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Main Article

Morbidity in patients waiting for tonsillectomy in Cardiff: a cross-sectional study

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Abstract

Objective: Our aim was to determine the morbidity of patients awaiting tonsillectomy.

Design: The study comprised a questionnaire survey of 379 children and 278 adults waiting over 12 months for tonsillectomy.

Outcome measures: These comprised frequency of infection, sickness absence and continuing desire for surgery.

Results: Response rates were 70 per cent (children) and 60 per cent (adults). Morbidity was similar in adults and children, and in those waiting more or less than two years. In the six months prior to the study, 86 per cent of children and 83 per cent of adults had had tonsillitis. Sixty per cent of children and 50 per cent of adults had had three or more episodes. Sixty-two per cent of children and 59 per cent of adults had had at least one long episode of tonsillitis, and 29 per cent of children and 24 per cent of adults had had more than three long episodes. Eighty-nine per cent of children had missed school at least once, compared with 71 per cent of adults missing work at least once ($p = 0.01$). The frequency of infection was significantly associated with patients' desire for surgery ($p < 0.001$).

Conclusions: Patients awaiting tonsillectomy experience considerable morbidity. This study does not support the hypothesis that untreated patients will 'outgrow' their condition.

Key words: Tonsillectomy; Surgical Procedures, Elective; Questionnaire; Preoperative Care; Wales

Introduction

Tonsillectomy is a commonly performed operation in both children and adults. Over 70 000 tonsillectomies were performed in the UK in the year 2000. However, the natural history of untreated tonsillar disease is unclear. It has been suggested that it may be self-limiting in the majority of cases, and that surgical intervention is thus unnecessary.[1] Tonsillectomy thus remains controversial, with few methodologically sound studies on which to rely.[2–4]

Events in Wales in recent years provided an opportunity to study the natural history of untreated tonsillar disease. In 2000, concerns over possible transmission of spongiform encephalopathies via reusable surgical instruments[5–7] led to the introduction of single-use instruments for tonsil and adenoid surgery.[8] These were subsequently abandoned in England in December 2001, when concerns over instrument safety and quality led the Department of Health to advise surgeons in England to resume surgery with reusable instruments.[9] At that time, the Welsh Assembly government instructed surgeons in Wales not to operate with reusable instruments, although they could continue using single-use instruments if they felt confident. This was followed by a marked reduction in the number of operations performed. In October 2002, the Chief Medical Officer for Wales advised cessation of routine tonsillectomies in Wales. This situation persisted until alternative single-use instruments became available in July 2003, when surgery resumed.

As a result, a cohort of patients existed in Wales which had been assessed as needing tonsillectomy, usually as a result of patients having four to six episodes of acute tonsillitis per year for two or more consecutive years and occasionally due to other conditions, e.g. sleep apnoea or quinsy. These patients had been added to waiting lists but had not been operated on. We investigated their levels of morbidity with a postal questionnaire.

Participants and methods

In January 2003, we sent a postal questionnaire and covering letter to all 688 patients identified by the Cardiff and Vale NHS Trust as waiting over 12 months for admission for tonsillectomy. A second

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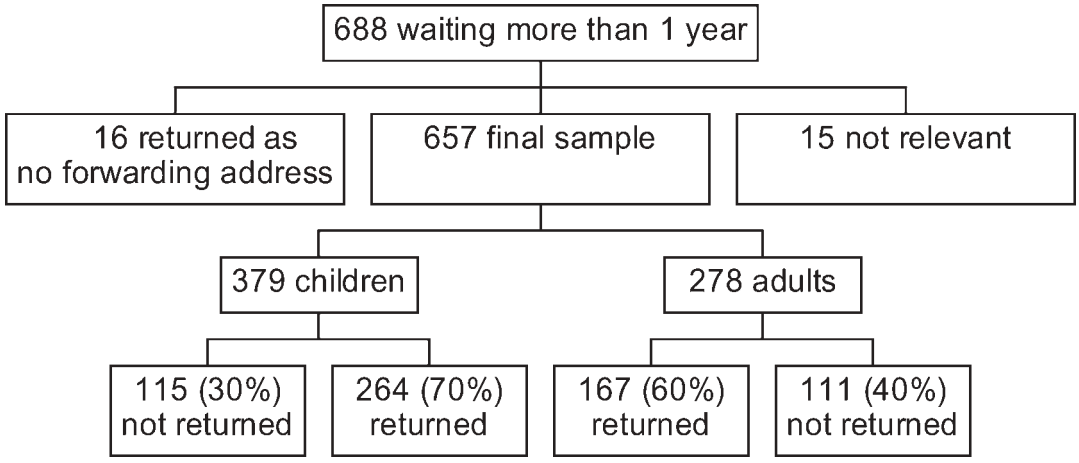

FIG. 1
Questionnaire distribution and response rates among adults and children.

mailing to non-respondents followed three months after the first.

