and from the hospital, lost time at work, doctors, nurses and secretary fees, stationary and equipment maintenance costs. Based on an average consultation time of 10 minutes, coupled with outpatient waiting time of 30 minutes and including all or some of the above ingredients an average cost for the

outpatient group has a range from approximately 80 to 140 Euros per patient.

We compared this with the direct booking system group, which incurs less cost as there are less contributing factors. This system simply requires consultant administrative time of approximately 5 minutes coupled with stationery and postage costs. Based on these criteria, we have calculated an average cost to be in the region of 10 Euros.

Tonsillectomy was chosen, as opposed to other procedures, because patient selection for this procedure is based on standard criteria and patient history. Patient' examination is rarely a consideration. The direct booking system has an inbuilt safety measure in that a senior member of the team reviews the patient on admission, goes through their questionnaire in detail, ensures all information was accurate and still pertinent, ensures that the surgery is warranted, that there is no reason not to proceed and that the patient is fully consented. If at any point it is not deemed safe or correct to proceed the patient is seen by the senior author and the procedure cancelled or deferred as appropriate.

It was interesting to note that the level of knowledge about the procedure and its risks and complications, of both patients and parents was found to be inadequate. Both groups scored an average of below 20 (16.68 by outpatients group, and 17.05 by direct booking group). The patients in the direct booking group had been sent a detailed leaflet regarding all aspects of tonsillectomy, once the decision had been made that they were suitable for surgery. There is an inherent risk with this practice that the patient will either not have the reading skills or comprehension to follow the content of the information sheet, or may in some cases fail to make any attempt to read it. However, we were interested to note that patients in this group were somewhat better informed than those patients who had had a traditional consultation in the outpatient clinic. The latter group would have been informed face to face of the options risks and complications of surgery and would have had the opportunity to ask for further clarification as required. Thus, despite oral and written advice both of our patient groups were poorly informed regarding the procedure they were about to undergo.

Table 2

	Overall (mean score)	Outpatient (mean score)	Direct booking (mean score)
Knowledge of procedure (n=9)	3.14(0-7)	3.36(0-7)	2.90(0-6)
Knowledge of recovery period (n=15)	7.51(4-15)	7.27(4-14)	7.76(4-15)
Knowledge of risk (n=24)	4.81(1-18)	4.72(1-18)	4.90(3-10)
Knowledge of risks of anaesthesia (n=6)	1.48(0-4)	1.32(0-4)	1.67(0-6)

Conclusion

The direct booking system for a tonsillectomy service provides an efficient and safe way of managing patients referred by general practitioners. It significantly reduces the waiting time from GP referral to surgery and successfully reduces the burden on the outpatient department.

References

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Appendix A

Part 1: Patient Selection

1) How long have you been suffering from sore throats?

- Weeks
- Months
- Years

2) How often do you get sore throats?

- One per month
- One per 2 months
- One per 3 months
- More than 2 per month

3) How long do these sore throats last?

- Less than 48 hours
- 2–3 days
- Greater than 3 days

4) When you have your sore throats, do you:

- Have high fever?
- Do the glands in your neck enlarge?
- See pus on the surface of the tonsils?
- Suffer from prolonged tiredness and lack of energy following the sore throats?
- Ever develop a rash associated with the sore throats?

5) Have you ever missed some time from school or work because of these sore throats?

6) Have you ever been admitted to the casualty department or hospital because of a severe sore throat?

7) Have you ever had quinsy or peritonsillar abscess?

8) Are these sore throats significantly affecting your quality of life?

Part 2: General Health

Do you suffer from any of these symptoms?

- 1) Chronic nasal discharge?
- 2) Recurring ear infection?
- 3) Loud snoring?
- 4) If yes, do you suffer from day time tiredness?
- 5) Have you any drug allergies?
- 6) Have you any tendencies to bleed or bruise easily?
- 7) Have you ever been diagnosed with heart murmurs?
- 8) Have you ever been diagnosed with heart murmur?
- 9) Have you had any general anaesthetic in the past?
- 10) If so, did you develop any complications?
- 11) Is there a family history of problems with anaesthesia?

12) Are you on any of these medications?

- a. Contraceptive pills
- b. Aspirin
- c. Plavix
- d. Warfarin
- e. Lithium
- f. MAOI inhibitors

13) Do you suffer from:

- a. Rheumatic heart disease
- b. Kidney disease
- c. Psoriasis

14) Do you have any dental implants, dental bridge, caps or brace?

Appendix B

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Pre Operative Information – Tonsillectomy

The procedure you have been booked for is called Tonsillectomy. It involves removal of the tonsils/adenoids under general anaesthesia. The aim of the procedure is to prevent recurrent tonsillitis (sore throats).

The procedure involves a hospital stay of approx 2 days. The procedure is performed under general anaesthesia.

There are a number of possible risks involved in having this procedure. These include the following:

1) Post operative pain:

Regular pain relieving medication is prescribed for the post operative period. This is necessary to allow each patient to proceed with a normal diet. The resumption of a normal diet following surgery is a crucial part of the healing process.

2) Infection

This may occur following the procedure, and may cause increasing pain. An antibiotic may be prescribed if this is suspected.

3) Bleeding

This may occur following the procedure (within 24 hours) or up to 15 days after the surgery, and if severe may necessitate readmission to hospital, blood transfusion, or a further procedure under anaesthesia to stop the bleeding.

Rare complications:

Anaesthetic complications – anaesthetic complications are very rare but can be serious.

Minor complications include nausea and vomiting

Problems which may occur if no surgery performed:

- The disease process of recurrent tonsillitis itself, if left untreated can cause a number of complications:
- Recurrent tonsillitis may necessitate the frequent and repeated use on antibiotics.
- Rarely infections are associated with heart disease, kidney disease or skin disease.
- In young children this can lead to failure to thrive- with poor weight gain etc.
- Frequent infections may lead to time being missed from school/ work.
- This leaflet has been produced to provide you with all the information you may require regarding your scheduled surgery. If you have any further questions, or wish to clarify any issue raised here please contact any member of the ENT team who will be happy to deal with your enquiry.

Please sign below to confirm that you have read and understood the above information.

Patients/ parents signature: _____

Print name: _____

Appendix C

QUESTIONNAIRE 2 (Q2)

PATIENT MRN: _____

DATE OF BIRTH: _____

GENDER: _____

1. Knowledge of procedure (KOP)

- Under GA _____
- Use of Tonsil Gag _____
- Method to secure bleeding _____

2. Knowledge of recovery period (KORP)

- Referred otalgia _____
- Importance of oral intake _____
- Method of pain relief _____
- Length of stay _____
- Presence of slough on tonsils _____

3. Knowledge of Risks (KOR)

- Primary Haemorrhage _____
- Secondary Haemorrhage _____
- Ear infection _____
- Chest infection _____
- Damage to teeth _____
- TMJ problem _____
- Persistent pain _____
- Recurrence of tonsils _____

4. Knowledge of risks of anaesthesia (KOA)

- Allergy _____
- Nausea/vomiting _____

0 = no knowledge

1 = minimal

2 = good

3 = excellent

Total score: _____ / 54 _____