Separate questionnaires were used for children (aged 16 years and under) and adults (aged over 16 years). Both questionnaires addressed the frequency of infection, general practitioner (GP) visits, antibiotic prescription, sickness absence from school or work, and prevalence of breathing through the mouth during the day, over the previous six months. In addition, the children's questionnaire asked about sleep apnoea, growth, eating habits, behavioural problems, school progress, and the need for day and night-time care secondary to tonsil problems, in the previous six months. Both questionnaires asked whether tonsillectomy was still felt to be necessary.

Results and analysis

Of the 688 questionnaires, 16 were returned undelivered with no forwarding address, 12 patients had already had surgery and three had unrelated conditions. This left a total sample of 657 patients, 278 (42 per cent) of whom were adults and 379 (58 per cent) children (Figure 1).

One hundred and sixty-seven (60 per cent) adult and 264 (70 per cent) child questionnaires were returned. There was no significant gender difference between responders and non-responders. People on the waiting list for more than two years were significantly less likely to respond than those who had been waiting between one and two years ($p < 0.01$). There was little difference in morbidity between those who had been on the waiting list one to two years and those who had been waiting more than two years.

Adult and child questionnaires were considered separately. Overall, episodes of infection were frequent in both adults and children (Table I).

Adults

One hundred and thirty-nine (83 per cent) adults had experienced at least one episode of tonsillitis lasting less than two weeks in the previous six months, and 83 (50 per cent) had had three or more such episodes. Ninety-eight (59 per cent) reported at least one episode of tonsillitis lasting more than two weeks, and 38 (24 per cent) had had more than three such episodes.

One hundred and sixteen (70 per cent) adults had visited their GP because of throat problems. Antibiotic usage was closely related to GP visits, suggesting that most visits resulted in a prescription.

One hundred and ten (71 per cent) adults had missed work at least once due to tonsillitis, 67 (43 per cent) for longer than one week. Adults who had been on the waiting list for less than two years were significantly more likely to have taken sick periods of less than one week than those who had

TABLE I
PATTERNS OF TONSILLAR ILLNESS IN ADULTS AND CHILDREN

Incident(s)	Adults		Children		*p*	Odds ratio (95%CI)
	n	%	*n*	%		
1+ Short episode	139	83	231	86	0.2	0.7 (0.4–1.3)
3+ Short episodes	83	50	158	60	0.04	0.7 (0.4–1.0)
1+ Long episode	98	59	163	62	0.5	0.9 (0.6–1.3)
3+ Long episodes	38	24	76	29	0.2	0.7 (0.5–1.2)
1+ Absence from work/school	110	71	235	89	0.01	3.5 (1.9–6.5)
Visited GP for throat	116	70	219	82	<0.001	2.4 (1.4–4.0)

CI = confidence intervals; 1+ = one or more; 3+ = three or more; episode = episode of tonsillitis; GP = general practitioner

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TABLE II

REASONS FOR FAMILY DISRUPTION, FOR CHILDREN ON TONSILLECTOMY WAITING LIST

Problem	Frequency	
	n	%
Needed daytime care because of tonsil problems	217	83
Needed night-time care at least once a week because of tonsil problems	210	79
Snored loudly	202	76
Irregular or interrupted breathing when asleep	152	59
Family member needed to take time off work for daytime care	129	49
Poor appetite	130	49
Growth and weight gain not as expected	85	32
Teacher concerned about school progress	67	25
Behavioural problems	67	25

been on the list longer (49 (77 per cent) *vs* 61 (66 per cent), $p < 0.05$).

Children

Two hundred and thirty-one (86 per cent) children had had at least one short episode of tonsillitis, and 158 (60 per cent) had had at least three such episodes. Sixty-three (62 per cent) had had at least one long episode, and 76 (29 per cent) had had more than three such episodes.

Two hundred and nineteen (82 per cent) children had visited their GP because of throat problems. Again, antibiotic usage was closely related to GP visits.

Two hundred and thirty-five (89 per cent) children had been absent from school at least once, 154 (58 per cent) for longer than one week. One hundred and fifty (86 per cent) of the children waiting one to two years had missed school for short periods, compared with 85 (94 per cent) of those who had been waiting more than two years ($p < 0.05$).

The children's questionnaire contained nine questions not posed to the adults (relating to developmental progress, sleep problems and the need for extra care as a result of throat problems) (Table II). Again, the responses indicated substantial morbidity and family disruption. Two hundred and seventeen (83 per cent) of the children had needed daytime care because of problems with their tonsils. For 129 (49 per cent), a family member had had to take time off work to care for them. Sleep and night-time difficulties were common. Two hundred and ten (79 per cent) children needed someone to get up at night to care for them because of problems with their tonsils at least once a week (and 41 children (15 per cent) needed such assistance more than 10 times per week). Two hundred and two (76 per cent) children snored loudly, and 152 (59 per cent) had had irregular breathing or had stopped breathing during sleep. For 49 (19 per cent), this happened 'much of the time'.

Most children (179, 68 per cent) were growing and gaining weight as expected, although 130 (49 per cent) were described as having problems with poor appetite and poor eating habits. Sixty-seven children (25 per cent) were described as having behavioural problems, and concern had been expressed about the school progress of 92 (35 per cent) children.

Continuing desire for tonsillectomy

Respondents were asked whether they thought they would benefit from having their tonsils removed. In the majority of cases where the patient was a child, the answer reflected their parents' views, although in a few cases it was clear that teenagers had responded on their own behalf. Desire for tonsillectomy was greater for children than adults, although the difference was not statistically significant. Only 12 (7 per cent) adults and 13 (5 per cent) children felt they would not benefit from tonsillectomy, while 37 (22 per cent) adults and 44 (17 per cent) children were unsure (Tables III and IV).

Children and adults who were experiencing frequent infections, sickness absence from school or work, and family disruption (in the case of children) were significantly more likely to feel that tonsillectomy would help them.

Discussion

We found considerable morbidity, which did not diminish with increasing length of time on the

TABLE III

FACTORS ASSOCIATED WITH PERSISTENT DESIRE FOR TONSILLECTOMY

Factor	Adults		Children	
	p	Odds ratio (95%CI)	*p*	Odds ratio (95%CI)
3+ Short tonsillitis episodes	<0.001	8.0 (3.3–19.8)	<0.001	7.9 (3.8–16.8)
3+ Long tonsillitis episodes	<0.001	6.5 (1.8–28.4)	<0.001	9.5 (2.7–39.7)
3+ GP visits	<0.01	4.2 (1.6–11.4)	<0.001	7.5 (3.3–17.6)
3+ Antibiotic prescriptions	<0.001	6.4 (2.0–22.8)	<0.001	9.2 (3.6–25.0)
3+ Short sickness absences	<0.001	6.2 (2.3–19.2)	<0.001	4.5 (2.3–9.0)
3+ Long sickness absences	0.04	3.6 (0.9–16.3)	<0.001	10.0 (2.9–41.6)
3+ Episodes of night-waking/week	N/A	N/A	<0.001	10.1 (4.7–22.4)
3+ Episodes of needing night-time care/week	N/A	N/A	<0.001	8.3 (3.8–18.7)
3+ Episodes of needing daytime care	N/A	N/A	<0.001	10.0 (2.9–41.6)

Table shows factors statistically significantly associated with a belief that tonsillectomy would still be beneficial, for adults and children. CI = confidence intervals; 3+ = three or more; GP = general practitioner; N/A = not applicable

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TABLE IV

FACTORS ASSOCIATED WITH PERSISTENT DESIRE FOR TONSILLECTOMY (CHILDREN)

Factor	*p*	Odds ratio (95%CI)
Stopping breathing during sleep	<0.001	4.4 (2.2–8.6)
Poor appetite	<0.001	5.2 (2.5–11.2)
Snoring	<0.01	3.1 (1.3–7.3)
Concern about school progress	<0.01	2.8 (1.3–6.0)
Family member needed to take time off work for daytime care	<0.01	7.7 (3.7–16.7)
Behavioural problems	0.01	2.9 (1.2–7.6)
Growth or weight gain not as expected	<0.05	2.8 (1.0–8.5)

Table shows factors statistically significantly associated with a belief that tonsillectomy would still be beneficial, for children only. CI = confidence intervals

waiting list, in adults and children waiting for tonsillectomy. This finding is supported by our experience of dealing with large volumes of complaints from patients who could be given no indication of when they were likely to be treated, during the period when tonsillectomy was suspended in Wales. It must be remembered that patients would have undergone a period of 'watchful waiting' under the care of their GP before referral for an ENT opinion. They would then have waited for their out-patient appointment and undergone another period of 'watchful waiting' before being placed on the waiting list. Thus, respondents to the questionnaire would have been experiencing symptoms for substantially longer than the time they had been on the waiting list.

As well as the morbidity experienced by the individual patients, the economic impact of untreated tonsillar disease was substantial, as a result of lost work time (due to sickness, caring for sick children and GP visits) and pharmaceutical costs.

Previous studies have shown that children awaiting tonsillectomy have an impaired quality of life, with parental eagerness for their child to have a tonsillectomy being associated with the number of episodes of throat infection in the previous year but not with time off school or parental time off work.[10] In addition, children awaiting tonsillectomy have been found to be significantly more likely to mouth-breathe, sleep restlessly and wake frequently than either normal children or children suffering from tonsillitis but not assessed as needing surgery.[11]

Our study confirmed that tonsillectomy was significantly more likely to be seen as desirable in children with frequent infections, restless sleeping and frequent night-time waking. In our study, parental desire for tonsillectomy was also significantly associated with sickness absences from school and parental time off work to look after the child. This apparent discrepancy with previous published studies may reflect the greater length of time our cohort of children and their families had been waiting for surgery.

Our study also examined the experiences of adults, who comprised 42 per cent of our waiting list. A desire for tonsillectomy in adults was associated with frequent infections, GP visits and antibiotic prescriptions, and with frequent sickness absence from work.

This study confirms the clinical impression that children and adults with disease severe enough to warrant inclusion on the tonsillectomy waiting list were unlikely to experience spontaneous resolution of their symptoms, even after two years. Individuals who were experiencing little or no morbidity recognized that tonsillectomy was unlikely to benefit them.

Possible limitations of the study

Questionnaire surveys require a high response rate to be reliable. The high response rates in this survey suggest that bias introduced by systematic differences between respondents and non-respondents was likely to be slight. However, the relatively lower response rates among those waiting over two years could have introduced bias, especially if (as could be hypothesized) non-respondents were likely to have less morbidity than respondents.

The questionnaire did not attempt to define 'tonsillitis', and it is possible that respondents differed in what they considered tonsillitis to be. Lack of agreement is known to exist between professionals as to the diagnostic features of tonsillitis.[12] However, individual's definitions of tonsillitis are likely to mirror those used during consultations when deciding on patient management, thus minimizing inconsistency.

Conclusion

This study supports the hypothesis that most children and adults with tonsillar disease severe enough to warrant their inclusion on a surgical waiting list will continue to suffer substantial morbidity while waiting for surgery. A minority of patients will experience resolution of their disease such that they no longer anticipate benefit from surgery. Further work to identify characteristics predictive of self-limiting illness would allow improved targeting of adenotonsillectomy and would minimize the morbidity associated with surgery.

This cohort of patients, arising out of a 'natural experiment', provides insight into the natural history of untreated chronic tonsillitis and allows evaluation of the effect of eventual tonsillectomy on morbidity. It is proposed to administer the same questionnaire to the cohort 12 months after surgery in order to quantify post-operative, as well as pre-operative, morbidity.

- **This study looks at morbidity suffered by patients awaiting tonsillectomy during a period in Wales when there was a moratorium on tonsillectomy following concern over the use of disposable instruments**
- **During this time patients awaiting surgery continued to experience significant morbidity, chiefly continued episodes of tonsillitis**
- **This study suggests that the notion of untreated patients 'outgrowing' their condition is false in the majority of patients**

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